UNIVERSITY OF LJUBLJANA
SCHOOL OF ECONOMICS AND BUSINESS

MASTER'S THESIS

THE EFFECTS OF GAMIFICATION ON THE HIRING PROCESS

Ljubljana, November 2024 FILIP SAKSIDA

AUTHORSHIP STATEMENT

The undersigned Filip Saksida, a student at the University of Ljubljana, School of Economics and Business, (hereafter: SEB LU), author of this written final work of studies with the title The Effects of Gamification on the Hiring Process, prepared under the supervision of Prof. Matej Černe, PhD

D E C L A R E

1. this written final work of studies to be based on the results of my own research;

2. the printed form of this written final work of studies to be identical to its electronic form;

3. the text of this written final work of studies to be language-edited and technically in adherence with the SEB LU's Technical Guidelines for Written Works, which means that I cited and / or quoted works and opinions of other authors in this written final work of studies in accordance with the SEB LU's Technical Guidelines for Written Works;

4. to be aware of the fact that plagiarism (in written or graphical form) is a criminal offence and can be prosecuted in accordance with the Criminal Code of the Republic of Slovenia;

5. to be aware of the consequences a proven plagiarism charge based on the this written final work could have for my status at the SEB LU in accordance with the relevant SEB LU Rules;

6. to have obtained all the necessary permits to use the data and works of other authors which are (in written or graphical form) referred to in this written final work of studies and to have clearly marked them;

7. to have acted in accordance with ethical principles during the preparation of this written final work of studies and to have, where necessary, obtained permission of the Ethics Committee;

8. my consent to use the electronic form of this written final work of studies for the detection of content similarity with other written works, using similarity detection software that is connected with the SEB LU Study Information System;

9. to transfer to the University of Ljubljana free of charge, non-exclusively, geographically and time-wise unlimited the right of saving this written final work of studies in the electronic form, the right of its reproduction, as well as the right of making this written final work of studies available to the public on the World Wide Web via the Repository of the University of Ljubljana;

10. my consent to publication of my personal data that are included in this written final work of studies and in this declaration, when this written final work of studies is published.

11. that I have verified the authenticity of the information derived from the records using artificial intelligence tools.

Ljubljana, October 10th, 2024 Author's signature: _____

TABLE OF CONTENTS

1 INTRODUCTION **1**

2 HIRING PROCESS **3**

2.1 Recruitment **3**

2.2 Selection **4**

2.3 Onboarding **6**

2.4 Retention **7**

3 GAMES AND GAMIFICATION **7**

3.1 History of games and toys **8**

3.2 The development of computer games **9**

3.3 Game effects on the behaviour of the individual **10**

3.4 Current concept of gamification **12**

4 GAMIFICATION IN RECRUITMENT **14**

4.1 Trends and use of gamification in recruitment **15**

4.2 Psychometric testing **17**

4.3 Gamified psychometric assessments **19**

4.4 Equalture's gamified psychometric assessment **20**

4.5 Equalture's assessment of candidate's skills and behaviours **22**

4.6 Unconscious bias in the hiring process **22**

4.7 Gamified assessment and Diversity, Equality & Inclusion **24**

5 EMPIRICAL RESEARCH **25**

5.1 Research methodology **26**

5.2 Introduction of the respondents **27**

5.3 Research results **28**

5.3.1 Group 1: Candidates 29

5.3.1.1 Accuracy of the assessment results *29*

5.3.1.2 Candidate experience *30*

5.3.1.3 Unconscious bias in the hiring process *30*

5.3.1.4 Assessments as a substitute for work experience and university degree *31*

5.3.1.5 The effects on the company *32*

5.3.2 Group 2: Users 33

5.3.2.1 Accuracy of the assessment results *33*
5.3.2.2 Candidate experience *34*
5.3.2.3 Unconscious bias in the hiring process *35*
5.3.2.4 Assessments as a substitute to work experience and university degree *35*
5.3.2.5 The effects on the company *36*
6 DISCUSSION WITH CONTRIBUTIONS AND IMPLICATIONS 37
6.1 Discussion of the research results 37
6.1.1 Accuracy of the assessment results 37
6.1.2 Candidate experience 38
6.1.3 Unconscious bias in the hiring process 39
6.1.4 Assessments as a substitute for work experience and university degree 40
6.1.5 The effects on the company 41
6.2 Recommendations for the implementation of gamified assessments into the hiring process 42
6.2.1 Clear communication behind the "why" and "how" regarding gamified assessments 42
6.2.2 Positioning 43
6.2.3 Performance and metrics tracking 44
6.2.4 Internal mobility 44
6.3 Limitations with future research directions 45
7 CONCLUSION 45
REFERENCE LIST 47
APPENDICES 51

LIST OF TABLES

Table 1: Characteristics of the first group of respondents (candidates) 27
Table 2: Characteristics of the second group of respondents (users) 28

LIST OF APPENDICES

Appendix 1: Summary in Slovene 1
Appendix 2: Equalture game - The Ferry 2
Appendix 3: Equalture game - The Racer 3

Appendix 4: Equalture game - The Pitch 4
Appendix 5: Equalture game - Birds 5
Appendix 6: Equalture game - The Fish game 6
Appendix 7: Transcript of the interview with respondent 1 (candidate).....7
Appendix 8: Transcript of the interview with respondent 2 (candidate).....9
Appendix 9: Transcript of the interview with respondent 3 (candidate).....11
Appendix 10: Transcript of the interview with respondent 4 (candidate).....13
Appendix 11: Transcript of the interview with respondent 5 (candidate).....15
Appendix 12: Transcript of the interview with respondent 6 (user) 17
Appendix 13: Transcript of the interview with respondent 7 (user) 20
Appendix 14: Transcript of the interview with respondent 8 (user) 22
Appendix 15: Transcript of the interview with respondent 9 (user) 24
Appendix 16: Transcript of the interview with respondent 10 (user) 26

LIST OF ABBREVIATIONS

sl. – Slovene
ADHD – (sl. Motnja pozornosti/ hiperaktivnost); attention-deficit/hyperactivity disorder
ATS – (sl. sistem za sledenje aplikantov); applicant tracking system
COVID-19 – (sl. bolezen koronavirus 2019); coronavirus disease 2019
CV – (sl- življenjepis); curriculum vitae
DE&I – (sl. raznolikost, enakost in vključevanje); diversity, equality & inclusion
EVP – (sl. delodajalčeva vrednostna ponudba); employer value proposition
Gen-Z – (sl. generacija Z); generation Z
GMA– (sl. splošne duševne sposobnosti); general mental ability
HRTech – (sl. tehnologija človeških virov); human resources technology
MIT – (sl. Tehnološki inštitut Massachusettsa); Massachusetts Institute of Technology
US – (sl. Združene Države); United States
USA – (sl. Združene Države Amerike); United States of America
VR – (sl. virtualna resničnost); virtual reality

1 INTRODUCTION

In recent years, the labour market has undergone significant changes, especially with the rapid development of technology. The recruitment processes, however, have largely remained the same and unchanged in many aspects. Yet, many companies have been forced to rethink their hiring strategies to match said digital and technological developments, to battle the growing shortage of desired human capital, and to retain existing talent. Recognising relevant competencies in an objective and data-driven way presents a significant challenge for companies that seek to secure the best talent on the market.

I have selected this topic because I have been working in the space of recruitment technology for the last three and half years, thus observing the application of gamification to the recruitment process closely. I believe that many current recruitment practices are outdated and have not been developing alongside emerging technologies, falling behind other departments in the company that have embraced the novelty of technology. Until this changes, many people will have to go through outdated, poorly planned, and ineffective recruitment processes. Therefore, the purpose of the research is to strengthen the understanding of how the use of gamification in the hiring process impacts the candidates and the employees using gamified tools as part of their hiring process, and the company itself.

The goal of the research is to analyse the experience of both parties of participants in the hiring process that utilises the concept of gamification - candidates and employees of the company in charge of the hiring process. Their experience as well as the results that such a process yields for both parties and the company alike, are to be analysed and compared to each other. The overall experience and results of the participants are to be compared to the theoretical research and used to answer the research questions. This application of gamification in recruitment has not been properly research by academics so far and most of the currently available research has been published by providers of recruitment technology, making the validity of such research untrustworthy.

In this thesis, I will research how the emergence of gamification has impacted recruitment practices, how it has been applied to the hiring process and how this affects the relevant stakeholders in the recruitment process. Specifically placing focus on the impact of gamified assessments on the early stages of the hiring process. The results of the research will not only help broaden the common knowledge about the use of gamification in the recruitment process but also provide actionable insights into the experience of people who have been a part of the process where gamification was used. The main benefits and possible pitfalls of such an application presented will thereby help companies to learn more about this topic and provide actionable suggestions for improvement of their hiring process.

To research will the following research questions:

- Research question 1: Do gamified assessments assess candidates' skills and behaviours more accurately than non-gamified ones?
- Research question 2: How does the candidate's experience with gamified assessments compare to the non-gamified assessments?
- Research question 3: Can gamified assessments increase or decrease the effect of unconscious bias on the hiring process?
- Research question 4: Do gamified assessments offer a better chance of employment for a candidate with no work experience and a university degree?
- Research question 5: What are the benefits of using gamified assessments over non-gamified ones at the company level?

The thesis will be split into four chapters, starting with the chapter on the hiring process. This chapter will describe different stages of the hiring process, how each stage is conducted, who participates in the process and which tools are used - everything from the very initial stage when a company identifies a need to hire a new employee up to the point when a hired person is fully onboarded and already working at the company for a longer period of time.

The second chapter will cover the history of the games, how they developed, how they affect human behaviour and how computer games have been developed. Following that, I will present how that led to the innovation of gamification that we know today.

The third chapter will describe how gamification is currently utilised in recruitment. I will research the past and current trends and then focus on its application to assessments. To establish an understanding of said assessments, I will present how psychometric assessments work and how they're currently used and then move to the use of gamified assessments in recruitment. It will also include how gamified assessments measure skills and behaviours, what impact they have on the effects of unconscious bias on hiring, and how they affect the diversity and inclusion of the company using them.

The theme of the fourth chapter will be focusing on empirical research where I will be researching how different groups of people involved in the process, where gamified assessments are used, experience it and what they do in certain aspects of it. This will include semi-structured interviews with a group of respondents who experienced gamified assessments as candidates, and a group of respondents that were using gamified assessments in the hiring process to gain a better understanding of the candidate's skills and behaviours. For the purpose of this research, the respondents will be recruiters and/or hiring managers.

The qualitative analysis will allow to draw common themes between the respondents' answers and identify patterns. Following this will be the discussion, where the findings will be presented and the most important aspects summarised.

To conclude the thesis, a number of suggestions gathered throughout the analysis will be given on how to best use gamified assessments in the hiring process for the ultimate efficiency and best candidate experience. I will also share my limitations with the current research for future research efforts and finish the thesis with my conclusion, which will be the result of my theoretical and empirical research.

2 HIRING PROCESS

The hiring process is an incredibly important aspect that often does not get the recognition it deserves compared to some of the other processes in the organisation. In the end, the success of any organisation depends on the people employed in said organisation, therefore getting the right talent on board is vital. Well-executed and thought-out hiring process can enrich the organisation with amazing talent that will elevate the organisation's culture and morale, establish internal processes or improve them, expand markets of operation and become an ambassador of the company's employer brand after they leave. A bad hire can severely damage the team's morale, resulting in top-performing colleagues leaving, ruining long-term relationships with clients and causing financial loss or even bankruptcy. It all starts with the hiring process and the most successful companies in the world recognize this and, thus, invest heavily in their recruitment departments. In the following chapter, I will present the commonly seen hiring process for office roles in 4 steps: recruitment, selection, onboarding and retention.

2.1 Recruitment

The first step of the recruitment process is employer branding. Employer branding is often overlooked since it's not an active action point during the hiring stage but rather happens continuously and even before the start of the hiring process. Employer branding is the image and reputation of the company as a potential employer and it can greatly impact the success of the hiring process. A bad employer brand could mean that the company is not as well-known on the market as some of its competitors and could receive a lesser number of candidates due to that. Poor treatment of employees, recurring lawsuits from employees due to wrongful termination and disregard for the morality of their business operations, such as the use of sweatshops, etc. can also contribute to a bad employer brand and result in a smaller number of candidates that would be willing to work at said company. Strong employer brand not only helps companies attract more candidates and quality talent but job seekers also perceive companies with strong employer brands as an opportunity to build the value of their résumé and job-related skills. As a result, they are more likely to accept offers from companies with strong brands even for a lower salary just to get those benefits (Lievens & Slaughter, 2016).

An important factor of employer brand is employee value proposition (hereinafter: EVP). While employer brand signals to the outside world how it is to work at a certain company

and what they stand for, what are their values, goals and what practices characterise the company, EVP defines what an employee gets in return for their commitment of working for said company. This is a sum of all the benefits and rewards they receive such as pension contribution, work-from-home budget, coverage of travel costs, amount of holidays etc. (Verlinden, n.d.).

Following is the process of sourcing candidates. Hiring managers work closely together with recruiters to align on the candidate profile they're looking for, what will be the main responsibilities of the role and what is the salary range and benefits they're prepared to offer. Recruiters devise a thorough job description for the role and publish the job advertisements to different media channels for better reach. Most companies use their career site on their official website and some additional media channels depending on the available budget and the candidate target group for the role. They can utilise job boards like Indeed and LinkedIn, professional and trade journals, newspapers and journals or some other niche job boards. If a company is looking to fill a high number of positions for one role, they might consider running a recruitment marketing campaign, where they will advertise their job vacancy to the target group in the form of ads on social media. This would mainly happen through Google, Instagram, Snapchat, X and TikTok. In case the role proves to be hard to fill, recruiters are likely to manually try to source candidates. They would approach potential candidates, who might not be necessarily active job seekers, to see if they would be interested in applying for the said position. If the company is lacking internal resources to fill the role, they would consider using a recruitment agency, which then would source and screen the candidates for them. If the agency-sourced candidate is hired, the recruitment agency gets a percentage of the new hire's yearly salary as payment for providing this service (Scott Snell, 2012).

2.2 Selection

After the candidate fills out & submits the job application form, this information is usually sent to an Applicant Tracking System (hereinafter: ATS). This is a software that allows recruitment departments to store and track applicant data including candidate information like resumes, cover letters and references but also helps recruiters track the candidate's journey through the hiring process. Depending on the software, additional features that reduce otherwise manual tasks are included as well, like automatic screening of the resumes, automatic interview scheduling feature and automated email sender notifying the candidate whether they've been rejected or accepted for an interview (Henderson, 2024).

Once the application reaches the ATS, recruiters review the application and the resume to see if it matches their qualification criteria. As mentioned before, some companies automate this step and use suited technology provided by the ATS. If the candidate fits the criteria, they're invited for an interview and if they don't, they will most often be sent a rejection email. The next step is the interview, commonly in the form of a phone or video call, with

the recruiter. This is the opportunity for the recruiter to gather insights to fill any missing information gaps and confirm that the candidate is qualified for the role before they proceed to the next stage. It's also a chance for a recruiter to identify the candidate's salary expectations, shortlist the number of candidates that will proceed to the next stage and shortly present the role to the candidate (von Moltke, n.d.). If the company uses pre-employment tools, commonly referred to as candidate assessments, they would then have the candidate complete the assessment. In the case of high-volume recruiting, this would be done before the recruiter interview to disqualify unfit candidates and save the recruiters time. Pre-employment tools might include cognitive testing, behavioural tests, a job simulation assessment or a personality assessment. The selection of tests depends on the type of role the company is hiring for and the company itself (van Vulpen, n.d.).

If the candidate passes all the steps they get invited for an interview with the hiring manager. Again, this can be a phone call but more commonly it's an in-person meeting or a video call. During the meeting the hiring manager seeks to gain a better understanding of the candidate's qualifications, skills, past work experience, why are they interviewing for this specific company, what made them look for another role, what are they looking for in a role and generally just evaluate if this is someone that would fit the company's culture and the team (Indeed, 2024).

The number of steps that follow depends on the company and the role. The more senior the role, the more rounds of interviews are expected but generally, the candidate would go through one or two rounds of interviews before receiving the offer. In this stage, it's common for companies to ask the candidate to prepare a case study, where they solve a particular challenge or outline the framework of the working process for a specific task relevant to their role. The reasoning behind this is to gain a better understanding of how the candidate approaches and solves problems specific to the role. Other team members of the hiring manager's team will often join this stage to get a second opinion but also for the candidate to ask them some questions regarding team dynamics. At this stage another more informal interview might take place - either a conversation with members of the management team, a conversation with other team members or just an additional conversation with the hiring manager regarding any questions that might still need to be answered either from managers or the candidate's side. After that, an official offer is proposed by the company. Two parties might enter into a negotiation stage in case the candidate is not satisfied with the terms of agreement offered. If both parties agree to the conditions in the offer letter, the employment contract is sent out and the candidate officially turns into a new hire. In case an agreement is not reached, either of the parties can back out of the process and the hiring cycle between the two parties is over (Indeed, 2021).

2.3 Onboarding

One might think the hiring process ends after the hiring decision has been made. The candidate has passed all of the pre-employment tests, and interviews, the team likes them and they are ready to start contributing to the team's efforts. However, in reality, onboarding plays a major role in making sure the new hire is well-equipped with the internal knowledge and tools necessary to start effectively contributing. Onboarding is the practice of preparing the candidate to join an organisation once they've accepted the company's offer letter. It's about giving them the information, resources, and tools they need to do their job. Not only that, but making them feel welcome and valued is crucial. 24% of new hires who leave their jobs do so in the first 45 days of employment and 4% of new hires never return after their first day on the job. Such cases are alarming to every leader and a financial nightmare for the company. In the case of a revenue-driving role the company is losing money by having the role empty, recruiters and hiring managers spend their valuable time to decide on the hire and the whole process has to start again if the new hire decides to leave shortly after they joined (Harpelund, 2019).

To make sure this doesn't happen, the company needs to have a well-thought out and coordinated onboarding process. There are 3 psychological processes, referred to as "tracks" by the author Harpelund (2019), that the new hire must go through. The first track is called the forming track. It's a process of incorporating the organisation's culture, vision, mission and values into the new hire and shaping their behaviour so it aligns with the rules and procedures. Second track is named the connecting track. It's a relationship-making process in which the aim is to connect the employee to the both personal and professional networks of the organisation. The third track is called the unfolding track. This is a process of unfolding the new hire's competencies and aligning them with the skills needed to deliver the value to the organisation (Harpelund, 2019).

Next to the three major psychological processes needed to properly onboard a new hire, the company must also execute three major operational projects. These would be (Comeet, n.d.):

- Training: the new hire should be presented with the employee handbook, ethics and compliance training, security & compliance practices and other documentation about the internal processes and protocols of the company.
- Mentoring: is the act of pairing a new hire with a more experienced team member who will show them the ropes and be their point of contact for any questions they might have. Mentors will usually schedule regular check-ins with the new employee to help them track their onboarding process and tackle any hurdles they might experience in the process.
- Tooling: most positions require certain tools for the job. In office jobs, this would commonly be a laptop and potentially a mobile phone. Most companies also use a plethora of software tools for their daily operations, which have to be activated by

software administrators. Making sure they have access to these tools and that they work as needed has to be done as soon as possible when the new hire joins.

2.4 Retention

Employee retention can be summarised as the process through which the employer encourages and strives to keep the employee for as long as possible in the organisation. It starts with the very first interaction between the company and the employee in the recruitment process and lasts for the whole duration of the employee's lifecycle. It's a process that benefits both parties - the employer offers a chance to the employee to fulfil their career ambition, provides a healthy-work life balance, recognizes their output, recognizes it and makes them feel valued. In exchange, the employee reciprocates by providing more value and output to the organisation as time passes on as they start possessing tacit knowledge about the inner operations of the company and the industry they work in. Not only that, they save the employer a lot of costs required to repeat the hiring process to fill the role in case they decide to leave. A high turnover rate is undesired and negatively affects the organisation - morale drops, performance decreases and the work pressure on colleagues left on the team increases as they have to pick up the responsibilities of the person that left. Employer brand is damaged, making it harder to attract good candidates and clients get confused when their contact person keeps changing. Therefore it is vital for the organisation to attain appropriately skilled employees. Employee retention strategies can include but are not limited to the following (Bussin, 2018):

- Employees are paid based on contributions or outputs rather than their job duties.
- Skillset development and application of it is rewarded with recognition and benefits.
- Introduce transparent pay structures and what kind of skill sets and applications are needed to achieve them.
- Managers actively involve and encourage employees to participate in reward processes.
- Provide external training to employees so they can progress and be promoted into new positions internally.
- Offer flexible working hours and working location options.

