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The Applications of Gamification in Human Resource Management

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*You don't build a business. You build
people, and people build the business.*

Zig Ziglar

Abstract

Gamification is the process of incorporating game-like components and mechanics into non-game environments, such as work processes, educational programs, or consumer interactions. These components and mechanics include points, prizes, challenges, and feedback mechanisms. By making tasks or experiences more pleasurable and participatory, gamification seeks to enhance engagement, motivation, and behavior change. Human resources, marketing, education, healthcare, and consumer interaction are just a few of the fields and uses where it is applied. Gamification can be used in a variety of contexts, such as in physical interactions, web-based platforms, and mobile applications. The degree to which gamification is aligned with the target audience, the desired results, and the context in which it is employed determines how effective it will be.

Gamification can possibly be utilized in the context of human resource management to enhance a number of HR procedures, including hiring, on-boarding, training, performance management, and employee engagement. Gamified training programs, for instance, can improve learning and information retention while attracting and identifying eligible candidates who have the required skills and abilities. Gamification may also be used to motivate staff members and honor their accomplishments of particular milestones or goals. Employee engagement and motivation may rise as a result, improving output and elevating work satisfaction.

Organizations must take into account a number of criteria, though, in order to properly apply gamification. First off, the game mechanics and components employed should not be seen as trivial or frivolous and should be in line with the organization's goals and culture. Second, gamification should support existing HR procedures rather than take their place. The ethical ramifications of gamification, such as the possibility of leveraging employee data for commercial gain, must also be taken into account by businesses.

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**Woman
Life
Freedom**

Aryan Zabihi, Rome, June 2023

...In the light of Kian Pirfalak¹

¹a brilliant youngster who believed in the rainbow deity and murdered by IRGC.

Chapter 1

Definitions

1.1 Human Resource Management and Industry 4.0

Human resource management is described as a strategic approach to the successful hiring and development of a highly devoted and competent personnel in order to fulfill the company's goals. Since its inception in the early 1980s, the deployment of human resources, as well as the recruiting, selection, staffing, retention, and release of personnel, have been critical aspects of this idea. Another critical duty is employee development, sometimes known as human resource development.

This role substantially impacts organizational growth and consequently the present and future performance of any company by focusing on all activities affecting professional education, learning, and training of individuals and teams. Hamlin and Stewart conducted an extensive literature review and derived the following main goals for human resource development:

- Improving individual / group effectiveness and performance
- Improving organizational effectiveness and performance
- Developing knowledge, skills and competencies
- Enhancing human potential and personal growth

Thus, the three main functional areas of human resource development can be defined as personal development (competencies), team development (collaboration) and organizational development (structure and processes). The identification of necessary competences is a precondition for creating a workforce that will satisfy current and future market demands. Competencies are the collection of information, skills, attitudes, and motivations that a person requires in order to successfully complete tasks and problems linked to their line of work. The majority of authors divide competences into four groups. Technical competencies are all knowledge and abilities that are relevant to a particular task, whereas methodological competencies are all knowledge and abilities that are related to decision-making and general issue solving.

Thirdly, social competences include all knowledge, expertise, and attitudes that support cooperation and interpersonal communication. Personal competences may encompass a person's values, motivations, and attitudes. On the other hand, qualification is the process of acquiring the necessary set of competencies through education and training.

Qualification and competency development interact in a continual improvement cycle. While competence development aims at developing essential abilities and, as a result, helps identify crucial gaps, qualification's goal is to address such gaps. A competency model can be used to improve the transparency of this process. The development of a competency model entails three critical steps: identifying new challenges, deducing competencies to meet those challenges, and visualizing required competencies using a suitable tool.

The fourth industrial revolution is a common term used to describe Industry 4.0. The term Industry 4.0 refers to the process of digitizing all aspects of the value chain in order to connect people, things, and systems through real-time data interchange. Because of this interconnectedness, products, machines, and processes are given artificial intelligence and are given the ability to independently adapt to unforeseen changes in the environment.