3 GAMES AND GAMIFICATION

Games, in their various forms, have been an integral part of humanity since the time of first civilizations. One-player games can induce relaxation, creativity, learning and improve problem-solving skills while multiplayer can additionally also help people establish stronger interpersonal bonds, feelings of belonging and change the way we perceive the world around us.

In the following chapter, I will dive into the history of games, their elements and how they have impacted the development of humanity. I will follow up with the discovery of the

development of computer games, which have made a significant mark on 20th-century trends, and the effects of games on the behaviour of the individual, which will be the most significant aspect of this thesis.

3.1 History of games and toys

Games and toys date back to the very beginning of humanity and civilizations. Archaeologists believe that people used ordinary objects available, like stones, sticks, shells and bones, as toys and game elements. Many of these objects were made out of perishable materials and predate any preserved written forms of evidence so they have been lost throughout. Toys made out of more durable materials, like rocks, are the only preserved toys from that era. (Hozjan, 2009)

The first solid evidence of a game element is found on an Egyptian hieroglyph depicting gaming boards Senet which dates back to 3100 BC. The rules of the game are still a topic of discussion amongst historians. The oldest confirmed dice along with some other game pieces was found on the territory of modern Turkey, dating back to 3000 BC. (Kumar et al., n.d.). Many ancient civilizations that appeared shortly after or at the same time, like Mesapotamians, old Greeks and Romans, were known for their use of games and some of them have even been preserved up until today. For example, jumping over the goat and tug of war are games originating from ancient Egypt that have been preserved up until this day. Boys in ancient Egypt were also known to play different games on wooden boards and games with balls. Girls were known to play with wooden dolls and wooden spinning tops - toys that spin on their vertical axis. Ancient Greeks also indulged in many board games that are known today, like chess and ladders. Girls would also play with ceramic dolls and boys would play ball games. (Hladnik, 2016)

During the period of mediaeval times, many new games were invented due to new materials available but more importantly, they were better documented. Kids of that era were playing games that are still popular amongst kids today, today like hide and seek, tag and hopscotch. With the development of new materials, like steel and iron, archery and sword fighting became common ways for nobleborns to pass their time but also develop their fighting skills. Those on the lower part of the societal ladder played ring toss, stick fighting and playing with marbles. This is also a time when we see the first instance of games of chance and card games. Knucklebones, the vertebrae of sheep, were used as dice and were a part of many early versions of dice games found in casinos today. Such an example was the dice game Hazard, which is an early version of the modern-day game Craps.

Many older board games, like Backgammon and Checkers, gained popularity amongst the masses in this period but chess was by far the most popular one. The chess pieces represent the social ranks of European society and warfare at the time. For example, Pawns represent the peasants and make up for half of the pieces on board. Bishops represent the church,

Rooks the mediaeval fortresses and King and Queen are the most powerful and important pieces on the board. (Pattie, 2011).

3.2 The development of computer games

The world of games would see its next big leap with the development of computers. First computers appeared in the 1940s and in December 1945, ENIAC, the first electronic, general-purpose programmable computer was developed at the University of Pennsylvania under the U.S Army contract. These computers did not resemble modern-day personal computers. They were very big, expensive and had very low computing power and storage. Therefore,nat they were only available to government organisations, scientists and some universities. (Press, 2022).

With computers becoming available to scientists at universities, the first computer chess engine began being developed. Chess is a complicated game with a vast amount of possible moves at every turn which meant that developing the chess engine took a long time. The computers did not only lack the necessary computing power but this was also a new process for the scientists involved. This process proved to be vital in the development of future programmes as by teaching the engine the rules and tactics of chess, they were also discovering and learning how to programme rational behaviour. In 1956, after years of work and studies across multiple universities, the first computer chess game took place in New Mexico (USA) on a computer called Maniac 1. As mentioned before, the computers were still weak in terms of computing power so they used a chessboard with only 36 fields instead of the regular 64. Even then, it took the computer 12 minutes for each move and its chess skills were equivalent to those of a beginner. Only a year later, a more developed computer IBM 704, was already able to run a chess game using the standard 64-field chessboard. This is a great representation of the rapid development of such engines and in 2024, most advanced chess engines like Stockfish and AlphaZero regularly beat chess grandmasters. Many new strategies and approaches to difficult positions in chess have been inspired by observing the gameplay of chess engines. (Stariha, 2006)

The first computer game that was accessible to the general public was invented in October 1958 by physicist William Higinbotham. He was the head of the Brookhaven National Laboratory instrumentation group which held annual visitors day. One of Higinbotham's responsibilities was to create an exciting exhibit to show off the work of their division and he thought the current format was a bit dull. Luckily, the instrumentation group possessed a small analogue computer capable of rendering dynamic curves on an oscilloscope and he thought it could be used to make the exhibit more entertaining and interactive. In a few hours, he came up with the idea of a simple tennis game and with the help of the technician Robert Dvorak, the game was ready in two weeks time. The game was fairly simple and each player would have 2 buttons - one to adjust the angle of the ball and the other one to hit the ball towards the other player. When the ball went out of the court or hit the net, the player could

hit a reset button to start the next round. The game was a great success and there were long lines of people waiting to get their 5-minute game time. (Tretkoff, 2008)

The next big milestone in the timeline of computer games was in 1961 when a Massachusetts Institute of Technology (MIT) student Steve Russel developed a game called Spacewar. This was the first intentionally designed computer game that sparked the interest of the public and people interested in exploiting the commercial possibility of this new principle called computer games. In 1972, a video game development and home computer company by the name Atari was founded and in the same year, they released an arcade game by the name of Pong. Similar to the game Tennis for two, Pong was a two-player game. Each player controls a paddle on one side of the screen and uses a knob to move it up and down. The goal of the game is to bounce off the tennis ball from your paddle to the opponent's side of the screen. The point is won if the opponent misses the ball with the paddle. The game was played on arcade machines which were placed in bars and pubs and it marked the start of the golden era of arcade games. Space Invaders, Asteroids and even today's highly popular Pac-Man followed the success of Pong and marked the golden era of arcade games (Overmars, 2012).

The gaming industry boomed throughout the 1980 and 1980. Games became more accessible with many new gaming consoles released in this period, such as GameBoy, PlayStation 1 and The GameCube, which allowed players to enjoy the games in the comfort of their homes for the first time. These new gaming consoles and personal computers became more technologically advanced, offering more computing power, more data storage and better graphics. This allowed for the development of more complex games, online multiplayer gaming and offered a better playing experience. This trend continued throughout the 2000s up to today where some games have a graphic quality that could be compared to real-life vision. With the development of Metaverse - online spaces where people can interact with each other and digital objects, and technologies like virtual reality (VR) headsets - technological headsets offering a digital 360° point of view, the gaming industry is only expected to grow. According to Statista, the global video-game market value in 2024 is 447.31 billion and is expected to grow to 871.11 billion by year 2030 (Clement, 2024).

3.3 Game effects on the behaviour of the individual

Scientists have started to more intensely research the effects games have on the behaviour of the individual over the course of the last 30 years as video games became more available and popular to the general public. If you would ask a number of strangers why they think most people play video games, the majority would probably answer with the following statement: “because they’re fun”. This answer would not be far from the truth as you could interpret ‘fun’ as enjoyment, which is an emotion. Games are fundamentally interactive products that create emotions. By influencing behaviour and cognition of the player, they offer new opportunities to solicit emotion through action. Emotions are essential to driving

the player's performance, focus, decision making and engagement and allow users to better form and recollect memories associated with them. (Lazzaro, 2004, p. 156).

XEODesign, a player experience design research and consulting company conducted a field study to find out what draws players to the games. They observed 34 gamers while playing their game of choice for 90 to 120 minutes in their home, fraternity house, public gaming room or any other location where they usually play. They observed the participants using the Contextual Inquiry methods and administered a questionnaire at the end of the session to participants. To get the viewpoint of non-gamers, they also interviewed 15 friends and family members of the participants. They also analysed what players said and did during the gaming session as well as their non-verbal emotional cues. (Lazzaro, 2004). According to Lazzaro, the president of XEODesign, the players can be grouped based on their reasons for playing games into 4 groups - the Four Keys of emotion:

The Internal Experience Key (also named The Player): These players game to experience a change in their emotional state. They like how games make them feel and think in a different way and describe gaming as a form of therapy for them. Players most often report internal sensations of excitement and relief when gaming and say they like gaming because it helps them clear their mind, makes them feel better about themselves, prevents boredom and helps them feel better about themselves as they get better at the game. Players that are drawn to this Key enjoy games with compelling interactions and a combination of rich graphics with great audio stimuli. This makes for a perfect combination that induces positive emotions in a player. Such games are Grand Theft Auto, Red Dead Redemption 2, Halo, Tetris, EverQuest and Civilization (Lazzaro, 2004).

The Challenge and Strategy Key (Hard Fun): This group plays to test their skills, overcome challenges and track progress. Overcoming obstacles, testing their skills and feeling a sense of accomplishment are the main reasons for playing and in the process of attentively progressing through obstacles and tracking progress induces emotions such as frustration and *fiero* (an Italian word for personal triumph). Players, in their own words, report that they want to beat the game when playing, to test how good their skills are, have multiple objectives and progress through them and enjoy using strategy to beat the game compared to bare luck. Games with this Key contain an array of compelling challenges with different difficulty levels, complex strategies to beat the game and reward player progress. Such games would be Civilization, Total War series, StarCraft, Tetris, EverQuest and Age of Empires (Lazzaro, 2004).

The Immersion Key (Easy Fun): In sharp contrast to the Hard Fun Key players, where enjoyment stems from beating the game, Easy Fun players experience enjoyment by simply playing and experiencing the game. Players curiously enjoy exploring the virtual world, its options and the storyline while experiencing internal states of mystery, awe and wonder. Players reported that they enjoy the adventure and excitement of the unknown, following the story and seeing what happens, immersing themselves in the virtual characters, enjoy intense

visual and sound effects and enjoy interacting with virtual characters. Games that induce this Key need to have rich visual and audio stimuli, strong storyline and virtual world that induces curiosity in the player so they can immerse themselves. Easy Fun games would be Splinter Cell, Max Payne, GTA series, Civilization Series and Collapse.

The Social Experience Key (Other Players): As the name suggests, players in this group play games because of the enjoyment they experience interacting with other players inside or outside the game. They tend to play online multiplayer games and invite friends over to their place to play games together. The player interaction motive is so big they might even play games they don't like but their friends do. Such playing context reinforces rivalries, teamwork, camaraderie and humour. In the words of the players of the group, they enjoy the company and not necessarily the game, want to have an excuse to invite friends over and enjoy watching others play. Games that attract players of this Key can be played online, offer cooperation modes (co-op for short) for two to four people where they can play as teammates to beat a common goal and are enjoyable for others to watch. Such games would be Call of Duty, SpiderHeck, Mario Kart, FIFA, NBA and Mortal Kombat.

By recognizing the key elements that drive the player's participation in games, we can adjust the game elements and tailor them depending on the target group to maximise the level of participation and consequently the business effect that follows (Lazzaro, 2004).

3.4 Current concept of gamification

"Gamification" as a term originated in the digital media industry. The first documented use can be traced back to 2008 but it didn't get the public interest until 2010. Foursquare, a platform that provides personalised recommendations of places to go near a user's current location based on users' previous browsing history and check-in history, added a gamification element to the user's experience in 2009. They launched a social network based on the user's location that allowed them to "check-in" online at the venues they were attending in real life. Users would get points for checking-in at new venues, get badges based on the points collected and even get a 'mayor' status if they had the highest number of check-in's out of all the players at a dedicated venue (Centrical, n.d.).

Following the massive success of Foursquare's gamified social network, many parallel expressions sprouted in the following years, such as behavioural games, applied games, productivity games, funware and surveillance entertainment. Gamification however, seems to be the most established out of them all and could be considered a household term today. Yet the definition of it was still unclear. The term was mostly used in the corporate world amongst the consultants and vendors who described gamification in terms of benefits for their clients. Some examples of the definition would be: "The adoption of game technology and game design methods outside of the games industry" or "the process of using game thinking and game mechanics to solve problems and engage users" (Deterding et al., 2011). Today's academic and most widely recognized definition is as follows: "Gamification is the

use of game design elements in non-game contexts" by authors Deterding et al. (2011). In the following section, I will deep dive into their article that unpacks the definition in 4 concepts.

The first and major concept is game. It is important to differentiate between games and play. Gamification relates to games and throughout this thesis, I will be using the word games to relate to computer or video games and play when describing a broader, looser category that encapsulates any activity containing game elements. The distinction between the two comes from Caillois, who established the terms of paidia and ludus as two sides of the play activity. Paidia (or playfulness) is a more free form of expression, improvisation and a combination of behaviours, while ludus (or gaming) indicates play that is organised, structured by rules and has a competitive element towards reaching a set goal. The latter form, of which the design elements focus almost exclusively on achieving goals bound by rules, is far more popular in today's context of gamification and has received the major academic research attention. Deterding et al. (2011) suggest adopting the term gamefulness, which includes playfull (padia) elements to describe gamification that consists both of free-form and rule-bound play.

The second concept is element. Authors of the article shine light on the distinction between "serious games", where they're describing full-fledged games created for non-entertainment purposes and "gamified applications" (such as Foursquare), where certain game elements or game atoms are only incorporated into the application. The lines between the two are often blurry and up for discussion - is Foursquare a game or merely a gamified application? This is also influenced by the user base. If a group of users introduce an informal rule or shared goal in a gamified application, they turn it into a serious game. Therefore the characteristics of a gamified application tend to be more diversified, fragile and provide a more unstable experience when compared to serious games. To gain a better understanding of how incorporating certain rules and game elements to the game might change its nature, it's necessary to have a closer look at the classic game model by Jesper Juul: "A game is a rule-based formal system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels attached to the outcome, and the consequences of the activity are optional and negotiable." Juul argues that no individual part of this definition describes a game and we could describe the game elements as building blocks that build the games. They can only build the figure of the game when they're put together. We could therefore refer to "gamification" as the description of elements that are characteristic to games – elements that are found in most (but not necessarily all) games, readily associated with games, and found to play a significant role in gameplay (Deterding et al., 2011).

The third concept is design. Existing literature on games and gamification suggests that design game elements, which are present in both forms, can be identified on varying levels of abstraction. Starting with most concrete and ending at abstract, we can distinguish five levels: Interface design patterns, game design patterns, design principles, conceptual models

of game design units and game design methods. What separates serious games from gamified applications from the designer perspective is that they differentiate gamification from both regular and serious games. For the game designers, it's about building systems that incorporate game elements, not necessarily a complete "game" itself. However, users experience these systems differently. The very elements designed to be game-like can be interpreted and engaged with in various ways - as a full game, a gameful experience, playful activity, or something else entirely. This flexibility, or "openness," is what separates gamified applications from traditional "games proper" from the user's perspective (Deterding et al., 2011).

Fourth and last concept is non-game context. Like serious games, gamification borrows elements from games and applies them in contexts other than traditional entertainment. While entertainment is undeniably the most common use of games historically and culturally, it's not the only one. Similarly, the primary function of gamification (as defined in this paper, aiming for gameful experiences) often focuses on improving user experience, engagement, or enjoyment. Although gamification is often used to achieve an educational or learning goal, while serious games are used in all kinds of contexts, we shouldn't be quick to limit the use to only those areas. Next to education and learning, gamification is increasingly being used in different areas such as health games, newsgames and other application areas (Deterding et al., 2011).

To summarise the above mentioned article, gamification refers to the use (rather than extension) of design (rather than game-based technology or other game related practices) elements (rather than full-fledged games) characteristic for games in non-game contexts (regardless of specific usage intentions, contexts, or media of implementation (Deterding et al., 2011, p. 13).

4 GAMIFICATION IN RECRUITMENT

In today's day and age, gamification is no longer a new concept. It has permeated different industries and expanded in many directions. By looking at the available research, it is evident that gamification is particularly present in industries with fast developing and emerging technologies, like software. Industries like education, healthcare, finance and e-commerce are expected to be the next crucial industries for gamification but more traditional industries are expected to follow. According to research conducted by Zippia, a career counseling platform for job seekers, 90% of employees participating in the study stated that gamification makes them more productive. By adding gamification to their daily operations, employees perceived a 48% increase in their work engagement. The employee engagement does not only benefit the mental wellbeing of the employees but it also has positive effects on the company itself as companies, that use gamification, tend to show profits seven times as high compared to the companies that don't use it. Similar engagement results can be seen on the educational level as well - 67% of students participating in the research agreed that gamified

learning is more motivating and engaging compared to the traditional format (Boskamp, 2023)

Gamification was bound to permeate the Human Resources (hereinafter: HR) industry due to its ability to drive engagement, which is a crucial element in the recruitment process. First attempt of using gamification in the recruitment process even predates the popularity boom of Foursquare's gamified application in 2008. In 1999 the United States (hereinafter: US) Army launched an online game called America's Army allowing applicants to virtually explore the Army and help them determine whether a soldier's job would fit their abilities, interests and needs. This recruitment platform is still used to this day (Resource Solutions, n.d.).

Next to governmental organs, organisations today are also increasing their efforts to attract and retain hard to find top-tier talent - Talent War is a term that refers to an increasingly competitive landscape for recruiting and retaining talented employees that has been present in the recruitment sphere in recent years. Record low employment rates, appearance of new roles in organisations due to technological development and new skill sets needed have made the labour market tight for organisations. They've started to invest more in the talent acquisition and talent retention processes and consequently started to look into more innovative and non-traditional recruitment tools.terezte Gamification proved to not only help with attracting younger talent that's entering the workforce, especially Generation Z (hereinafter: Gen-Z), who are more critical of existing processes in business settings than previous generations, but also to recruit candidates faster, expand the number of applications, reduce the effect of unconscious bias on the decision making process and get a better understanding of the candidates' cognitive abilities and behavioural traits.

4.1 Trends and use of gamification in recruitment

Use of gamification in recruitment started to shift from innovative and revolutionary methods of approaching recruitment to a proven method of driving candidate and employee engagement during the coronavirus disease (hereinafter: COVID-19) age. Flexible working and hybrid working arrangements became more common as they were necessary not only within teams but throughout the entire organisation. Gamified learning modules were used to onboard new employees and help them get acquainted with new technologies. Such onboarding programs showed very positive results, with 54% of the companies reporting high productivity with new hires that went through such a process. In 2018, the gamification market size was valued at only $5.5 billion. In 2024, it's currently standing at $16.24 billion and is expected to reach a valuation of $70 billion (Precedence Research, 2023). With global COVID-19 lockdowns, most workspaces were pushed into a digital environment and with it the recruitment process as well. Many gamification uses for recruitment purposes found its ground with this shift to heavy use of computers and mobile devices for work purposes. In

the next paragraphs, I will describe some of the most common applications of gamification in recruitment.

Employee referral tools are traditional in-house referral programmes that can be gamified to boost employee engagement. For example, employees can be incentivized to share a job vacancy on 2 of their social media platforms and then be put in a cash award or gift card award raffle. This would amplify the media reach of the job advertisement and add additional motivation for employees to share it (Rathi & Parimalarani, 2019).

Gamified assessments are used to evaluate the candidate's cognitive skills, behavioural traits and test how they would respond in different situations using a variety of tests. By adding gamification to it, the process can be made more engaging and fun for the candidate. A candidate is more likely to showcase genuine behaviour while going through a gamified assessment. High levels of stress, connected to traditional assessments, can result in skewed results. From the recruiter's point of view, this will help them attract more candidates as not many companies are able to offer such an innovative approach to hiring and it positively affects the employer brand. A more fun assessment process can then lead to a lower dropout and by setting up a competency profile required for the role, recruiters can also automate the first step of the screening process, saving them valuable time when dealing with high numbers of applicants (Rathi & Parimalarani, 2019).

Rewards systems can also be gamified. By leaving positive comments on career sites and employer rating boards, candidates can gain badges, points and gain access to more insights provided by the board (Rathi & Parimalarani, 2019).

Learning & development tools are important to keep developing the skills of the existing workforce. By allowing the user to gain points and different levels when they complete set goals or courses, you can drive their engagement (Rathi & Parimalarani, 2019).

A great practical example of using a gamified assessment to test candidates' abilities in a work setting is a game called "My Marriott Hotel". Marriott International, a famous global hotel chain, developed a recruitment game that would especially appeal to millennials and Gen-Z applicants. It puts the candidate in a work environment where they have to run a virtual hotel and other functions. This would include running restaurant tasks like procure stock on budget, organise working schedules, train other employees and serve guests. Customer service would be rated and they would either win or lose points based on the guest satisfaction level (Rathi & Parimalarani, 2019). Other notable companies started to use gamification to drive action for their sustainability sustainability goals. Toyota incorporated gamification in their vehicles to make their customers more energy-efficient. Other organisations have also integrated the gamification of sustainability into their business model. One example is Recylebank, a New York based company determined to be the frontrunner in encouraging recycling and good environmental habits. It created a reward

token system for members to participating in everyday green actiony collecting tokens, they can get discounts and deals at their nearby business'.

4.2 Psychometric testing

In the following chapters, I will focus on the use of gamification in candidate assessments as this is the area where its application has gained the most traction in the recent years and is believed to have the most impact. To get a better understanding of how application of gamification impacts said assessments, I first need to unveil how traditional psychometric assessments work and how they are used.

Traditional candidate assessments is a term used to describe psychometric tests used in a selection process. These are standardised and scientifically proven methods used to measure the individuals behavioural traits and cognitive capabilities. They help employers identify to which extent the candidate's personality and cognitive abilities match those required to perform the role successfully. These insights are invaluable to the employer as they help identify some of the hidden aspects of the candidate which are quite difficult to gain from the traditional face-to-face or video interviews. Not only that, it also helps filter unqualified candidates at the very start of the hiring funnel, saving recruiters' time. Although some candidates believe that such tests can not accurately measure their abilities or get a full grasp on their personality, psychometric tests are scientifically validated and statistically examined tools, meaning they are quite reliable in predicting candidates' performance (Meyer, 2024).

Psychometric tests can be generally divided into two groups: tests that measure cognitive abilities and tests that measure personality profiles. Cognitive ability tests measure solving skills, logical thinking, pattern recognition and numerical reasoning. Some examples of such tests would be (Institute of Psychometric Coaching, n.d.):

- Abstract tests: measure problem-solving abilities, strategic and logical thinking. The most commonly used test is when you have a horizontal list of different shapes and you have to determine the shape that will follow next. This tests if the candidate is able to identify the logical rules that apply to the group of shapes and use them to identify the following one.
- Numerical tests: similar to an abstract test, a numerical test reveals if the candidate can identify the logical rules in a mathematical problem. The numbers are usually displayed in grids and the candidate has to identify the missing numbers by applying logic rules.
- Verbal tests: are similar to numerical tests but instead of numbers being presented on a grid or spreadsheet, they are in written forms. It tests if the candidate can extract the written information and present it in a numerical format.

Personality tests (or behavioural tests) provide insights into somebody's personality profile. These tests require the candidate to provide answers to how they would react or feel in certain social situations to test different personality traits, which then make up the personality

profile. In recent years, many “soft-skills” tests have been added to this category as well to test for specific traits like communication abilities, language skills, time management, teamwork, tenacity and leadership skills. It’s important to mention that the candidate can not perform badly on these tests. While cognitive ability tests have objectively good and bad results, personality tests can never have objectively good or bad results. They are relative to the company culture and the requirements of the role at hand (Herrity, 2024). Some examples of personality profile tests would be (Institute of Psychometric Coaching, n.d.):

- Emotional intelligence tests: test the candidate's ability to identify emotions, understand them and predict emotional responses. These can be in a graphic form, where an image represents a certain emotion and tests the candidate's recognition of it as well as the level of it on a numerical scale. Another common example is a verbal description of a workplace situation where the candidate has to recognize the emotional cues and appropriate responses.
- Statement tests: a candidate is presented with a list of personality statements and has to answer to what degree they agree or disagree with each statement. The answers options are usually strongly agree, agree, neutral, disagree and strongly disagree.

These tests stayed relatively unchanged throughout the years and did not follow the rapid development of the digital world and the growing demand for a lean recruitment process. One of the weaknesses of these tests is their practicability. Since tests did not change throughout the years, it became general knowledge of what the tests assess and how to best prepare for them. With a quick Google search, the candidates can acquaint themselves in detail about the tests they will have to perform, what are the socially desirable answers that will increase their chances of being hired and even practise solving them. Continuous training of such tests results in inaccurate results that do not reliably portray the cognitive abilities and behavioural traits of the candidate. Instead, their cognitive assessment is replaced by an assessment of how well they can execute a well-practised process and their personality assessment results in a socially desirable profile that they believe is sought after by the employer. The purpose of the test is defeated with the unreliability of the results (Schmidt et al., 2016).

The second disadvantage of traditional tests is their duration. An assessment, combined with cognitive ability tests and personality tests, usually takes between 45 minutes and 1.5 hours to complete (CMPB, n.d.). In today’s tight labour market, where companies are competing to attract the best talent, a lengthy recruitment process means they could lose the candidate they desire to a competitor with a shorter and more efficient process. The candidate could also simply lose interest if the process is too long - results of a U.S. research conducted by Robert Half show that 57% of 1000 workers polled indicated they would step out of the hiring process if it was too long (Adeola, 2022). Amidst the fast-paced technological development and the war for talent, traditional assessments take too long to complete and can result in a smaller talent pool.

4.3 Gamified psychometric assessments

Due to the engaging and fun element that implementation of gamification brings, it quickly found its way into psychometric assessments used in recruitment. As mentioned before, psychometric assessments are not a novelty and have been used for more than 200 years. In 2022, 75% of The Times' 100 Best Companies to Work For were reported to use psychometric tests in their recruitment process to bring the best talent on board (Vesere, n.d.).

Due to the tight labour market in recent years, many businesses started to look for ways to enhance their employer brand to attract more candidates. Traditional recruitment process, which was long, non-engaging for the candidate and used extensive psychometric tests, plays a major role in this as it is the first contact between the employer and the candidate. The use of gamification seemed like a natural solution to the problem. When applicants take part in a selection process that relies on technology and even more specifically gamification, which is a modern approach to recruitment, they are signalled that the organisation itself is technologically advanced, modern and innovative (Georgiou & Lievens, 2022).

Next to an enhanced employer brand for businesses, gamified psychometric tests significantly benefit the employer as well as the applicant in the selection process. Some of the main benefits are (Kirovska et al., 2020):

- Candidate engagement: gamified assessments are more engaging for the candidate and provide a fun experience that is unique. By providing such an interactive experience, the completion rate of the test increases and the talent pool can increase due to the appealing recruitment process that is unique to the competition.
- Easier evaluation for non-experienced applicants: it's hard to evaluate graduates or other candidates that don't have any prior experience based on a curriculum vitae (hereinafter: CV) and a motivational letter. No applicable work experience makes it harder for recruiters to effectively screen candidates and are at risk of rejecting potentially a great candidate if they base their decision only on the content of a CV. By having them play a game, it's easier to evaluate their skills and behavioural traits needed for the job.
- Reduced candidate screening time: gamified assessments take less time to complete compared to the traditional assessments. They usually take between 8-25 minutes to complete but they also reduce recruiters' time needed to screen the candidates. By establishing a desired competency profile for the role, the scores of the candidate can be instantly matched to it after they complete the assessment. This task, which is usually done manually by the recruiter, is now done automatically, filtering the candidate into either a qualified group or an unqualified group of applicants. The result is a more data-driven, objective selection process that reduces the businesses cost by cutting man hours.
- Helps build neurodiverse teams: many candidates are a great match for the role they're applying to but don't perform well in a hiring process. They could have anxiety when interviewing and solving psychometric assessments, which hinders their opportunity of

getting a job. The influence of anxiety or stress is reduced while playing a gamified assessment since they tend to forget that they are performing a test and rather experience it as just playing a game. Focusing on playing the game also brings out unconscious behaviour which also benefits the employer as they are getting a more accurate glimpse into the behaviours of the applicant.

4.4 Equalture's gamified psychometric assessment

In 2024, gamified assessments have become a more common practice in the recruitment world and there are a number of different providers on the European market. Some major providers would be TestGorilla, Arctic Shores, BrainsFirst and Equalture. To provide a better understanding of gamified assessments and to illustrate how they work, I will present a gamified assessment tool Equalture and what are the results of its use for their customers. I have chosen this provider as I have myself worked at Equalture in the past and I'm very familiar with the charateristics of their tool.

Equalture is a Dutch based human resources technology (hereinafter: HRTech) startup that was founded in 2018 in Rotterdam. Currently counting 43 employees, the company's vision is to change the established traditional or in their words archaic recruitment models that heavily rely on using CVs as a main selection tool (Equalture, n.d.a). They want to help companies move to a skill-based hiring module, which is an approach of making selection decisions based on candidates' skills rather than academic achievements and previous work experience (Keeling, n.d.). To make a move to a skill-based hiring module, companies need help evaluating these skills to make more objective and data-driven decisions. To ensure the validity of the games, they base their games on proven neuroscientific modules and have an internal Science team developing the games.

Equalture believes that the current hiring practices haven't evolved much in the past years and haven't been keeping up with the rapid development in other business departments. Traditional tests can lead to anxiety, stress and they are also prone to unconscious bias and social desirability. By applying gamification, these elements can be removed and provide both parties, candidate and the employer, with a more engaging and modern process that can't be practised beforehand. Using gamification in the selection process also enables a more inclusive process where neurodivergent candidates stand a more fair chance of employment. Games have been tested for candidates with anxiety, colour blindness, dyslexia, attention-deficit/hyperactivity disorder (hereinafter: ADHD), autism etc. and there were no statistically significant differences in scores, making them more inclusive as traditional assessments (Equalture, n.d.b).

Equalture's neuroscientific assessments come in a set of 5 games. While some of the games introduce a completely new approach to testing certain capabilities, some draw inspiration from already existing riddles and maths problems. A problem-solving testing game is a modern remake of an old riddle "The Wolf, the Goat and the Cabbage" that dates back to

the 9th century. In the riddle, the farmer needs to transport his wolf, goat and the cabbage across the river. He can only take one of the three at a time and if left unattended, the goat will eat the cabbage and the wolf will eat the goat (Future Learn, n.d.). Equalture elevated this riddle and added multiple levels, as well as other characters to the game to make the riddle even more complicated and enable better tracking of the problem-solving ability skills. The visual representation of the five games can be found in the appendix and they measure the following traits (Stenken, n.d.):

- The Ferry: tests problem-solving abilities which are associated with our way of thinking and the behaviour we engage in to obtain the desired outcome. As a sub-trait to problem-solving, it also tests planning, decision-making process, analytical thinking, intuitiveness and planning skills.
- The Racer: measures cognitive flexibility which is our ability to spontaneously restructure existing knowledge, by switching mental sets, tasks, or strategies. It is an indicator of how fast we can adapt our behaviours and thoughts in new situations that arise in the ever changing environments. Sub-traits measured are adaptability, multitasking, processing of new information, the need for structure and tolerance for mistakes.
- The Pitch: measures collaborative behaviours which can be simply defined as two or more people working together to achieve a common goal efficiently. Collaborative behaviours are more commonly described as communication, coordination and teamwork skills. The measured sub-traits are self-motivation vs group motivation, feedback processing, information sharing and independence.
- Birds: measure speed-accuracy trade off. By maximising our speed and accuracy of performing tasks we increase our performance yet we can't maximise both due to our cognitive limitations. As a result, of limited cognitive capacities, we sometimes cannot have it both ways. As a result, we might sacrifice some accuracy to get a task done faster or slow down to be more accurate. This is what's called a speed-accuracy trade-off. Sub-traits measured are working under pressure, attention to detail and meeting deadlines.
- The Fish game: measures the learning ability. One of the most important factors of learning ability is working memory which refers to the temporary storage and manipulation of information in our mind, which is essential for general cognitive functioning such as reading, language comprehension, reasoning and learning (Baddeley, 1992). This is essentially our capability to retain given information and use it to tackle complex tasks. Sub-traits measured are learning speed and information processing.

By using said games, one of their customers has seen a 93% reduction in screening them and they were able to expand their talent pool when using it for their traineeship program. 25% of the candidates in the hiring process wouldn't have been invited for an interview only based on their CV (Damoiseaux, n.d.). Another customer used their games for their high-volume customer service roles. Candidates ranked their screening experience with 4.5/5, the ratio of candidates interviewed to candidates hired increased from 17% to 3% and the drop-

off during onboarding, which is usually a result of making a wrong hire for the company, decreased from 32% to 7% (Joost, 2024).

4.5 Equalture's assessment of candidate's skills and behaviours

Equalture created an "Objective Hiring Framework" which is a hiring method that is based on running the hiring process and making the hiring decision based on 4 pillars. The pillars are as follows: the right insights, collected with the right method, at the right time and executed with the right criteria. The starting and most important pillar, the right insights, is the information about the candidate's cognitive ability and behavioural traits. They claim that the combination of the two insights, supported by structured interviews, is the best predictor of future work performance (Equalture, n.d.c).

This is backed by research from Schmidt et al. (2016) where he summarised 10 years of research findings on the validity of job selection methods up to the year 1998. Research shows that both education and work experience have a very low correlation with future job performance. For education, the statistical correlation to future work success is .10. For work experience, it's .16. Both of these correlations are considered very weak by the standards of statistics or actually indicate no correlation to the prediction of future work success. General Mental Ability (hereinafter: GMA), interchangeably used with the term cognitive ability, far outperforms education and previous work experience when predicting future work success. The correlation between GMA and future work success is .65 which is a strong correlation in terms of statistics and the highest predictor of future work success according to Schmidt's study. For high-complexity jobs. that require higher levels of problem-solving abilities, the correlation is even higher, a .75 (Schmidt et al., 2016). CVs mainly provide insights into a candidate's education and work performance which are weak indicators of future work performance, making them an unreliable screening tool.

4.6 Unconscious bias in the hiring process

Unconscious bias describes a subconscious attitude that affects the way individuals feel and think about others around them. Subconscious attitudes aren't necessarily as well-formed as coherent thoughts but they can be very ingrained and impact the emotional and rational responses of individuals in everyday situations (Reiners, 2024).

Unconscious bias often carries a negative connotation even though every human being is unconsciously biased and it is a crucial information processing mechanism. Humans collect massive amounts of information every day and our brain is responsible for processing it. The capacity of our conscious mind is limited, therefore it can allow us to only focus on a certain amount of tasks at one time. You can notice this in everyday life situations - a lively conversation between the driver and passenger might get quiet as the driver is overtaking a truck on a narrow lane at high speed. Another example would be a driver lowering the music

volume as they attempt to park their car in reverse. While the music volume and the success of reverse parking don't seem to have any correlation, they are the perfect examples of the conscious limitation of our brain and how we can't focus on multiple tasks at the time. One research shows that humans can on average remember 2 seconds worth of speech without recalling the memory after seeing it or hearing it. (Wasserman & Wasserman, 2016).

On the other hand, our unconscious mind is not as limited and is able to process vast amounts of information we are exposed to every day. It labels, categorises and stores the information in our brain, forming a subconscious system that helps us operate every day and unconsciously guide our decision-making when dealing with different situations. This can be best understood with an association example - imagine a software developer and a nurse. There is a high chance one would imagine a software developer as a male and a nurse as a female. This is because our brain associates the two occupations based on previous experiences, as well as memories and you've most likely met more male than female software developers in your life or were presented information through different media channels like movies. The same applies to the nurse (Kahneman, 2011).

This same experiment might yield different results in different parts of the world as there is no rule to these labelings. It all varies on our social environment like education, religion, family and class and our unique experiences. With different cultures and different historical experiences at play, different people's brains form different labels which leads to different assumptions towards one topic (Clar et al., 2021).

While everybody is inherently unconsciously biased, the effects it can have on the decision-making process in the hiring process can be devastating for the company and should be mitigated as much as possible. Hiring managers could reject a very well fit candidate for the job because they had a bad first impression of them and based their whole perception of the candidate around that first impression. This is called the horns effect. Conversely, they could hire a candidate with whom they had a very positive first impression which made them less perceptive to some poor qualities they exhibited later in the process. This is called the halo effect. Similarity bias is when the hiring manager favours a candidate because they share similar characteristics with them and is very common. They might unconsciously prefer candidates that attended the same university as them, grew up in the same area, have the same hobby, are of the same race or ethnicity etc., even though they might not be the best candidate in the process. There is a large amount of different types of unconscious bias that we know of and every person is susceptible to it. (Vesere, n.d.).

This can ultimately lead to the hiring of a candidate that is not best fit for the job based on their merit. Such decisions can heavily impact the company culture and the dynamics in the team as the better qualified employees might start to resent the management for making such a decision. After all, it is they who have to pick up slack of the hire who is not as qualified as them. Diversity is another aspect that can be impacted. Research showed that even names on a CV trigger unconscious bias. Candidates with the name Jeniffer were associated with

less motivation and competence and received less support and a smaller salary than candidates named John at the faculty of biological and physical sciences, even though they shared the same background (Moss-Racusin et al., 2012). That's why it's crucial to use other more objective and data-driven selection methods next to the CV to try and mitigate the effects of the unconscious bias.

4.7 Gamified assessment and diversity, equality & inclusion

DE&I stands for Diversity, Equality & Inclusion and in a business setting, it's an organisational framework which seeks to promote the fair treatment and full participation of people of different races, ethnicities, religions, abilities, genders, and sexual orientations and especially people who are usually underrepresented or discriminated against (McKinsey & Company, 2022). Many companies have put diversity, equality and inclusion (hereinafter: DE&I) programs in place to ensure that the company's culture reflects these values and makes fair hiring decisions. This was the result of the societal movement and public pressure but also due to some bad practices in hiring, that are a direct result of unconscious bias. For example, applicants with ethnic-sounding names are 28% less likely to get a callback for an interview. Candidates with Arabic-sounding names receive 50% fewer callbacks than those with Anglo-Saxon names. Female job applicants with children are 35% less likely to get hired than women with no children. People with visible tattoos are 15% less likely to be hired compared to those without tattoos. Resume whitening (removing information indicating race or ethnicity) increases callback rates for Black candidates by 25% (Lindner, 2024).

A lot of these inequalities can be mitigated by using gamified assessments as they collect insights in a more standardised and objective manner that is not influenced by unconscious bias. By testing for cognitive abilities and behavioural traits companies are getting insights not only into how candidates approach social situations and solve problems, but companies are also able to increase the neurodiversity within their teams. Neurodiversity describes the idea that people experience and interact with the world around them in many different ways and there is no "right" way to see the world (Baumer, 2021). Research has shown that there is a high correlation between diverse teams and the level of team creativity. It also leads to higher capabilities of problem-solving within the team (Wang et al., 2019).

There are three main benefits to having a diverse workforce. Firstly, diversity helps companies increase their talent pool and consequently increase their chances of attracting top talent. According to Glassdoor, 76% of job seekers and employees stated that a diverse workforce plays and important factor when evaluating new companies and jobs offer. Even more than, that 32% stated they would not even apply to a job if there was a lack of diversity. This is especially holds true with younger workforce, Millennials and Gen-Z, who place high importance on DE&I. Secondly, a more diverse workforce equals better business performance. A recent McKinsey survey showed that organisations with higher gender

diversity were 25% more likely to financially outperform their competitors. Same survey also showed that companies with higher cultural and ethnic diversity were 36% more profitable than those with lower levels. The final benefit of a more diverse workforce is increased innovation and better workforce agility. Diverse companies are 1.8x times better prepared for changes and 1.7x times more likely to be innovation leaders compared to their competitors. This is especially crucial in disruptive industries, where agility plays a significant role in the company's ability to adapt to the new technologies and trends. The fast-emerging industry of artificial intelligence would be a great example of this (McConnell, 2024).

A diverse workforce doesn't just naturally happen in most companies but it rather takes a dedicated effort and planning. This all starts with a recruitment strategy with diversity in mind that seeks to attract candidates from a wider range of backgrounds. To do that, a company must execute a recruitment strategy with a diversity metrics and specific and measurable goals that are aligned with their diversity mission. Metrics can be gender, cultural background, education levels and so on. To attract such candidates, the company should post their vacancies on diversity and niche job boards, connect with professional associations working with mentioned candidate groups and leverage their social network that caters to diverse communities. Attracting candidates is of course not enough and proper bias reducing techniques have to be taught to the hiring managers. But some companies struggle to attract candidates - employer branding campaigns reflecting their dedication and support to the culture of diversity would be a great action point in that case. To ensure the dedication to diversity doesn't stop there, hiring managers should undergo bias-reducing training in screening, such as structured interviews to foster an inclusive environment. And most importantly, the culture of diversity must be implemented in the company culture so it is nurtured by its employees (McConnell, 2024).

So not only is it the right thing to provide every candidate with a fair chance of being hired based on their skills, it's also beneficial for the company's creativity and productivity.

5 EMPIRICAL RESEARCH

The purpose of the research was to strengthen the understanding of how the use of gamification in the hiring process impacts multiple parties involved - the candidates, the employees using the gamified tool as part of their hiring process and the company itself, with the goal to analyse the experience of participants and answer research questions posed.

For the research, I have conducted qualitative research with two groups of interviewees - the candidates and employees of the company in charge of the hiring process that uses gamification. The research method that was used was an interview. I conducted ten interviews in total, five per group. The answers of the interview have been analysed per group and the analysis of each group compared later on. I have concluded the research by

reporting the findings of the analysis and suggesting points of improvement. The qualitative research was based on the theoretical research of the thesis.

5.1 Research methodology

The research method used was the interview. It's the most widely used tool to collect information in qualitative research. When properly used, it allows the researcher to explore the participants' experiences, beliefs and identities in depth and draw new conclusions. The type of interview used was a semi-structured interview which is a mix between a structured interview and unstructured interviews. The questions are formed prior to the interview but the interviewer will allow the interviewee to further elaborate and expand beyond the original interview question to gain a better understanding of their thought process. The interviewer might also offer the interviewee an opportunity to expand their train of thought where they see fit and find it interesting through the use of open-ended questions. The benefit of using a semi-structured interview as opposed to a structured one is that it allows the interviewer to extract more contextually rich and deeper answers by asking open-ended questions where they see fit. The structured interview is more rigid and hinders the depth and richness of the responses (Alsaawi, 2014).

I conducted interviews in English with ten participants who have experienced first-hand a hiring process where the element of gamification was present. The interviews were conducted through Google Meet software and were recorded and transcribed. They lasted between 12 and 20 minutes. The transcription was later on checked for any grammatical errors and unclarites to match the recording. The interviewees answered the questions without any prior preparation and based only on their experiences. Due to privacy reasons, the identity of the respondents is anonymous but all respondents authorised the publishing of the interview transcripts.

During the interview, I focused on obtaining a deep understanding of their views and personal experience of using gamification in the recruitment process. To ensure that, I asked follow-up questions where I saw fit in addition to the five pre-planned questions. The pre-set research questions were the same for all 10 candidates. The candidates were asked the following questions:

- Research question 1: Do gamified assessments assess candidates' skills and behaviours more accurately than non-gamified ones?
- Research question 2: How does the candidate's experience with gamified assessments compare to the non-gamified assessments?
- Research question 3: Can gamified assessments increase or decrease the effect of unconscious bias on the hiring process?
- Research question 4: Do gamified assessments offer a better chance of employment for a candidate with no work experience and a university degree?

– Research question 5: What are the benefits of using gamified assessments over non-gamified ones at the company level?

Both groups of respondents answered the same research questions which enabled me to compare the responses of different respondents per each research question and analyse them for patterns of positive aspects and negative aspects of the experience on a group level. Furthermore, the analysis of answers on a group level will be compared to each at the end to draw an overall general conclusion on the experience and effects of using gamified assessments in the hiring process.

5.2 Introduction of the respondents

The interviewees, hereafter named respondents, were deliberately selected for the semi-structured interviews. To avoid having a one-sided view of the usage of gamification in the hiring process, I had to gather the opinions of all parties involved in the process. Thus, I have interviewed respondents that experienced the gamification in the recruitment process from the candidate point of view, and those who sat on the opposite side of the process as an employee in charge of the hiring process at different companies. These were either recruiters, HR Managers or hiring managers, most commonly managers of different departments. Out of ten respondents included in this research, five respondents belonged to the first group and five respondents to the second group.

Group 1: Candidates

The first group of respondents is the candidates. These are the respondents who at some point in history applied for various roles at various companies that use gamified assessments as a part of their hiring and experienced it first-hand. Not all respondents were exposed to the same version or provider of the gamified assessment and they have undergone the hiring process in different stages of their career compared to other respondents. For some, it was at the start of their career journey and for some, it was at a later stage in their career for more senior job roles. Respondents are also of different nationalities and don't perform the same roles at their respective companies compared to the other respondents. This was a deliberate choice in order to get a more diverse pool of personal experiences, reduce the effects of cultural bias and avoid any homogeneity in respondent's experiences. This group consists of 5 respondents, whose names will not be displayed due to privacy requests, and the following table 1 represents their characteristics.

Table 1: Characteristics of the first group of respondents (candidates)

Respondent's name	**Nationality**	**Role**	**Sex**	**Years of experience**
Respondent 1	Latvian	Content Marketing Manager	Female	5

Respondent 2	Latvian	Sales Enablement Specialist & Freelancer	Male	5
Respondent 3	Dutch	Sales Development Representative	Male	2
Respondent 4	Hungarian	Account Manager	Female	7
Respondent 5	Belgian	Revenue Operations Specialist	Male	4

Source: Own work.

Group 2: Users

The second group of respondents is the users. Users sit on the opposite side of the hiring process as the employees of various companies that utilise gamified assessments or any other gamified tool in their hiring process. They can occupy the role of a recruiter, talent acquisition specialist, human resources business partner or most commonly as a hiring manager. Hiring managers are the leaders of various departments who are hiring for new people and will make the final decision on whether a candidate will be rejected or proceed to the next stage and ultimately be hired. The respondents are employed by various companies that use different versions of gamified assessments or other gamified tools in their hiring process. As with the first group, the respondent group consists of five people from different cultural backgrounds and nationalities. They have experienced gamified tools in the hiring process in different stages of their career and occupy different roles. This was done to provide objective results and a diverse range of personal experiences. The respondents' names will also not be displayed due to privacy requests and the following table 2 represents their characteristics.

Table 2: Characteristics of the second group of respondents (users)

Respondent's name	**Nationality**	**Role**	**Sex**	**Years of experience**
Respondent 1	Dutch	Head of Marketing	Male	8
Respondent 2	Austrian	Marketing Lead	Female	6
Respondent 3	Irish	Head of Recruitment	Female	9
Respondent 4	Salvadoran	Revenue Operations Manager	Male	4
Respondent 5	Dutch	Head of Sales	Female	10

Source: Own work.

5.3 Research results

In the following chapter, I will present the analysis of answers per question to draw any similarities between respondents regarding their personal experiences and opinions regarding the use of gamified assessments in the hiring process. I will be focusing on the positive aspects, negative aspects and the overall conclusion. This will be done on a group

level, after which the group analysis will be compared to the analysis results of the other group to get a general overview of this topic per research question asked.

5.3.1 Group 1: Candidates

In this chapter, I'll present the analysis of the answers of the candidate respondents group. Their answers were analysed per research question to draw out the positive and negative aspect of using gamification in the hiring process, as well as their concerns.

5.3.1.1 Accuracy of the assessment results

Some respondents perceived gamified assessments as a better method of evaluating skills and behaviours compared to the non-gamified ones. One of the respondents said that the games make it harder to detect what exactly is being measured, which makes it harder to adjust your performance based on the results you think the company wants to see in a candidate. "It measures natural behaviour. You often don't know what's being measured, so there's less chance to manipulate your answers". Another respondent noted that the gamification factor helps candidates to not feel as if they're being assessed: "The biggest benefit of gamified assessments is that you're distracted from the fact that it's an assessment". By providing an environment where the candidate doesn't feel like they're being evaluated and is fun and enjoyable, the gamified assessments may create a more accurate reflection of the candidate's abilities. This is because when a candidate is relaxed and not under stress, their genuine character and abilities are shown and they focus on tasks as they would in their natural state - something that may be skewed when a candidate is feeling very stressed.

Some respondents did share some concerns about whether gamified assessments are actually a more accurate testing tool and remained uncertain about the overall accuracy of gamified assessments in comparison to traditional methods. One participant said: "I'm not sure if gamified assessments are better at measuring skills because many IQ tests exist for that purpose". Another one stated: "For behaviours, definitely... but for skills, I'm not sure if they're more accurate". The respondents were quite positive that gamified assessments can assess behavioural traits more successfully than traditional assessments due to a relaxed and engaging element but remain doubtful when it comes to certain skills, especially hard skills like technical abilities.

Overall, the respondents expressed appreciation for the engaging and fun experience that the gamified assessments provide and for reducing the stress of being assessed. And while the respondents did not find any lack of efficiency or inaccurate assessment results when being tested through a gamified assessment tool, they were unsure whether gamified assessments provided better insights than traditional methods. The fun and engaging environment of the

assessment, which brings out the candidate's genuine nature, is believed to positively affect the results but this can't be said with certainty.

5.3.1.2 Candidate experience

Respondents generally expressed a preference for gamified assessments over traditional non-gamified methods. They found them more engaging and enjoyable which in turn reduced the stress usually associated with such assessments. "It was definitely more fun, felt faster, and required less energy, so I didn't feel as stressed compared to regular assessments" said one respondent. Another respondent shared a similar experience: "It took me 20 minutes, maybe even less... but it felt like the time just went by super fast". Traditional assessments have been around for a long time already but the same can't be said for gamified ones. "It was surprising because it's an unexpected, new way of assessing candidates... it made it more enjoyable" said one of the respondents, appreciating the novelty of the format.

Some candidates also perceived them as more engaging and fun but did not find the experience that much more enjoyable compared to the traditional assessments. "While it was more fun, I wouldn't say it drastically changed the way I was evaluated compared to other methods" stated one respondent. Another one said: "It felt like a nice experience... but I don't know if it's a huge improvement over traditional assessments". This suggests that, although the gamified process might offer a more pleasant experience, for some the experience of being assessed in the hiring process alone carries such a negative connotation, that even the fun and engaging element of gamification is not enough to significantly improve the experience.

To summarise the responses, the majority of respondents found a more positive experience with gamified assessments compared to the non-gamified ones. They found them more engaging, enjoyable, less stressful, faster, interactive and a refreshing alternative to the traditional format that has been the norm for a long time.

5.3.1.3 Unconscious bias in the hiring process

Several respondents highlighted that gamified assessments can reduce the effects of unconscious bias on the hiring process as they can draw a more accurate representation of the candidate's skills with objective data rather than more subjective factors that can be found on the CV. Such factors would be educational background, the formatting, layout and the language used on the CV and also appearance if the picture is included. One respondent noted: "it removes the personal subjectivity that's present in traditional hiring—like how a candidate is presented or how their CV looks". Another respondent highlighted: "It can definitely decrease it because you're looking at objective metrics that don't depend on the person's background".

While some respondents said the reduced unconscious bias presents a more equal playing field, where somebody's appearance or the name of the university they attended doesn't guarantee them an advantage or potentially hurt their chances in the hiring interview, few respondents raised concerns about hidden biases within the assessments themselves. Some expressed that due to the gaming element, people who have more experience with video games might have an advantage. "The game has to be well-developed to account for factors like colour blindness or over-favouring candidates who play video games often" said one respondent. Another respondent pointed out: "Gamified assessments might reduce some biases, but they could still introduce new ones" - an example would be over-fixation on the cognitive ability levels while those might not be extremely relevant for the role.

Majority of respondents agreed that gamified assessments are able to decrease the bias but also brought up some concerns to what extent that is possible. While they can be decreased, unconscious biases are inherently what makes us human and unless the human element is completely removed from the hiring process, unconscious bias will remain. "I think gamified assessments decrease unconscious bias... but I don't think it's a perfect solution," said one respondent. Another one stated: "It likely reduces unconscious bias because they collect data without the influence of a person asking the questions, but bias can still creep in later in the process". To conclude that a gamified assessment not only decreases but also eliminates bias, would be another bias in itself.

To conclude, respondents generally believed that gamified assessments can decrease unconscious bias in the hiring process by focusing on objective metrics rather than subjective factors present in the CV. The assessments were seen as a way to reduce personal bias related to appearance, education, and other superficial factors that should not be taken into account in the hiring process but unfortunately are because of unconscious bias.

5.3.1.4 Assessments as a substitute for work experience and university degree

Respondents were aware of the skills and behaviours the assessment was testing as some of these providers provide a summary of the results after they've completed it. Many companies also explain the reason behind the usage of gamified assessments to the candidates to reduce the dropout rate - knowing why you're spending the next 20-30 minutes playing a game will make you less inclined to shut it down midway. Because the games measure competencies, for which you do not need to attend a university or have particular work experience, the respondents generally believed that gamified assessments would offer them a better chance at employment if they had no university degree or relevant work experience. One respondent stated: "It allows employers to look at a broader talent pool, considering people they might have previously rejected. It worked out for me, so yes, it definitely offers better chances". Respondents often mentioned that gamified assessments allow candidates without traditional qualifications to showcase their strengths, such as problem-solving or soft skills, which might otherwise be overlooked in a CV-based process.

Despite a generally positive view on gamified assessments, some candidates expressed concerns about whether such assessments could fully replace the more established criteria that is university degree and work experience. “While gamified assessments could level the playing field, they might not account for specific industry knowledge or technical skills that come from formal education or work experience” said one of the respondents. This could apply to the roles of a lawyer or a doctor where formal education is needed due to the responsibility of their work and the consequences if they’re not properly trained. Another respondent stated: "I would say yes, but I think it depends on the assessment and the role”.

Overall, respondents believed that gamified assessments do offer candidates without work experience or a university degree a better chance of employment, as these assessments focus on competencies and potential rather than formal qualifications. This gives candidates that do not have those requirements, a better chance of employment. After all, if a candidate does not have a university degree, it doesn’t necessarily mean that they are lazy or not ambitious. In many countries, attending a university is not financially viable for a lot of people and some experience difficult life circumstances that prevent them from doing so. So games offer more inclusiveness to the hiring process. However, a university degree and relevant work experience should not be eliminated or overlooked for certain industries and roles, so the usage of gamified assessments varies on the context of the situation.

5.3.1.5 The effects on the company

Some respondents followed up on the train of thought from the previous question and highlighted that a major advantage for the company is the ability to attract a broader and more diverse pool of candidates which simultaneously improves the diversity of the company. DE&I being a strong point of many companies’ agendas in 2024, it’s definitely an efficient tool for promoting it. "It helps expand the talent pool, attract unusual talent, and improve diversity" said one respondent. DE&I plays a big role in employer branding, so that can be boosted as well. One respondent said: “It makes a company look cool and forward-thinking". Another respondent highlighted the efficiency of the hiring process that it brings. By using a tool, recruiters reduce the time they spend on screening candidates, meaning they can source and screen more candidates, effectively placing more people in the company.

As discussed in the previous question, some respondents noted that gamified assessments might not be enough to fully replace traditional methods, which perform better when it comes to assessing hard skills, as technical knowledge. Because of that, employees might need to use multiple assessments to get a complete overview of the candidate’s skills, making the hiring process longer and more unattractive to the candidate. "They’re more efficient, but for certain roles that require technical expertise, I’m not sure if gamified assessments alone are enough," said one of the respondents. If the novelty of gamified assessments wears off or if it becomes an additional step that candidates find unnecessary, especially if not implemented early in the recruitment process, it might negatively affect the candidate

experience. As one respondent said: "It only brings benefits if used at the beginning of the process; if it's just an extra step later on, candidates won't appreciate".

Overall, respondents recognised several important benefits of using gamified assessments at the company level, including expanding the talent pool, improving diversity, reducing time to hire, and enhancing employer branding by providing a better candidate experience. Improving the efficiency of the process was also a strong theme. However, there was some hesitation whether gamified assessments alone provide enough information on the candidate's skills, risking being an addition to the hiring process instead of the replacement to traditional assessments in the long run.

5.3.2 Group 2: Users

In this chapter, I'll present the analysis of the respondents' answers from the user group. Their answers were analysed per research question to draw out the positive and negative aspect of using gamification in the hiring process, as well as their concerns.

5.3.2.1 Accuracy of the assessment results

This group of respondents also had a generally positive outlook regarding the efficiency of assessing candidate's skills and behaviours. Many noted the reduced effect of social desirability bias when using gamified assessments compared to traditional ones. With traditional format, it's easier to detect what is being assessed and candidates manipulate their answers favourably to suit the expectations of the company and what they're looking for in a candidate. Gamified assessments are better at masking the traits that are being assessed, leading to a more genuine representation of the candidate. One respondent highlighted: "In a game, however, it's less obvious and harder to manipulate, depending on the game design. So yes, it has the potential to be more accurate". Another respondent said: "What has been proven about gamified assessments is that they reduce a certain level of social desirability, and they're more fun. When people are more engaged in an assessment, they tend to behave closer to their natural behaviour without overthinking". The more authentic representation of the candidate offers a more objective framework for decision making. "With gamified assessments, you get a more natural and objective picture of candidates, which is what I value the most compared to CVs or work sample tests" noted one candidate.

Some respondents emphasised the importance of using the assessments at the right stage of the hiring process. If used at the later stages of the process, it would not be as effective with painting an objective representation of the candidate and reducing unconscious bias as the bias would already be established through previous experiences. One respondent noted: "It highly depends on which parts of the hiring process you choose to use them. If you use them at the very beginning as the first screening, which is what we do, I feel like they have extremely high potential to reduce unconscious biases and help make more objective hiring

decisions. However, if assessments are used at the end of the hiring process, then there's a higher likelihood that these results could feed into your existing biases". And while most people appreciate the novelty of the gamified format, especially the younger generations, one respondent had some uncertainty if this format is suitable for all candidates and all job types. They said: "It depends on the role you're recruiting for. For example, open-minded candidates may appreciate something innovative like a game-based assessment, while others might prefer the traditional format because they can practise for it".

To conclude, respondents agreed that gamified assessments are generally more effective in assessing candidates' skills and behaviours than traditional methods, primarily due to their ability to reduce social desirability bias and capture more natural responses. There was some uncertainty regarding their effectiveness across different job roles and different candidate pools. Furthermore, the stage at which the tool is used also plays an important role.

5.3.2.2 Candidate experience

We already touched upon how gamified assessments bring out a more authentic picture of the candidate and this is due to the gamification element. It is a more engaging, enjoyable and less stressful experience which helps the candidate to feel more comfortable and to let their true character shine. Many respondents agreed that it proved a better candidate experience compared to the non-gamified assessments. One respondent said: "Candidates often tell us they've never seen anything like it before, and they usually like that. They also appreciate getting their own scores back, and many recognise themselves in those scores. Overall, candidates find the process new, cool, and less intrusive, making it a more enjoyable experience". Another respondent noted: "The candidate experience was pretty poorly rated with the traditional ones, and now we've seen a significant increase in satisfaction. Our current employees who applied through game-based assessments often mention that they really enjoyed the experience and that it stood out compared to other companies that use more traditional tests".

Once again, some respondents noted that the candidate experience can also depend on the candidate's preferences: "It depends on individual preferences. Some people may prefer the more traditional numerical tests, but overall, gamified assessments are seen as more fun and lead to a better candidate experience". They also highlighted the importance of using gamified assessments at the right stage of the hiring process. Introducing them at a later stage can cause some confusion with the candidate or even upsetness as they would not understand the reasoning behind the assessment - after all, they already participated in an interview which should give them an idea of their skills and behaviours. "We've found that when we introduce gamified assessments later in the process, it can cause some confusion, especially if the candidate has already gone through an interview".

To conclude, respondents agreed that gamified assessments tend to provide a candidate experience that is more immersive, enjoyable, less stressful and more engaging compared to

traditional assessments. Employers however need to use them at the right stage of the hiring process and keep in mind that not everybody will appreciate a gamified format, but the majority will.

5.3.2.3 Unconscious bias in the hiring process

Many respondents highlighted that gamified assessments do have the potential to reduce unconscious bias in the hiring process. Because they are scientifically researched and based on proven models for assessing cognitive skills and behaviours, they offer a more objective outlook on the candidate. Furthermore, the results can be quantified - something that is not possible or harder to do when comparing them to the CV. One respondent said: "They're less prone to social desirability and cultural differences, and they're less likely to be misinterpreted". Another respondent stated, "It decreases unconscious bias because we rely less on the resume. Using it as a first step helps me stay more objective". CV offers a lot of information about the candidate, that is not necessarily important for the hiring process and can trigger some biases. Think of ethnicity, age, sex and so on. "By focusing on skills like problem-solving, flexible thinking, and teamwork, and quantifying those into numbers, you're removing biases related to education, nationality, or gender, which are more prominent in CVs" were words of another respondent.

While generally positive about the effects of gamified assessment and how they can reduce unconscious bias, some respondents highlighted possible pitfalls: "It highly depends on which parts of the hiring process you choose to use them. If you introduce the assessment later, after forming an opinion about the candidate, it might actually increase bias if the test results don't match your initial impression". Another respondent said: "Biases can still creep in when interpreting the results. For example, if someone scores low on problem-solving, they might be disqualified quickly, even though they could demonstrate those skills in other ways". While unconscious bias can be decreased by the use of such assessments, it seems that the respondents were not convinced that it can be eliminated and can even introduce new biases if used incorrectly.

Generally, respondents agreed that gamified assessments reduce unconscious bias and was a clearly a preferred solution to using the CV to combat some common unconscious biases that can arise when looking at the candidate's education levels, ethnicity, gender etc. However, they should be aware of their own biases even when using such assessments - to believe such a tool can eliminate the biases from the process can lead to more biases.

5.3.2.4 Assessments as a substitute to work experience and university degree

All respondents agreed that gamified assessments offer a better chance of employment for a candidate with no work experience and university degree. Gamified assessments offer an insight into a candidate's competencies and skills, which are increasingly more important

and recognized in the workplace. One respondent stated: "It's easier for hiring managers to identify candidates with the right skills and intelligence, even if they lack work experience or a degree". The question is of course whether a hire based on such criteria will be successful in their role. One of the respondents provided such an example: "We've made several hires without prior job experience, which used to be a very important criterion when screening candidates, and these employees are honestly outperforming others". While it's great to hear such a success story, one must be careful not to draw conclusions from a small sample pool of data.

Despite the overall positive outlook, some respondents noted that hiring based on experience and education is still very much the industry standard and there are reasons for it. "While gamified assessments can provide more opportunities for candidates without traditional qualifications, they may still struggle in roles that require specific technical skills or industry knowledge". I already discussed this in the previous questions but it's once again confirmed that gamified assessments don't seem to be a replacement for certain hard skill tests but rather a good addition to test soft skills. And while some might be open minded and excited about the possibility of hidden talent, there might be other relevant stakeholders in the process that could not be so open to the idea of gamified assessments and reject a candidate that proceeded through the hiring interview based on good assessment results rather than experience and education. "It's important to note that while gamified assessments can give candidates without experience a foot in the door, hiring managers might still look for experience or education in later stages of recruitment" stressed one of the respondents.

To conclude, all respondents agreed that gamified assessments offer candidates without work experience or a university degree a better chance of employment by focusing on skills and potential rather than formal qualifications.

5.3.2.5 The effects on the company

Respondents have identified many key benefits throughout the interview process and summed them directly in this question. A common benefit to all of the respondents is efficiency in the hiring process or to be more specific - time saving, which in effect is also a cost saver. One respondent explained: "Gamified assessments are more efficient—it's much faster to sort through gamified assessment profiles than to read through CVs or cover letters. That's a major cost-saver". This is especially important when dealing with high volumes of applicants: "Sorting through resumes is time-consuming, so gamified assessments can optimise the process and reduce costs". Arguably the most important benefit for companies in 2024, is that it expands the talent pool and attributes to the company's diversity. "It helps expand the talent pool, attract unusual talent, and improve diversity" said one respondent.

However, some respondents expressed concerns regarding the use of gamified assessments: "While gamified assessments help make the hiring process faster and more objective, I'm unsure if they lead to more accurate long-term hiring decisions". This is a valid point as this

format is quite a novelty and there is not enough research and data available to make conclusions on what effects such methods have on the long term.

Overall, I can conclude that respondents recognized significant benefits of using gamified assessments on the company level, such as improved efficiency, reduced hiring costs and increased inclusivity and diversity of the talent pool. Whether the long term results are as great as they are perceived in the short term is unclear.

6 DISCUSSION WITH CONTRIBUTIONS AND IMPLICATIONS

In this chapter, I have showcased the final research results, which were the result of the analysis of both groups of respondents. Following that, I have presented my suggestions implementing gamified assessments into the hiring process based on the theoretical research and interview analysis, furthermore, sharing findings regarding limitations for future research directions.

6.1 Discussion of the research results

In the following chapter, I have compared the already presented analysis of each individual group to each other. I have presented the common themes found between the two groups and pointed out where the groups misaligned the most in their perception when it comes to the use of gamified assessments in the hiring process. For each question, a conclusion has been drawn, based on all ten respondents, to answer the theoretical questions at the core of this research.

6.1.1 Accuracy of the assessment results

Both the group of candidates and group of users agreed that gamified assessments are generally more effective at assessing candidates' skills and behaviours than non-gamified assessments. Both groups pointed out that gamified assessments are able to provide more accurate assessments as they are harder to manipulate. Not only that, they provide a more enjoyable and less stressful environment. When people are immersed in a gamified assessment, they tend to forget they're being assessed and simply perform the game, which brings out the candidate's genuine (or in other words - unconscious) behaviour. However, the same cannot be said about traditional assessments where social desirability plays a bigger role (Schmidt et al., 2016). Both groups highlighted the objectivity of the gamified assessment, especially when compared to a CV. Respondents drew comparisons between gamified assessments and CVs frequently, and majority of them were not particularly fond of the use of CV, which in their opinion consists of many superficial factors that should not be considered in the hiring process or should not be as relevant as they are in many hiring processes.

While both groups agreed that gamified assessments are a more accurate instrument for predicting candidate's skills and behaviours, there was one key difference that emerged between the groups. The candidate group was not so convinced about the accuracy of such assessments compared to the user group. The respondents continuously expressed doubts about whether the gamified assessments can fully capture the skill sets and behaviours of the candidate in the way they claim. Gamified assessments are quite a novelty and they felt that these assessments have not been tested enough to support the claim that they are more accurate. After all, traditional assessments have been around for much longer and while they might not provide the same level of candidate experience, these more traditional counterparts to gamified assessments have been tested and proven on the market. Regardless, the user group expressed greater confidence in the accuracy of the results provided by gamified assessments both for skills and behaviours.

Overall, both groups confirmed that gamified assessments are more effective in assessing behaviours as these assessments are able to reduce bias and provide an environment that better captures the candidate's natural behaviour. When it comes to the assessments of skills, there was a division. Candidate group highlighted that a gamified assessment might not be enough for a proper assessment of their skills & abilities, and therefore should be added only as a supplementary tool in the process, alongside other tools and job suitability assessment methods. In contrast, the users group was more confident in the efficiency of gamified assessments to measure skills and behaviours fully. The user group considers gamified assessments a crucial tool and a key factor in the hiring process.

6.1.2 Candidate experience

The analysis of the responses indicated that gamified assessments generally offer a better candidate experience compared to non-gamified assessments. Main advantages, that kept recurring, were that they offer a more enjoyable and engaging experience. This confirms our theoretical research where this was one of the key factors when comparing two types of assessments. The gamification aspect distracts the candidate from the fact that they are being assessed and makes it easier for them to engage with the game and just enjoy playing it. This results in reduced stress and typically in a faster process. Even if the gamified assessment takes the same time to complete as the non-gamified one, the candidate will feel that the time passed faster. In the era, where traditional recruitment practices seem outdated and slow, gamified assessment ensures a more informal and interactive environment which many candidates found refreshing compared to CV screenings or standardised tests.

Some respondents did highlight that the use of gamified assessments alone in the hiring process might not be enough to improve the candidate experience, especially if the timing of introducing a gamified assessment during the hiring process is not well thought out. If used at the beginning of the process, as a replacement for CV screening and not as an addition to the application form, the candidates are more likely to perceive it positively. If done this

way, candidates will have more confidence if they pass the assessment and are progressed to the next stage, knowing their competency profile is sufficient for the role and that such an assessment won't be used later on in the process after they've already invested time in the hiring process. If used in the later stages, it might damage the candidate experience. Candidates might feel the gamified assessments are just another hurdle in the hiring process and perceive the assessments as unnecessary since they've already spoken to the hiring manager and/or recruiters. Moreover, if a gamified assessment is used as a complementary tool to a hard-skills test, it will just increase the duration of the hiring process and possibly frustrate the candidate even more. If this happens, a higher candidate dropout can be expected as discovered in the theoretical research (Adeola, 2022). Types of roles also have to be taken into account - many respondents stated that they got great feedback from candidates for mostly commercial roles like sales and marketing. Not much was said about the more technical roles, where gamified assessments might not receive the same feedback.

To conclude, the respondents mutually confirmed that gamified assessments provide a better candidate experience compared to their more traditional counterparts, highlighting reduced stress, better engagement and generally just a more enjoyable process. The gamified assessments, however, should be used at the beginning stages of the hiring process and as a replacement to one of the steps in the hiring process rather than an additional step.

6.1.3 Unconscious bias in the hiring process

Analysis of the respondents' answers shows that gamified assessments are perceived to decrease the effect of unconscious bias in the hiring process, which is supported by theoretical research (Vesere, n.d.). Respondents indicated on multiple occasions that they appreciate the objectivity gamified assessments bring to the table, especially when comparing these assessments to the CV. In theoretical part of this paper, I have presented research on how having different sounding or non-western names on the CV can decrease your chances of progressing in the hiring process. While respondents don't know what is the quantifiable effect of such factors on CV, they were very clear that the information on the CV can hurt them more than help them. Whether that's their nationality, gender, ethnicity, education, photograph or just the way they presented their experience - all of it can be subject to unconscious biases and hurt their chance of proceeding in the hiring process. The candidates like being assessed through gamified assessments as before engaging in the gamified assessments, a clear explanation of what they measure - problem solving skills, cognitive flexibility, learning ability, communication skills etc., - was provided. Which candidates perceive as more relevant for the future success in the role rather than education levels.

That being said, some respondents noted that while unconscious bias can be decreased through the use of such tools, it doesn't guarantee a bias-free process. As per my theoretical research, humans are inherently biased. It's part of the mechanism that allows us to make

thousands of micro-decisions on a daily basis without exhausting ourselves, therefore being an extremely useful mechanism (Kahneman, 2011). We should, however, be aware of it and understand how it works so we can try to limit the effect of unconscious bias on the hiring decision. But as long as there will be a human touch present in the hiring process, unconscious bias will not be eliminated. It's important to notice that gamified assessments are a good tool for reducing unconscious bias and it does so effectively but it can not eliminate it completely if there are more steps in the hiring process next to the gamified assessment.

To conclude, respondent analysis confirmed our theoretical research and stated that gamified assessments are effective tools to reduce unconscious bias in the hiring process. However, gamified assessments are not a tool that can completely eliminate unconscious biases. Such an assumption would be dangerous as it might open the doors for new bias to creep in.

6.1.4 Assessments as a substitute for work experience and university degree

By analysing the responses of both groups, I came to the conclusion that both groups agreed that gamified assessments offer a better chance of employment for a candidate without relevant work experience or a university. Across both groups, respondents were aware of the competencies measured in the assessment and how they can benefit a candidate without traditional requirements for the job when going through a hiring process. Assessment vendors and companies seem to put a lot of effort in making the candidate understand why they are required to take the assessment and what it measures. Competency based hiring, as it's called, is an emerging trend that many are aware of and gamified assessments go hand in hand with such a hiring model. A process including gamified assessments is perceived as more inclusive and better suited at identifying hidden talents that might be otherwise overlooked when only paying attention to, for example, academic credentials. The use of gamified assessments opens doors to a broader talent pool, where more candidates get a fairer opportunity for their desired role and the company benefits from talent that would otherwise go unnoticed in a traditional recruitment process (Baumer, 2021).

I see the growing popularity of gamified assessments closely connected to the fast-paced and ever changing environment that we live in. New skills, that haven't existed before, become sought after when a new technology is introduced and with the rapid technological evolution, the skills that a candidate might've learned in university might already be outdated by the time they are ready to enter the job market. Hence, it has become increasingly important that we do not seek candidates with existing skills, which might become obsolete shortly but rather to find candidates that are able to learn new skills fast and are adaptable, which is additionally supported by the theoretical research from Keeling (n.d.). Gamified assessments provide exactly the solution and a positive change from traditional requirements, which in many cases do not seem to follow the industry changes.

While both groups or rather all of the respondents agreed that gamified assessments could provide candidates with no relevant work experience or university degree a fairer chance at employment, the candidate group seemed more reserved. They expressed concerns whether it really gives the edge needed to get through the hiring process and not just foot through the door. They expressed concerns whether employers might still revert to considering experience or education further along in the process. On the other hand, the user group was more optimistic about the power of gamified assessments and believed that these assessments could not only help non-traditional candidates at the start of the process but could also serve as a reliable method for evaluating potential throughout the entire hiring cycle, reducing the need to rely on formal qualifications at any stage.

To conclude the analysis, I can answer the research question positively that gamified assessments do in fact offer a better chance of employment for candidates without traditional job requirements. They offer a more level playing field for candidates from different walks of life and offer companies access to a broader talent pool, where they might find their ideal hire that would otherwise be overlooked. The success of such a tool relies on the trust people have in it and whether they're comfortable letting go of traditional requirements. Change takes time and job experience and academic level have been an important factor in the hiring process for a long time already. To fully utilise gamified assessment and not let our biases creep up later in the process, users of gamified assessments have to be sure of the effects that such a tool can bring them.

6.1.5 The effects on the company

Both groups of respondents identified several key benefits of using gamified assessments over non gamified ones at the company level but each group highlighted some other benefits as well, which I will dive into in the second paragraph. As stated in the analysis of my previous questions, candidates showed deep understanding of gamified assessments and were able to think strategically about the impact it has on the company. The main advantage that both groups acknowledged is increased efficiency of the hiring process. As a replacement for manual screening of CVs, companies can evaluate skills and behaviours of the candidates faster, which is especially noticeable with large volumes of applicants (Kirovska et al., 2020). Another significant benefit mentioned by both groups was the reduction of unconscious bias in the hiring process which confirms my theoretical implication that gamified assessments are a great tool to reduce the undesired effects of unconscious bias, which can be triggered by education level, gender, ethnicity, and so on.

Next to common key benefits recognized between the groups, there was also a key benefit that each group highlighted. Objectivity was a recurring benefit in the candidate group. Respondents appreciated that gamified assessments provide a fair opportunity to prove their skills without relying on the achievements on the CV or carefully crafted cover letter, both of which can be misleading and not relevant to the job. For the group of users, they put strong

emphasis on how gamified assessments impact and can improve diversity and inclusivity in the hiring process. The use of gamified assessments in the hiring process allows companies to attract and identify a wider range of talent while simultaneously rethinking the way talent is identified. By focusing on behavioural traits, cognitive abilities and the potential, companies can broaden their talent pool and tap into otherwise overlooked talent. This can be seen as a great competitive advantage for the companies as diverse teams exhibit higher levels of creativity, which leads to higher problem-solving skills (Wang et al., 2019). Companies which stick to traditional hiring practices might overlook mentioned talent to their competitors, which are using gamified assessments.

To conclude, the analysis showed that gamified assessments provide a number of significant advantages such as efficiency, objectivity, reduced unconscious bias and a larger and more diverse talent pool, over non-gamified assessments.

6.2 Recommendations for the implementation of gamified assessments into the hiring process

After analysing the responses of both respondents in the previous chapter, I have come to several conclusions about the effects of gamified assessments in the hiring process both on the candidates and user or the company as an entity. By analysing the answers of respondents from different cultural backgrounds, professional experience levels and different experiences with said gamified assessments at different companies, I was able to conclude many positive factors of using such assessments as well as some pitfalls and areas of improvement. In the following chapter, I will present my suggestions on how gamified assessments should be used and implemented for best candidate experience and efficiency of the company and possible pitfalls that come with it. These suggestions have been formulated in combination with theoretical research and my empirical research, which was conducted through semi-structured interviews with two groups of respondents: candidates and users.

6.2.1 Clear communication behind the “why” and “how” regarding gamified assessments

Assessments, whether traditional or gamified or any other format, tend to not be perceived well by most candidates. Job search is an exhausting process and job seekers generally have to apply for a large number of roles at different companies before they are invited for the next step of the process, which is usually the interview. To secure a job offer, most candidates have to be a part of multiple hiring processes at different companies to enhance their chances of getting to that point and each hiring process usually consists of at least three interviews with an assignment. This is a major time investment for a candidate and they can be rejected for a role later down in the process after investing several hours into a specific hiring process. Not to mention that a large portion of job seekers go through this tedious

process while working their current jobs. The job seekers already feel like they're jumping through so many hoops in the hiring process, that when they are told it is needed to complete an assessment, which will require another fifteen minutes to an hour of their time, many might drop out of the hiring process altogether as they feel it's too big of a time investment. This was clear from my theoretical research and is one of the reasons why gamified assessments have an advantage over traditional psychometric assessments - they take less time to complete and are far more engaging than their traditional counterparts. While gamified assessments are a better format for assessing talent, it doesn't mean there won't be a percentage of candidates who will feel it's too much of a time investment to complete.

To counteract that, companies must communicate clearly to the candidate why they will be taking the assessment, how long it will take and most importantly - what will it assess. Throughout the analysis, many candidate respondents showed a great understanding about the gamified assessment they took. They knew how long the games would take, what they would measure and in some cases, even received a short summary of the results themselves. I'm convinced this played a major role in their candidate experience and how they view gamified assessments to this day. If this is not done, it leaves room for doubt and scepticism in the candidate's perception of gamified assessments which could result in higher drop-off rates during the hiring process. Clear communication about how and why gamified assessments will be used in the process is therefore of utmost importance for the candidate experience and to ensure it doesn't turn off candidates from completing the hiring process.

6.2.2 Positioning

Throughout the analysis, all respondents recognised that gamified assessments can decrease the effects of unconscious bias in the hiring process, providing a fairer opportunity for candidates without a university degree and overall contributing to a more objective hiring process. However, many respondents highlighted that the right position of the assessment in the hiring process plays a big role in achieving objectivity in hiring. Unconscious biases are formed immediately, so if a candidate would have to submit their CV, which would be screened by a recruiter, go through a recruiter interview and a hiring manager, and then be required to complete a gamified assessment - that would already be potentially too late as the biases would already be formed and the objectivity of the tool would be greatly diminished. The results of the assessment might be perceived differently due to established unconscious biases and not to mention the candidate's experience might be damaged, as they might perceive the assessment as an unnecessary step at this point. One of the key benefits of gamified assessments is also their ability to compare the candidate results to the established competency profile for the role. This makes it easy to automate the screening process, where suitable candidates pass to the next step and those who don't, get rejected. The benefit of such use is only possible when the assessment is used as the first step or the second step in the process as some respondents mentioned.

In order to utilise the gamified assessment to its maximum efficiency, I would recommend using the games at the very beginning of the hiring process and sharing as little information with the recruiters as possible to reduce unconscious bias as much as possible. Unconscious bias can't be eliminated from the process entirely, only mitigated and using a gamified assessment at the very beginning would be the suggested way to go about it.

6.2.3 Performance and metrics tracking

Gamified assessments are a novelty and people generally are known to be resistant to change. Trying to integrate gamified assessments into a hiring process might cause a lot of initial resistance from internal stakeholders like recruiters, hiring managers or even the management. The costs associated with investing in a new assessment tool, getting the training necessary to understand how to use it might be some of the main objections to implementing gamified assessments. CVs and cover letters have been used as the primary candidate screening methods for years, therefore getting stakeholder buy-in to using something that is a novelty, might be a challenge initially. To build a strong business case to convince such stakeholders, companies need to diligently measure the performance of hires and keep track of certain metrics, like time to hire and screening times, for example. By doing this the company can showcase the reduced screening time it has gained as a direct result of implementing a gamified assessment and calculate the costs saved connected to it. Furthermore, by tracking the performance of talent that got hired when a hiring process included a gamified assessment in contrast to when that was not the case, it's easier to get a more thorough overview of the efficiency of such a tool supported by data and not just assumptions.

Another great example would be measuring the performance of talent hired through gamified assessments, who wouldn't have been given a chance for employment based on their traditional qualifications but performed great on the assessment. The more data collected, the easier it is to build a strong business case to convince stakeholders to invest in such a tool but also to convince doubtful hiring managers and recruiters that it's a powerful tool that can significantly benefit them.

6.2.4 Internal mobility

Throughout the theoretical and empirical research, gamified assessments were only described as a tool to assess external talent, people who are not yet part of the company. Internal recruitment, a process where employees of the company apply for roles within the company, was not really discussed and I believe companies should utilise this approach more. By measuring the cognitive abilities and behavioural traits of already employed candidates, they could be matched to other vacancies within the company. This can help companies professionally develop their internal talent, expand their talent pool and also contribute to retention. Retention is a very important topic in the recruitment world at the

moment - how do you retain your best people? Great talent needs to be stimulated and challenged. Without these crucial aspects, many might leave their current roles after a few years when they master all the skills and abilities associated with the role, and don't feel challenged by the work anymore. By providing such challenges or rather growth opportunities internally, companies could fill their positions faster, retain great talent and possibly also save on external recruitment costs. Gamified assessments should be utilised more in such a sense and not be restricted to external recruitment only.

6.3 Limitations with future research directions

During the research process of the effects of gamification on the recruitment process I ran into three limitations. The first limitation was the sample size. Given the selected method of semi-structured interviews, I was unable to interview a larger number of respondents, which might affect the validity of the results. Semi-structured interviews proved to be the right choice of method but they are also more time intensive compared to a survey for example. Due to this, I have not reached the saturation in the research. To ensure a more objective and accurate representation on the effects of gamification on the recruitment process, I'd suggest increasing the sample size of respondents.

The second limitation was the diversity of respondents. Respondents were selected to be as diverse as possible in terms of years of work experience, ethnicity, culture, job roles and of course whether they were a candidate or a user to get a more wholesome overview. Even with such careful selection, all of the respondents work in the technology industry and currently reside in the Netherlands. While I made sure that the results would be as objective as possible, one might argue that the diversity of respondents poses an issue in itself. The respondents should ultimately be as similar to each other as possible to ensure the best accuracy of the results.

The third limitation was the age of the respondents. Gamified assessments are quite a novelty and only started to make an appearance in the recruitment world in the last fifteen years. They are also mostly used to assess junior and medium level role applicants as they can often be perceived as less appropriate for some senior positions. Naturally, the majority of the workforce progresses up on the corporate ladder so many of the senior employees never went through a process that utilises gamified assessments, and most likely won't go due to their seniority. To ensure the objectivity of the research, I would highly recommend future researchers to include respondents from all working age groups in the research to avoid subjective results.

7 CONCLUSION

Companies are always competing for the best talent possible on the market. Out of all of the resources in business - human, physical and financial, talent is the most important one. It is

people that come up with the next big idea, it is people that can come up with compelling business strategies and execute them and it is people performing day-to-day tasks that keep the company going. Most successful companies have long realised that the cost of right talent is nothing compared to the value they will bring to the company. And it all starts with the hiring process.

Business environments have shifted and changed with the discovery, as well as advancements of new technologies. New industries arose due to such technologies and with new industries a need for talent with different skill sets has risen too. Hiring process, on the other hand, or the criteria on which hiring decisions are being made, has not kept up with the ever changing business environment and remained largely the same apart from the digitalisation of the process. CV and cover letter are still the most prominent application instruments and have been for more than a hundred years. Most traditional psychometric assessments, that are still in use today, were designed to measure different behavioural and personality traits, learning ability, cognitive flexibility, communication skills etc., but not in the hiring process. They were not designed to be engaging and fun but simply to assess certain traits and skills.

Gamification seemed to be the missing element to these assessments. By introducing the element of gamification to already established and scientifically proven assessments, companies got a tool that is able to assess needed skills in a fun and engaging way. By masking what the assessment measures, they are able to provide a more objective and genuine representation of the candidate's cognitive and behavioural skills. The same skills that are so sought after on the talent market and are proven to be the best predictors of future work performance. All while being more engaging, fun, immersive and easily accessible over multiple devices. Not to forget that it's a more inclusive approach and can benefit the diversity of the company, which is an important agenda in today's age.

While it seems to be a wonderful solution to some of the pressing issues in the hiring process, I have come to a conclusion through my theoretical and empirical research which is as follows: gamified assessments are quite a novelty and haven't been researched in depth as much some of the more traditional assessments on the market. There is not a lot of long-term data supporting some of the benefits it's aimed to provide and a lot of the research is provided by the gamified assessment providers themselves. This makes it hard to distinguish whether all the perception of the gamified assessments is accurate or is it merely supported by some research and then heavily promoted to boost the sales of such providers.

Gamification and gamified assessments should not be viewed as an end-all solution to ensure the most efficient and objective hiring process that will result in the best hire. It is a tool and like all tools it must be used appropriately and for the right reasons. The gamified assessments need to be used at the right stage of the hiring process and operated by trained personnel. If that is not the case, it could result in causing more damage to the hiring process due to misuse and overreliance on it. A gamified assessment should be used as a

complementary tool to other tools, like technical skill assignments and most importantly - structured interviews.

To conclude my research, I believe that gamification has had a positive impact on the hiring process and will continue to become more present in other areas of the hiring process, especially onboarding. Companies that are ready to embrace the novelty of such tools will be a step ahead of their competitors and will be able to discover overlooked talent.

REFERENCE LIST

1. Adeola, R. (2022, October 18). *Negative effects of a lengthy recruitment process [+ ready-to-use solutions].* https://www.matchr.io/negative-effects-of-a-lengthy-recruitment-process/
2. Alsaawi, A. (2014). A critical review of qualitative interviews. *European Journal of Business and Social Sciences, 3*(4), 149–156.
3. Baddeley, A. (1992). Working memory. *Science, 255*(5044), 556–559.
4. Baumer, N. (2021, November 23). *What is neurodiversity?* [published on blog]. Retrieved April 22, 2024 from https://www.health.harvard.edu/blog/what-is-neurodiversity-202111232645
5. Boskam, E. (2023). Zippia. *25 Gamification Statistics [2023]: Facts + Trends You Need To Know.* https://www.zippia.com/advice/gamification-statistics/
6. Bussin, M. (2018). *Retention strategies: the key to attract and retain excellent employees.* Knowledge Resources.
7. Centrical. (n.d.). *What foursquare's evolution can teach us about enterprise gamification.* https://centrical.com/resources/what-foursquares-evolution-can-teach-us-about-enterprise-gamification/
8. Clar, M., Muhr, S. L., Reiss, L. K. & Storm, K. (2021). Unconscious bias in organizations: Discriminatory forces at work. *Kvinder, Køn & Forskning, 32*(3), 5–10.
9. Clement, J. (2024, February 13). *Video gaming market size worldwide 2022-2032.* https://www.statista.com/statistics/292056/video-game-market-value-worldwide/
10. CMPB. (n.d.). *Psychometric test.* https://www.cmpb.gov.sg/web/portal/cmpb/home/before-ns/pre-enlistment-process/medical-screening-and-psychometric-test/psychometric-test
11. Comeet. (n.d.). *The full cycle recruiting process: onboarding* [published on blog]. Retrieved April 22, 2024 from https://www.comeet.com/resources/blog/the-full-cycle-recruiting-process-onboarding
12. Cloke, H. (2023, May 27). Growth Engineering. *19 Gamification Trends for 2021-2025: Top Stats, Facts & Examples.* https://www.growthengineering.co.uk/19-gamification-trends-for-2022-2025-top-stats-facts-examples/
13. Damoiseaux, D. (n.d.). *How FrieslandCampina hired more diverse talent and reduced screening time by 93%.* https://www.equalture.com/customer/how-frieslandcampina-reduced-their-screening-time-by-93/

14. Deterding, S., Dixon, D., Khaled, R. & Nacke, L. (2011). From game design elements to gamefulness: defining gamification. In A. Lugmayr, H. Franssila, C. Safran & I. Hammouda (Eds.), *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (pp. 9–15). ACM.
15. Equalture. (n.d.a). *About us.* https://www.equalture.com/about-us/
16. Equalture. (n.d.b). *The science behind gamified assessments* [published on blog]. Retrieved April 22, 2024 from https://www.equalture.com/blog/the-science-behind-gamified-assessments/
17. Equalture. (n.d.c). *Equalture's objective hiring framework.* https://www.equalture.com/objective-hiring-formula/
18. Future Learn. (n.d.). *The wolf, the goat and the cabbage.* https://www.futurelearn.com/info/courses/recreational-math/0/steps/43518
19. Georgiou, K. & Lievens, F. (2022). Gamifying an assessment method: what signals are organizations sending to applicants? *Journal of Managerial Psychology*, *37*(6), 559–574.
20. Harpelund, C. (2019). *Onboarding: getting new hires off to a flying start*. Emerald Publishing Limited.
21. Henderson, R. (2024, January 24). *Applicant tracking systems: everything you need to know.* https://www.jobscan.co/applicant-tracking-systems/
22. Herrity, J. (2024, August 16). *What are soft skills? (With examples and resume tips).* https://www.indeed.com/career-advice/resumes-cover-letters/soft-skills
23. Hladnik, A. (2016). *Igrifikacija kot nov način izboljšanja pedagoškega procesa* (master's thesis). School of Economics and Business, University of Ljubljana.
24. Hozjan, S. (2009). *Igre in igrače skozi generacije* (diploma's thesis). Faculty of Pedagogy, University of Maribor.
25. Indeed. (2021, October 6). *Final job interview: top 9 tips + examples | indeed career tips* [YouTube]. https://www.youtube.com/watch?v=YTHE_GbpZU0#video
26. Indeed. (2024, August 18). *The typical interview timeline and what you can expect*. https://www.indeed.com/career-advice/interviewing/interview-timeline
27. Institute of Psychometric Coaching. (n.d.). *What are psychometric tests.* https://www.psychometricinstitute.com.au/psychometricguide/introduction_to_psychometric_tests.html
28. Joost. (2024, May 23). *How randstad improved their talent pool utilisation when hiring for customer service roles by 70%.* https://www.equalture.com/customer/how-randstad-improved-their-talent-pool-utilisation-by-92/
29. Kahneman, D. (2011). Thinking, fast and slow. Inquiry: Critical Thinking Across the Disciplines, 27(2), 54–57.
30. Keeling, A. (n.d.). *What is skills-based hiring?* [published on blog]. Retrieved April 22, 2024 from https://www.testgorilla.com/blog/what-is-skills-based-hiring/
31. Kirovska, Z., Josimovski, S. & Kiselicki, M. (2020). Modern trends of recruitment-introducing the concept of gamification. *Journal of Sustainable Development, 10*(24), 55–65.

32. Kumar, J. M., Herger, M. & Dam, R. F. (n.d.). *A brief history of games.* https://www.interaction-design.org/literature/article/a-brief-history-of-games
33. Lazzaro, N. (2004). *Why we play games: Four keys to more emotion in player experiences*. https://ubm-twvideo01.s3.amazonaws.com/o1/vault/gdc04/slides/why_we_play_games.pdf
34. Lievens, F. & Slaughter, J. E. (2016). Employer image and employer branding: What we know and what we need to know. *Annual Review of Organizational Psychology and Organizational Behavior*, *3*(1), 407–440.
35. Lindner, J. (2024, July 17). *Hiring bias statistics: alarming trends revealed in job market.* https://gitnux.org/hiring-bias-statistics/
36. McConnell, B. (2024, May 321). Recruitee. *Diversity Recruiting: Importance and 12 steps to improvement*. https://recruitee.com/articles/diversity-recruiting-strategy
37. McKinsey & Company. (2022, August 17). *What is diversity, equity, and inclusion?* https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-diversity-equity-and-inclusion
38. Meyer, C. (2024, June 26). *Psychometric testing in recruitment - a complete guide* [published on blog]. Retrieved April 22, 2024 from https://www.thomas.co/resources/type/hr-blog/psychometric-testing-recruitment-complete-guide
39. Moss-Racusin, C. A., Dovidio, J. F., Brescoll, V. L., Graham, M. J. & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences, 109*(41), 16474–16479.
40. Overmars, M. (2012, January 30). *A brief history of computer games.* https://www.stichtingspel.org/sites/default/files/history_of_games.pdf
41. Pattie, T. (2011). *Medieval games and recreation*, https://castle.eiu.edu/reading/MEDIEVALGAMES.pdf
42. Precedence Research. (2023, August 5). *Gamification market size, share, and trends 2024 to 2034.* https://www.precedenceresearch.com/gamification-market
43. Press, G. (2022, April 26). *Modern computing: a short history, 1945-2022.* https://www.forbes.com/sites/gilpress/2022/04/26/modern-computing-a-short-history-1945-2022/
44. Rathi, M. & Parimalarani, G. (2019). *Gamification: a new tool for recruitment.* https://www.researchgate.net/profile/Rathi-Meena/publication/337858122_GAMIFICATION_A_NEW_TOOL_FOR_RECRUITMENT/links/5e12d5a3a6fdcc283759acf5/GAMIFICATION-A-NEW-TOOL-FOR-RECRUITMENT.pdf
45. Reiners, B. (2024, August 28). *Unconscious bias: 18 examples and how to avoid them in the workplace.* https://builtin.com/diversity-inclusion/unconscious-bias-examples
46. Resource Solutions. (n.d.). *Gamification in recruitment: innovation at resource solutions.* https://www.robertwaltersgroup.com/content/dam/robert-walters/corporate/news-and-pr/files/whitepapers/gamification-in-recruitment.pdf
47. Schmidt, F. L., Oh, I. S. & Shaffer, J. A. (2016). *The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 100 years.*

Fox School of Business.
48. Scott Snell, G. W. B. (2012). *Managing human resources* (16th ed.). Cengage learning.
49. Stariha, S. (2006). *Razlogi za igranje računalniških iger* (diploma's thesis). Faculty of Social Sciences, University of Ljubljana.
50. Stenken I. (n.d.). (Semi-)structued interview guide for Equalture's game-based assessments. Retrieved August 4, 2024, from https://support.equalture.com/en/articles/8456190-semi-structured-interview-guide-for-equalture-s-game-based-assessments
51. Tretkoff, E. (2008, September 22). *October 1958: physicist invents first video game.* https://www.aps.org/publications/apsnews/200810/physicshistory.cfm
52. van Vulpen, E. (n.d.). *Selection process: 7 steps & best practices to hire top talent* [published on blog]. Retrieved April 22, 2024 from https://www.aihr.com/blog/selection-process-practical-guide/
53. Verlinden, N. (n.d.). *13 great employer branding examples to inspire you in 2025* [published on blog]. Retrieved April 22, 2024 from https://www.aihr.com/blog/employer-branding-examples/
54. Vesere, A. (n.d.). *10 unconscious hiring bias & how to avoid them* [published on blog]. Retrieved April 22, 2024 from https://www.equalture.com/blog/10-types-of-unconscious-hiring-bias/
55. Vesere, A. (n.d.). *Psychometric tests for hiring: advantages & disadvantages.* https://www.equalture.com/blog/psychometric-tests-in-recruitment-advantages-and-disadvantages/
56. von Moltke, N. (n.d.). *Screening interview: a complete guide for hr [2025 edition]* [published on blog]. Retrieved April 22, 2024 from https://www.aihr.com/blog/screening-interview/
57. Wang, J., Cheng, G. H. L., Chen, T. & Leung, K. (2019). Team creativity/innovation in culturally diverse teams: A meta-analysis. *Journal of Organizational Behavior, 40*(6), 693–708.
58. Wasserman, T. & Wasserman, L. D. (2016). Automaticity and unconsciousness: What are they and what's the difference? In *Depathologizing Psychopathology* (pp. 67–77). Springer International Publishing.

APPENDICES

Appendix 1: Summary in Slovene

POVZETEK

Naloga raziskuje vplive igrifikacije na proces zaposlovanja. Igrifikacija je v zadnjih dvajsetih letih pospešeno in uspešno prodrla v poslovni svet ter se pokazala za uporaben instrument v kadrovski funkciji, še posebej v začetnih fazah zaposlovalnega procesa. Kljub pogosti uporabi igrifikacije v procesu zaposlovanja rezultati omenjene aplikacije igrifikacije niso dodobra raziskani, kar me je navdušilo, da raziskavo opravim sam. Namen naloge je raziskati vpliv igrifikacije na zaposlitveni proces, še posebej v obliki uporabe igrificiranih ocenitev, ter kakšni so učinki in posledice za sodelujoče osebe v tem procesu. V tem primeru so to kandidati in uporabniki. Za izvedbo raziskave je bil opravljen poglobljen pregled obstoječe literature, nakar so bile ugotovitve primerjane z rezultati empirične raziskave.

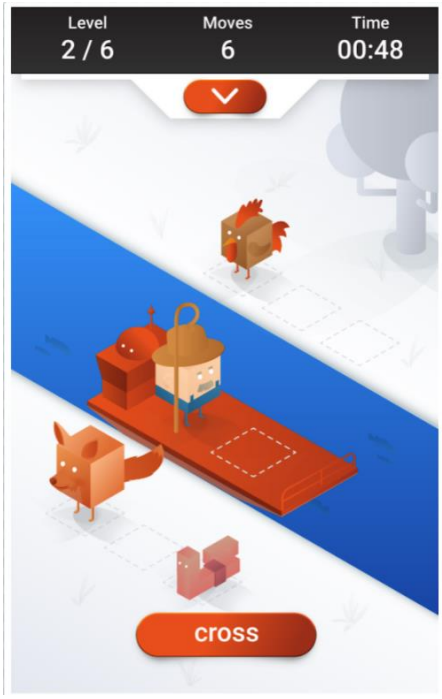
Za empirično raziskavo sem opravil analizo kvalitativnih podatkov, ki sem jih pridobil z opravljanjem polstrukturiranih intervjujev. Intervjuvanih je bilo deset oseb, ki imajo izkušnje z uporabo igrificiranih ocenitev v zaposlitvenem procesu. Izbranih je bilo pet oseb, ki so izkusile omenjeni proces kot aplikanti, in pet oseb, ki so bile uporabniki igrificiranih ocenitev. To so bili predvsem naborniki in vodje različnih poslovnih enot znotraj podjetja. Analiza kvalitativnih podatkov je bila izvedena v dveh korakih. Najprej sem analiziral odgovore na ravni vsake skupine intervjuvancev, nakar sta bili analizi odgovorov obeh skupin primerjani med sabo v drugem koraku za končno analizo in ugotovitve. S tem je bilo mogoče primerjati tako razlike kot podobnosti med izkušnjami in mnenji med uporabniki igrificiranih ocenitev in aplikanti.

Rezultati analize kažejo, da igrificirane ocenitve pozitivno vplivajo na osebe, prisotne v zaposlitvenem procesu, ki uporabljajo takšna orodja. Aplikacije igrificirane ocenitve v procesu zaposlovanja pripomorejo k temu, da postane proces zabavnejši in vzbudi zagon v aplikantu. V primerjavi z drugimi orodji na trgu omogoča zmanjšanje vplivov podzavestne pristranskosti in ponudi večjemu številu kandidatov, še posebej tistim, ki nimajo univerzitetne izobrazbe in delovnih izkušenj, povečano priložnost za zaposlitev. Hkrati tudi ponudi pozitivne vplive na strani podjetja. Vodje oddelkov pridobijo boljše vpoglede v spretnosti in vzorce vedenja aplikantov. S pridobljenimi vpogledi v aplikantove sposobnosti so sposobnejši prepoznati lastnosti, ki so povezane z uspešnostjo na delovnem mestu, kar ne bi bilo mogoče s tradicionalnimi orodji na trgu. To poveča nabor razpoložljivega talenta in tudi privabi več aplikantov, ki se morda ne bi odločili za prijavo, če tako orodje ne bi bilo del procesa.

KLJUČNE BESEDE: igrifikacija, proces zaposlovanja, polstrukturirani intervju, podzavestna pristranskost

Appendix 2: Equalture game - The Ferry

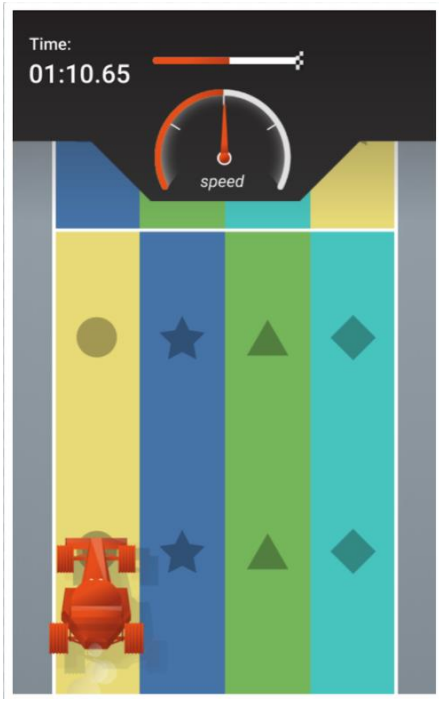
Figure 1: The Ferry



Source: Stenken (n.d.)

Appendix 3: Equalture game - The Racer

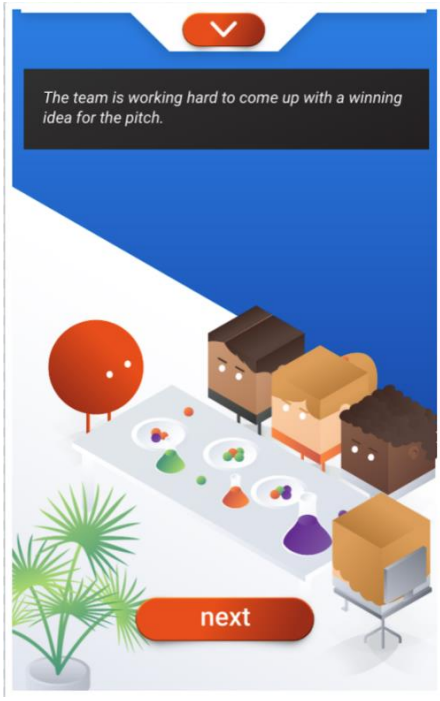
Figure 1: The Racer



Source: Stenken (n.d.)

Appendix 4: Equalture game - The Pitch

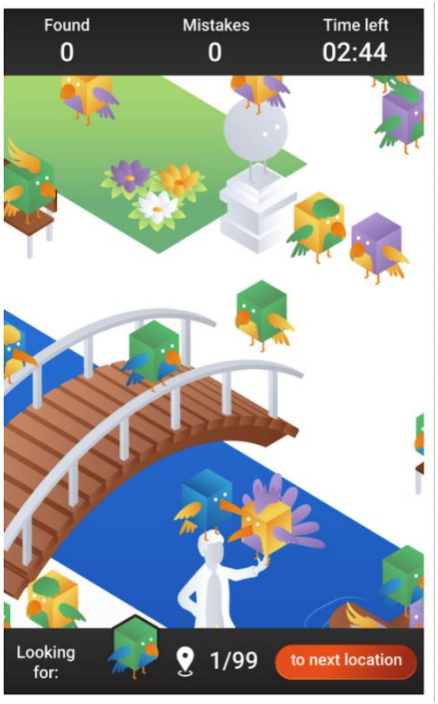
Figure 1: The Pitch



Source: Stenken (n.d)

Appendix 5: Equalture game – Birds

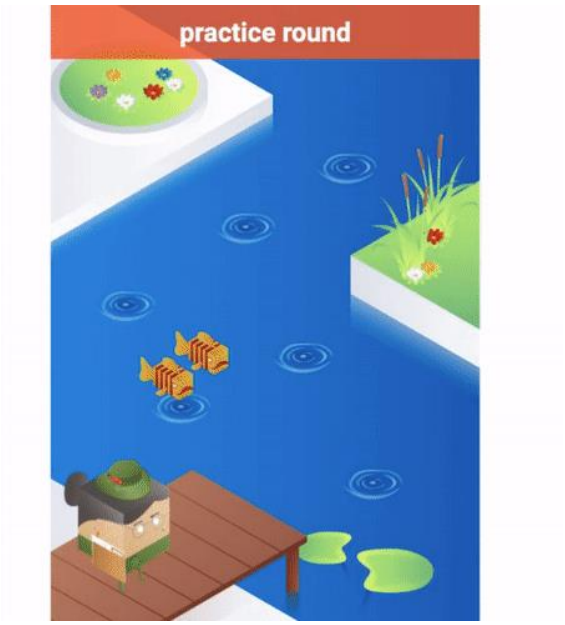
Figure 1: Birds



Source: Stenken (n.d.)

Appendix 6: Equalture game - The Fish game

Figure 1: The Fish game



Source: Stenken (n.d.)

Appendix 7: Transcript of the interview with respondent 1 (candidate)

Filip Saksida: And we're live. Thank you for joining me and being so helpful. As mentioned, I have five questions for you, and I want to hear your thoughts on the hiring process where gamified assessments were used, so through your eyes as a candidate. Without further ado, should we just get into it?

Respondent 1: Yeah, for sure.

Filip Saksida: Okay, question number one. Do you think that gamified assessments assess candidates' skills and behaviors more accurately than non-gamified ones?

Respondent 1: The first thing that came to mind was obviously more traditional application methods. So, therefore, motivation letters and CVs. However, to be more specific, I'm not really sure, honestly. I haven't seen much information or done much research into it myself, but it felt like, for some reason, that might be the case because A.) I just enjoyed doing the assessments more than a traditional test, like the figure series tests – I always find those a bit annoying to complete and always super lengthy. But I'm not sure if I know about the actual ability to measure skills better.

Filip Saksida: So you can't really say yes or no?

Respondent 1: I think I'm somewhere in the middle. I've only completed gamified assessments once. And it felt like a nice experience. I felt like I could, I guess in a way, showcase my skills better in the sense that I wasn't thinking about what they expect from me. But I cannot give a conclusive answer.

Filip Saksida: Okay, I mean it's funny that you mentioned that because you already started answering the second question a little bit, but the second question is – how does the candidate experience with gamified assessments compared to the non-gamified assessments?

Respondent 1: Yeah, in short, I think it's just way more engaging and I guess in a way entertaining compared to looking at those super lengthy, boring, time-consuming, more traditional counterparts. I can't think of any specific examples other than figure A series tests.

Filip Saksida: Mhm.

Respondent 1: But I think it took me 20 minutes, maybe even less, to complete the gamified assessments, but it felt like the time just went by super fast.

Filip Saksida: Okay, nice. Third question – do you think that gamified assessments increase or decrease the effects of unconscious bias in the hiring process?

Respondent 1: I would say that it decreases it because when you're looking at more traditional logical tests, then I sort of already can expect or anticipate what they're going to

measure. But the gamified ones that I have completed, they felt like it was a bit more hidden what exactly they're trying to measure with it. Therefore, I would say it is a less biased approach to assessing skills and candidates overall.

Filip Saksida: Okay, interesting. Question number four – do you think that gamified assessments offer a better chance of employment for a candidate that has no work experience and a university degree?

Respondent 1: I think I'm a bit biased in that sense because the only time I did complete game-based assessments, I actually ended up getting a job with no experience before. So I would say yes.

Filip Saksida: Nice, nice short and sweet. Well then, we are at the last question. What are the benefits of using gamified assessments versus non-gamified assessments at a company level? So this is really like a strategic view, a helicopter view if you might.

Respondent 1: I think it sort of positions the company almost in a unicorn status where you start hiring people potentially with more diverse skills and backgrounds than you would if you look at CVs or use traditional tests. Because if we're also talking about educational level and stuff, then I think it can be difficult for people to do well in those more traditional counterparts compared to the game-based assessments because of lack of education or limited accessibility to education during growing up, for example. And I think, I mean, if we speak about the whole bias aspect of it, right, because that was one of your questions before.

Filip Saksida: Yeah.

Respondent 1: Then I guess it also makes the hiring process a bit more inclusive, right, because you're supposedly measuring skills in a more objective way.

Filip Saksida: Yep.

Respondent 1: So, yeah.

Filip Saksida: What was the end of your answer? Okay, perfect. Thank you so much. You've been of great help. We're done with all five questions, so we can just end the interview here, and I cannot thank you enough for helping me with this project.

Respondent 1: Pleasure. Thank you.

Filip Saksida: Take care.

Appendix 8: Transcript of the interview with respondent 2 (candidate)

Filip Saksida: We're live. Thank you for joining, Respondent 2. We're going to go through a set of five questions, focusing on your experience with gamified assessments during the recruitment process. Here's the first question: Do you think gamified assessments assess candidates' skills and behaviors more accurately than non-gamified ones?

Respondent 2: I think they do. It feels more natural completing them, though I'm not entirely sure what I'm being assessed on—it's not always clear. In a way, that makes it more valid because, on one side, I'd like to know what I'm being evaluated on, so I could think accordingly and try to get the best result for the role. But from the company's perspective, it's probably better to have an assessment where the candidates don't know what's being measured, as it provides a more genuine view of how the candidate thinks and behaves.

Filip Saksida: Got it. Next question: How does the candidate's experience with gamified assessments compare to non-gamified ones? How did you find the difference?

Respondent 2: It was definitely more fun, felt faster, and required less energy, so I didn't feel as stressed compared to regular assessments. Traditional assessments are less enjoyable. Other than the fun factor, I wouldn't say there's a huge difference between the two in terms of results.

Filip Saksida: Interesting. Third question: Can gamified assessments increase or decrease unconscious bias in the hiring process, in your opinion?

Respondent 2: I think it can still lead to bias when looking at results. For example, if someone scores high on a gamified test that measures IQ, it could bias the recruiter, even if high IQ isn't necessary for the role. The same goes for other attributes, like working fast—it might lead someone to assume that working fast is beneficial for any job, when that's not always the case. However, gamified assessments likely reduce unconscious bias because they collect data without the influence of a person asking the questions. So, compared to a traditional interview, gamified assessments may help mitigate bias related to interpersonal dynamics.

Filip Saksida: Okay, I see. Now for question four: In your opinion, do gamified assessments offer a better chance of employment for candidates who don't have work experience or a university degree?

Respondent 2: Definitely. Not everyone is academically oriented, and that's just one way the brain works. There are many other ways people excel, and gamified assessments tap into these different strengths. Someone who isn't academically inclined could still excel in a role and possibly outperform someone with an academic background. Gamified assessments give these candidates an opportunity to show their capabilities in less academic, but equally important, areas.

Filip Saksida: Exactly. If you only assess academic skills, you risk missing out on a lot of talent. Just because someone's strengths aren't academic doesn't mean they can't do a good job, right?

Respondent 2: Absolutely. Another key issue is that not everyone has the chance to pursue academic education due to life circumstances. Many people need to work while studying, which can affect their academic performance. By focusing solely on academics, we're missing out on a lot of talent.

Filip Saksida: Great point. The final question is a bit more strategic: What are the benefits of using gamified assessments at a company-wide level?

Respondent 2: Gamified assessments provide a company with a more flexible workforce. If we think of the company as an organism navigating the marketplace and competing with other organisms for clients, the most adaptable organisms are the ones that survive. Gamified assessments help companies tap into a wider variety of human resources because they allow for a broader range of talent beyond the typical academic criteria. This flexibility helps companies be more adaptable and capable of addressing different challenges.

Filip Saksida: So, it's about versatility of thought, right?

Respondent 2: Exactly. A more rigid organisation might struggle when faced with a tough challenge, as everyone could be thinking similarly. A company with a diverse group of thinkers—people who approach problems from different angles—might be able to solve those problems faster and more effectively, outpacing the competition.

Filip Saksida: Love that. Well, that brings us to the end of the interview. Thank you so much, Respondent 2!

Respondent 2: Thank you! I really enjoyed this.

Appendix 9: Transcript of the interview with respondent 3 (candidate)

Filip Saksida: Hi Respondent 3, thanks for taking the time. I've prepared five questions, and you can answer them as briefly or as fully as you'd like. I just want to hear your thoughts and how you perceive these topics, especially from your perspective as a candidate who went through the gamified assessment process and how did you experience that compared to other assessments or the traditional process? Ready to start?

Respondent 3: Yeah, let's do it.

Filip Saksida: First question: Do you think gamified assessments evaluate candidates' skills and behaviours more accurately than non-gamified ones?

Respondent 3: For behaviours, definitely. Your natural behaviour comes out more in a game, and from the behavioural assessments I've taken, the results aligned pretty well with how I am as a person. Skills, though, I'm not sure if gamified assessments are better than non-gamified ones because there are many IQ tests out there. The difference with game-based assessments is that you can't really train for them, which might make them more accurate. They're also less susceptible to social desirability bias, which is why I think non-gamified assessments might be less accurate. There's more I could say, but I think you want to hear this from my perspective as a candidate, right?

Filip Saksida: Exactly, because you've gone through this process and other processes with more traditional assessments, like CVs and motivational letters. How does gamified assessment compare?

Respondent 3: I think the main points I just mentioned are key. Also, traditional assessments are often more stressful and boring for candidates, and they're not as inclusive.

Filip Saksida: That's very interesting. You've already touched on the second question: How does a candidate's experience with gamified assessments compare to non-gamified assessments?

Respondent 3: Gamified assessments tie in nicely with diversity, equity, and inclusion. The fact that there's a game at the start of the hiring process, instead of a long traditional assessment, makes it more inclusive. It doesn't matter where you're from, your skin color, or whether you're rich or poor—people get rejected for the strangest reasons. In gamified assessments, candidates are screened based on their skills and characteristics rather than irrelevant factors. This reduces stress and boosts confidence in the process. And, of course, playing a game is much more fun than going through traditional assessments.

Filip Saksida: That's a great point.

Respondent 3: Traditional assessments can take an hour or more—sometimes even four hours—while game-based assessments are usually super short but still produce the same, if

not better, results. So, overall, the candidate experience is better, faster, and more inclusive with gamified assessments.

Filip Saksida: Third question: Can gamified assessments increase or decrease unconscious bias in the hiring process?

Respondent 3: I think gamified assessments decrease unconscious bias in the hiring process, but there are some caveats. If you solely rely on the game-based results, it's pretty unbiased because there's no recruiter involvement. However, as soon as you enter that first call or interview, unconscious bias will come into play.

Filip Saksida: Yeah, I've heard people say that AI can be biased because humans made it, but do you think that applies to gamified assessments?

Respondent 3: Not really. I think gamified assessments are properly unbiased. They don't factor in cultural backgrounds—at least not in a biased way.

Filip Saksida: Humans are always going to be biased. So even if the gamified assessment is unbiased, once you reach the interview stage, bias might creep in. Would you still say gamified assessments reduce bias?

Respondent 3: Yes, they decrease bias to some extent, but you need to use them at the very start of the hiring funnel. If you introduce the assessment after the first interview, confirmation bias might kick in. If you already have an idea of a person and use the assessment to validate it, you're likely to continue with that person.

Filip Saksida: Fourth question: Do gamified assessments offer a better chance of employment for a candidate with no work experience?

Respondent 3: Absolutely. In gamified assessments, everyone gets a fair chance because work experience isn't taken into account. If you rely only on game-based tests, it levels the playing field.

Filip Saksida: Great. Now, the final question is: What are the benefits of using gamified assessments at a company level?

Respondent 3: For recruiters, it drastically reduces the time to hire. You only end up interviewing high-quality candidates with high potential. This improves the quality of interviews and saves time. Those are the main benefits: cost-saving and time-saving.

Filip Saksida: Amazing. We're already done! Thanks for your time, Respondent 3. I'll stop recording now.

Respondent 3: Hope I was of help.

Appendix 10: Transcript of the interview with respondent 4 (candidate)

Filip Saksida: Respondent 4, thank you for joining me today. I didn't send the questions beforehand, but it's really about your perception of gamified assessments and how they compare to traditional recruitment processes, where it's just a CV and a motivational letter. I want to hear about your experience from the candidate's perspective. So, question number one: Do you think gamified assessments evaluate candidate skills and behaviours more accurately than non-gamified ones?

Respondent 4: I would think so, yes. I haven't really gone through an application process without gamified assessments, but I've done them in general. I think the biggest benefit of gamified assessments is that you're distracted from the fact that it's an assessment. With non-gamified assessments, it's usually pretty clear what they're measuring—whether it's numbers or words. But with gamified assessments, it's harder to tell because it doesn't feel like an assessment.

Filip Saksida: Right.

Respondent 4: I think that's the biggest advantage. You're less likely to do what you think the assessor wants because you don't know what they're measuring. Maybe for problem-solving games, it's obvious—you just solve the problem as fast as possible. But for other aspects, not knowing what's being measured is an advantage.

Filip Saksida: So, would you say gamified assessments are more accurate compared to non-gamified assessments when it comes to assessing skills?

Respondent 4: Yeah, I'd say they're more accurate. On top of that, you're more likely to finish a gamified assessment because it's more fun. With non-gamified assessments, you might only get through them if you're good at them, so you end up with a biased view of what the average score is.

Filip Saksida: That's a very interesting perspective. You already touched on my second question, which is how does the candidate's experience with gamified assessments compare to non-gamified assessments?

Respondent 4: The candidate experience is definitely better. Like I said, you don't feel like you're being assessed. You're probably more involved and lose track of time, much like how playing video games feels shorter than taking an exam. Plus, if candidates expect a traditional assessment and get something gamified instead, they're likely to be pleasantly surprised.

Filip Saksida: Got it. Thanks. Third question: Can gamified assessments increase or decrease the effect of unconscious bias in the hiring process?

Respondent 4: It can definitely decrease it because you're looking at objective metrics that don't depend on the person's background. Bias is more likely to creep in through personal data, not the assessment itself. But one caveat is that the game has to be well-developed to account for factors like colour blindness or over-favouring candidates who play video games often. As long as the game accurately measures the skills it's supposed to, and isn't influenced by irrelevant factors, it can reduce bias.

Filip Saksida: I agree, especially when the assessments are scientifically backed to avoid those biases. Next question: Do you think gamified assessments offer a better chance of employment for candidates with no work experience or educational background?

Respondent 4: Yes, definitely. If a candidate doesn't have experience or a degree, gamified assessments measure their potential and cognitive abilities instead. For example, if there are 10 applicants, some with experience, candidates without experience might be at a disadvantage. But if the gamified assessment doesn't factor in experience, it levels the playing field, making it fairer for those without experience.

Filip Saksida: Thanks for that. Last question: What are the benefits of using gamified assessments over non-gamified ones at the company level?

Respondent 4: For the company, it's more efficient because recruiters just look at the game scores rather than screening a bunch of CVs. It's also more objective. If two recruiters screen the same CVs, they'll likely have different opinions. That subjectivity isn't good for the applicant or the company. Gamified assessments give you objective data to base decisions on, whereas CVs are subjective—everyone has different opinions about companies and experiences listed on them.

Filip Saksida: So, gamified assessments help ensure you're making the right hiring decisions based on objective data rather than being swayed by someone's charm, for example?

Respondent 4: Exactly.

Filip Saksida: I definitely agree. Cool, we're done. Thank you so much, Respondent 4.

Appendix 11: Transcript of the interview with respondent 5 (candidate)

Filip Saksida: Okay, we're live. So I have five questions for you, and I want to hear your perspective on the recruitment process where gamified assessments were used—from your experience as a candidate. You can go as deep into the answers as you'd like.

Respondent 5: Perfect.

Filip Saksida: Let's start with question number one. Do you think gamified assessments evaluate candidates' skills and behaviours more accurately than non-gamified ones?

Respondent 5: Good question. I think if you compare it to traditional assessments, then yes, because it measures natural behaviour. You often don't know what's being measured, so there's less chance to manipulate your answers. So yes, definitely.

Filip Saksida: That was a very well-structured answer! Cool, we can move to the second question. How does the candidate's experience with gamified assessments compare to non-gamified assessments, in your opinion?

Respondent 5: I've gone through it once as a candidate, and after applying for many other jobs where you have to write a motivational letter and submit your CV, this felt much more seamless. It was surprising because it's an unexpected, new way of assessing candidates. The novelty lasts throughout the whole assessment. It's cool because you don't always know what's being measured. There's still some stress because you know you're being evaluated, but the way it was communicated—that it's about capability and not right or wrong—made it more enjoyable. Overall, I found it more interesting, though still a bit stressful.

Filip Saksida: Nice. Okay, question number three: Can gamified assessments increase or decrease the effect of unconscious bias in the hiring process?

Respondent 5: I believe they decrease it, especially if they're based on validated, scientific data and if all candidates are experiencing the same environment. That makes the assessment more objective. It removes the personal subjectivity that's present in traditional hiring—like how a candidate is presented or how their CV looks. With gamified assessments, that's gone, and in my case, that was necessary because I entered a sector with a completely different background. If you looked at my qualifications, I wouldn't have been the right fit, but the assessment gave me a chance, so for me, it definitely reduced bias.

Filip Saksida: Funny you mention that, because my next question ties into your answer: Do you think gamified assessments offer a better chance of employment for candidates without relevant work experience or an academic degree?

Respondent 5: Yes, if the assessment is focused on competencies or soft skills and is used at the beginning of the hiring process. It allows employers to look at a broader talent pool,

considering people they might have previously rejected. It worked out for me, so yes, it definitely offers better chances.

Filip Saksida: It definitely worked out. Awesome. We're flying through this. Last question: What are the benefits of using gamified assessments over non-gamified ones at a company level?

Respondent 5: From a candidate's perspective, it seems more forward-thinking in terms of how the company positions itself.

Filip Saksida: Right, and if you could put yourself in the company's shoes, what would the benefit be for the whole organisation?

Respondent 5: It helps expand the talent pool, attract unusual talent, and improve diversity. It also enhances the candidate experience—people enjoy it more. Gamified assessments allow for better screening of candidates and reduce screening time since you're not relying on resumes as much. Did I mention diversity? Yes, and efficiency too. Plus, there's the employer branding benefit—using gamified assessments makes a company look cool and forward-thinking.

Filip Saksida: I think you've highlighted two main things: employer branding and the impact on time to hire, talent pool expansion, and cost reduction in the recruitment process.

Respondent 5: Yes, absolutely. But it depends on how it's used. If it's just an extra step later in the process, candidates won't appreciate it. It only brings benefits if used at the beginning.

Filip Saksida: Makes sense. Awesome, we're already done. Thank you so much for your time and answers.

Respondent 5: Thank you for having me.

Appendix 12: Transcript of the interview with respondent 6 (user)

Filip Saksida: Good afternoon, Respondent 6. How are you doing?

Respondent 6: I'm doing great, thanks. How about you?

Filip Saksida: Can't complain. Thank you so much for joining me this evening on a Google Meet. As I said, it's going to be an interview with five questions. You can answer them as short or as long as you want to, and I really want to get your perspective from a hiring manager's point of view on the hiring process where gamified assessments were used. Does that sound good?

Respondent 6: Yeah, let's go ahead.

Filip Saksida: Question number one: Do you think gamified assessments assess candidate skills and behaviors more accurately than non-gamified ones?

Respondent 6: I'm not gonna lie, I've had my reservations for a long time, but I've done some research into the topic, and I am feeling very optimistic about the reliability of these tests when it comes to assessing skills. So I would say that I'm tilting towards agreeing with the fact that they can be more reliable if used appropriately and at the right stage of the hiring process.

Filip Saksida: What do you mean by "appropriately"?

Respondent 6: I feel like there's a lot of hiring managers that I've spoken to who tend to use these assessments at the wrong parts during the hiring process. And sometimes they already have certain preconceptions about the candidates upfront, based on their CVs, which then sort of messes with the results that we see in the candidate reports that come out of the assessments. So I think the key to success here is really looking at where you're using these assessments and determining whether they're adding value in terms of showing the right skills or whether they're just backing up your biases.

Filip Saksida: Solid point. Thank you. Second question: How does the candidate's experience with gamified assessments compare to non-gamified ones?

Respondent 6: Honestly, I've only seen improvements in feedback from candidates who have applied using game-based assessments. We used more traditional ones a few months ago, but then we made the switch. The candidate experience was pretty poorly rated with the traditional ones, and now we've seen a significant increase in satisfaction. Our current employees who applied through game-based assessments often mention that they really enjoyed the experience and that it stood out compared to other companies that use more traditional tests.

Filip Saksida: Amazing. Question number three: Do gamified assessments, in your opinion, increase or decrease the effect of unconscious bias in the hiring process?

Respondent 6: I think the answer to this question connects to what I mentioned at the beginning. It highly depends on which parts of the hiring process you choose to use them. If you use them at the very beginning as the first screening, which is what we do, I feel like they have extremely high potential to reduce unconscious biases and help make more objective hiring decisions. However, if assessments are used at the end of the hiring process, then as I mentioned before, there's a higher likelihood that these results could feed into your existing biases. For example, if you believe someone is great at problem-solving based on their CV but the game results suggest otherwise, you might be more inclined to trust your initial opinion.

Filip Saksida: Solid point.

Respondent 6: Sorry, there's something in my throat.

Filip Saksida: No worries. Question number four: Do gamified assessments offer a better chance of employment for candidates with no work experience or academic background?

Respondent 6: Definitely. I think we've seen this from our own talent pool and the people we've hired. We've made several hires without prior job experience, which used to be a very important criterion when screening candidates, and these employees are honestly outperforming others. So I'm very hopeful about what this means for the future.

Filip Saksida: Amazing.

Respondent 6: Yeah, it's been really interesting to see.

Filip Saksida: And the last question: What are the benefits of using gamified assessments over non-gamified ones at the company level?

Respondent 6: I think it introduces more diversity in terms of cognitive skills and behaviors. It builds a company culture where every new person adds value to what is already there.

Filip Saksida: Right, right. So it's more about adding to the culture rather than fitting into it?

Respondent 6: Yes, precisely.

Filip Saksida: Interesting. Thank you so much for your time, Respondent 6. This has been extremely valuable and insightful. I really appreciate you taking the time to do this.

Respondent 6: You're welcome. Have a nice evening.

Filip Saksida: You too. Good luck with everything.

Respondent 6: Take care. Bye.

Appendix 13: Transcript of the interview with respondent 7 (user)

Filip Saksida: Hi Respondent 7, so I have five questions prepared, and thank you very much for taking the time to do this. These questions are really about your perception of using gamified assessments in the hiring process from the perspective of a hiring manager. I know you've also gone through it as a candidate, but I'd like to focus on your experience as a hiring manager. Let's kick off with the first question.

Respondent 7: Sure, go ahead.

Filip Saksida: Do you think gamified assessments assess candidates' skills and behaviours more accurately than non-gamified ones?

Respondent 7: Yeah, in general, I think they do. The gamified elements take away some of the social desirability that often comes up when candidates try to show the skills I'm looking for as a hiring manager. For example, if I list "collaboration" as a required skill in a job description, people will likely answer accordingly in a traditional assessment or interview. In a game, however, it's less obvious and harder to manipulate, depending on the game design. So yes, it has the potential to be more accurate.

Filip Saksida: So you're saying that traditional assessments are more prone to socially desirable answers?

Respondent 7: Yes, definitely. But it's not just traditional assessments—it also happens in interviews. If I ask someone, "Do you like working with others?" they're unlikely to say no. For the marketing role I'm hiring for now, I want someone who works well with a team, and that's clear in the job description. However, candidates can still present themselves differently from who they really are.

Filip Saksida: Nice, let's move on to the next question. How do you think candidates' experience with gamified assessments compares to non-gamified assessments?

Respondent 7: Well, since we only use gamified assessments now, candidates often tell us they've never seen anything like it before, and they usually like that. They also appreciate getting their own scores back, and many recognize themselves in those scores. Overall, candidates find the process new, cool, and less intrusive, making it a more enjoyable experience.

Filip Saksida: Awesome. Next question: Can gamified assessments increase or decrease the effect of unconscious bias in the hiring process?

Respondent 7: It can go both ways, but generally, gamified assessments tend to decrease unconscious bias. They're less prone to social desirability and cultural differences, and they're less likely to be misinterpreted. It also depends on the validation of the assessment itself. However, it could still go both ways because it depends on how you use the outcomes.

For example, if I have a large sample size of employees, I can assess what skills matter most for a given role. If I don't have enough data, though, my assumptions about relevant skills might not be accurate.

Filip Saksida: Interesting take. I think you're right that these assessments can help guide interviews by providing an objective starting point for exploring a candidate's skills.

Respondent 7: Absolutely. If a candidate scores well on problem-solving, for example, I can explore that more deeply in the interview. And if someone scores poorly on collaboration but I think it's crucial for the role, I can ask them to explain a situation where they collaborated successfully. It allows us to start the conversation more objectively.

Filip Saksida: Agreed. Now, on to the next question: Do you think gamified assessments offer a better chance of employment for candidates without relevant work experience or a university degree?

Respondent 7: Yes, for sure. We're all looking for top performers, and science shows that this has more to do with competencies, which can be measured. If you only look at a CV from someone without work experience, what can you really evaluate? A CV doesn't tell the full story.

Filip Saksida: That's a great point. Sometimes, what's on a CV is irrelevant and can even be a distraction. For example, if someone lists that they've played the clarinet for eight years, is that a sign of a top performer?

Respondent 7: It could be, but not necessarily. It might show consistency, but it's easy to get caught up in irrelevant details and make wrong conclusions. If I hire someone who's great at their job and who also happens to play the clarinet, I might falsely assume that there's a connection between the two.

Filip Saksida: Exactly. Now for the final question: What do you think are the benefits of using gamified assessments versus non-gamified ones at a company-wide level?

Respondent 7: Gamified assessments are a tool—they're not a solution on their own. But they should be part of the toolbox to help place people in the right roles. A good gamified assessment is objective and helps break down barriers that many minority groups face in the job market. If used correctly, they can help a company build a more diverse workforce, which brings new perspectives and energy. The long-term business impact can be significant, but only if the assessments are used properly. Otherwise, it could just be a branding stunt.

Filip Saksida: That's a great conclusion. Thank you for your time, Respondent 7.

Appendix 14: Transcript of the interview with respondent 8 (user)

Filip Saksida: Hi Respondent 8, let's dive in. As I said, there will be five questions regarding gamified assessments in the recruitment process from your perspective as a hiring manager. So, first question.

Respondent 8: Yeah.

Filip Saksida: Do you think gamified assessments assess candidates' skills and behaviours more accurately than non-gamified ones?

Respondent 8: Short answer, yes. With gamified assessments, you get a more natural and objective picture of candidates, which is what I value the most compared to CVs or work sample tests. With traditional assessments, candidates might use AI or provide socially desirable answers, trying to guess what you want to hear rather than showing their true behaviours or experiences. Gamified assessments help eliminate that, offering a more well-rounded and natural view of the candidate.

Filip Saksida: That's a great answer! Very well articulated. Let's move on to the second question: How do you think candidates' experiences with gamified assessments compare to non-gamified ones?

Respondent 8: I would hope they're less stressful. As a candidate myself in the past, I've found traditional assessments, like numerical reasoning or personality tests, quite stressful. You know there's a right or wrong answer, and that pressure builds up. With gamified assessments, the idea is to test your behaviour and cognition—more about potential rather than finding the "correct" answer. So I hope it's less stressful and more engaging. From my experience asking candidates, they generally respond more positively to gamified assessments.

Filip Saksida: Definitely. People tend to enjoy games more than traditional assessments, even if it's part of a hiring process. Also, as you mentioned, there's no clear benchmark to compare against, since traditional assessments are so standard. Anything different is likely to feel better.

Respondent 8: Exactly. It's hard to measure against something so typical and ingrained. You can score above or below that baseline, but it's difficult to directly compare them.

Filip Saksida: Next question: Can gamified assessments increase or decrease the effect of unconscious bias in the hiring process?

Respondent 8: My default answer would be that they decrease unconscious bias, especially when it comes to demographic data. Many applicant tracking systems now blind CVs to hide personal details, and gamified assessments remove even more bias. They don't consider factors like university degrees, age, or work experience. However, biases can still creep in

when interpreting the results. For example, if someone scores low on problem-solving, they might be disqualified quickly, even though they could demonstrate those skills in other ways.

Filip Saksida: Great answer. Let's move to the next one. Do you think gamified assessments offer a better chance of employment for candidates with no work experience or university degree?

Respondent 8: Yes, absolutely. If you remove work experience and degrees from the equation, candidates can't be judged on them. Using gamified assessments as the first touchpoint or data collection method gives candidates a better chance. Of course, there's a separate question about how much relevant experience or a degree might shape their behaviour, but at a surface level, it definitely offers a fairer chance.

Filip Saksida: Awesome. Last question: What are the benefits of using gamified assessments over non-gamified ones at the company level?

Respondent 8: At a company level, I'd hope it promotes fairness by ensuring that every candidate is assessed equally. This could create a more cohesive company culture, knowing that everyone went through the same process. Another benefit would be diversity of thought, since you're not just hiring people based on their degrees or experience from the same institutions. In terms of numbers, gamified assessments could increase efficiency. Recruiters wouldn't have to sift through as many CVs, allowing them to focus on candidates with the right potential faster.

Filip Saksida: That was quick! We're already done. Thank you so much Respondent 8, it was a pleasure talking to you.

Respondent 8: Glad I could be of help.

Appendix 15: Transcript of the interview with respondent 9 (user)

Filip Saksida: This will take about 10 to 15 minutes. Thanks for joining me. This is really about your perspective on the usage of gamified assessments in the hiring process from your eyes as a hiring manager. You can answer the questions as briefly or in as much detail as you'd like. Let's get started with the first question.

Respondent 9: Sounds good.

Filip Saksida: Do you think gamified assessments assess candidates' skills and behaviours more accurately than non-gamified ones?

Respondent 9: It depends because there's a wide variety of non-gamified assessments. For example, do I think gamified assessments measure skills and behaviours better than a CV? Absolutely. CVs are not great at measuring those things—they're more for measuring experience. Gamified assessments are better at assessing skills and behaviours, but if you compare them to something like an interview, especially a case study in a specialised role, interviews might be better for that. That's why I view gamified assessments not as a full replacement, but as an additional tool in the hiring process. For example, starting with a gamified assessment and then using an interview to dig deeper into specific skills or behaviours.

Filip Saksida: I agree. There's no replacement for the interview, but having a gamified assessment complements the process and makes it more accurate. Awesome. On to the second question: How does the candidate's experience with gamified assessments compare to non-gamified assessments, based on what you've seen?

Respondent 9: From the feedback we've received, most candidates prefer gamified assessments, especially in the first screening step. There's a lot of fatigue with CVs and the repetitive information candidates are asked to provide. Cover letters are also time-consuming and tiring. So, as an initial point of contact, candidates generally enjoy gamified assessments more. However, we've found that when we introduce gamified assessments later in the process, it can cause some confusion, especially if the candidate has already gone through an interview. So, it depends on how you use them, but overall, candidates seem to prefer the experience.

Filip Saksida: Thanks for that. Next question: Can gamified assessments increase or decrease unconscious bias in the hiring process?

Respondent 9: That's an interesting one. I think, initially, they can decrease bias, especially if you anonymize the process. By focusing on skills like problem-solving, flexible thinking, and teamwork, and quantifying those into numbers, you're removing biases related to education, nationality, or gender, which are more prominent in CVs. Reducing candidates to numbers may sound impersonal, but it's a fair way to assess them. That said, bias can creep

back in when you reintroduce elements like interviews, but using gamified assessments as an initial sifting tool helps reduce unconscious bias.

Filip Saksida: Agreed. Moving on, do you think gamified assessments offer a better chance of employment for candidates with no relevant work experience or university degree?

Respondent 9: Yes, absolutely. As I mentioned earlier, anonymizing the process and measuring someone's actual skills helps eliminate bias. Many companies tend to favour candidates from their own university or alumni networks, which introduces unfair preferences. Gamified assessments level the playing field by focusing on the candidate's abilities rather than their background.

Filip Saksida: Great. Last question: What do you think are the benefits of using gamified assessments over non-gamified ones at the company level?

Respondent 9: The biggest benefit is efficiency—it's much faster to sort through gamified assessment profiles than to read through CVs or cover letters. That's a major cost-saver. Another benefit is that gamified assessments boost your company's reputation, which can attract more candidates to your talent pool. In the long run, I think gamified assessments help make better hiring decisions, leading to a stronger team. But that's harder to measure concretely.

Filip Saksida: Awesome! Thank you so much for your time and answers. I'll stop the recording now.

Appendix 16: Transcript of the interview with respondent 10 (user)

Filip Saksida: Hi Respondent 10, thanks for joining! As I said, this is really about your perspective on using gamified assessments in the hiring process through your eyes as a hiring manager. So without further ado, let's jump into it. First question: Do you think gamified assessments assess candidates' skills and behaviors more accurately than non-gamified ones?

Respondent 10: In general, yes. What has been proven about gamified assessments is that they reduce a certain level of social desirability, and they're more fun. When people are more engaged in an assessment, they tend to behave closer to their natural behavior without overthinking. So overall, yes.

Filip Saksida: Nice, short, and sweet! There's no right or wrong answer, so feel free to elaborate as much as you like. Moving on, how does the candidate's experience with gamified assessments compare to non-gamified assessments?

Respondent 10: I think it depends on individual preferences. Some people may prefer the more traditional numerical tests, but overall, gamified assessments are seen as more fun and lead to a better candidate experience. It also depends on the role you're recruiting for. For example, open-minded candidates may appreciate something innovative like a game-based assessment, while others might prefer the traditional format because they can practise for it. Based on the research I've read, gamified assessments tend to have higher ratings in terms of candidate experience.

Filip Saksida: How about in your personal experience?

Respondent 10: In my experience, hiring for sales roles, I've always received positive feedback from candidates. Salespeople tend to be open to new things and experimentation, so they generally enjoy the process. I've seen good candidate experiences with gamified assessments.

Filip Saksida: Awesome, let's move on to the next question. Can gamified assessments increase or decrease the effect of unconscious bias in the hiring process?

Respondent 10: It depends on when in the process you use them. I usually use them at the beginning, which helps create a clear, objective image of the candidate. In that case, it decreases unconscious bias because we rely less on the resume. However, if you introduce the assessment later, after forming an opinion about the candidate, it might actually increase bias if the test results don't match your initial impression. For me, using it as a first step helps me stay more objective.

Filip Saksida: Love that answer. We're moving through these quickly! Next question: Do you think gamified assessments offer a better chance of employment for candidates with no relevant work experience or university degree?

Respondent 10: In general, yes. It's easier for hiring managers to identify candidates with the right skills and intelligence, even if they lack work experience or a degree. Again, it depends on how you use the gamified assessment. If you focus heavily on the resume, it might not make a huge difference. But using a gamified assessment allows us to look beyond work experience, which is particularly helpful in sales roles where flexibility, multitasking, and performance under pressure matter more than experience. Long answer short: Yes, candidates without work experience or a degree have a better chance when gamified assessments are used.

Filip Saksida: I agree, especially for sales roles. Skills like flexibility and communication are key, and you can't always gauge that from a resume. Last question: What are the benefits of using gamified assessments at the company level from a strategic point of view?

Respondent 10: Good question. From a company perspective, gamified assessments allow for more reliable results, contributing to hiring the best people for the job. It also makes the recruitment process more efficient, especially for companies with high application volumes. Sorting through resumes is time-consuming, so gamified assessments can optimise the process and reduce costs. Additionally, it helps with diversity and inclusivity goals, as gamified assessments provide a more objective measure of candidates, contributing to a more diverse workforce. So, I'd say the main benefits are better hires, efficiency, and diversity.

Filip Saksida: Amazing answers. Thanks so much! I'll stop the recording now.