Intelligent components also integrate with larger systems, facilitating the development of adaptable, self-regulating industrial processes. Although there are many applications for smart systems and objects, the industrial sector continues to get the majority of attention. Industry 4.0 offers businesses an abundance of new prospects, but it also presents a number of difficulties due to the continuous automation and digitization. The PESTEL framework is used in the following chapters to assess macro-environmental concerns while taking into account political, economic, social, technological, environmental, and legal variables.

Economic challenges: Companies have to cope with shortened product lifecycles, quicker time-to-market, and the requirement to lower costs in order to remain competitive as a result of the continuous globalization process. While traditional company models are more easily exposed to replacements, businesses must simplify their innovation processes and shift to a more service-oriented business model. Additionally, customers now want a greater degree of customization and flexibility. Markets have gotten more unpredictable and diverse as a result. Collaboration is therefore more essential than ever before. In order to remain competitive, businesses must increasingly form strategic partnerships with their suppliers or rivals. This ultimately results in the correlation of whole value chains, which raises the complexity of operations.

Social challenges: The demographic shift is one of the social concerns that has the most impact. To replace those who are retiring, fewer young people are joining the workforce. Thus, it is necessary to establish techniques that attract in fresh talents while preserving the expertise of more experienced workers. Younger generations also reflect opposing societal ideals, such the increased significance of a healthy work-life balance. This is related to the expanding employee flexibility brought on by changes in workplace structures. To ensure that workers' personal lives and work lives do not conflict, restrictions on employees' constant availability must be put in place. Innovative forms of lifetime learning are also necessary because of the rise in virtual work and flexible work issues. Processes are also growing more complicated, which results in a loss of employment needing lower credentials, and a rise in occupations requiring higher degrees. Therefore, businesses must prepare their staff for higher-level, more strategic, coordinated, and creative work.

Technical challenges: A significant volume of data (big data) must be handled by businesses in a successful way due to the exponential rise of technology. As a result, complex IT infrastructures including communication networks and internet protocols must be created and put in place. It is also essential to create open architectures that enable collaborative work across many platforms in order to ensure the trouble-free sharing of data between partners within a network. Large data

storage on external servers creates an extra cyber security issue since data must be secured against unwanted access. Employees need to continue learning in order to be ready for the rise in virtual work, such as using virtual glasses.

Environmental challenges: The ongoing climate change is one of the major environmental challenges. The environment in biospheres is always changing, and this has an effect on every living thing that lives there. The optimal use of natural resources is even more important because the majority of them are limited. Companies now understand their part in advancing sustainable solutions as a consequence.

Political and legal challenges: The growing demand for finance for research projects is the most apparent political problem. Governments must help organizations both in the creation of new technologies and in their assimilation into the current environment. Governments must also set legal guidelines for the use of big data. The protection of privacy is the main issue since, while using smart things, data will be gathered on everything. To further increase employee protection, restrictions for work hours and safety must be put in place.

Human resource management is changing dramatically as a result of Industry 4.0. Human resource managers must identify the new skills and competences necessary for the digital era and create training programs to guarantee that staff are ready for the changing nature of work. Recruitment and selection procedures must also evolve in order to take use of new technology and platforms for discovering and recruiting qualified applicants.

For performance management and real-time feedback, data analytics is becoming increasingly vital. Human resource managers must use data to monitor and assess employee performance, as well as to give focused feedback and growth opportunities. Furthermore, employee engagement and retention tactics must evolve in response to employee worries about the influence of automation and digital technologies on their work.

In order to make sure that companies have the proper people to address both present and future demands, long-term workforce planning strategies must be devised. To maximize the potential provided by Industry 4.0, HR managers must adopt a proactive strategy for workforce planning and modify their procedures.

For HR managers to successfully traverse the fast changing digital world, they must embrace change and modify their human resource management strategies. By doing this, businesses may succeed in the age of Industry 4.0 by attracting and keeping top personnel, enhancing performance, and increasing productivity.

1.2 Gamification Theory

The concept of gamification is based on, and links with, a range of theories including those of behavioral economics, human psychology, learning and development, motivation, fun, performance, communication, team-working, problem-solving, risk-taking, decision-making, job design, trust, and flow. Gamification of real-world objectives, when done correctly, can connect with untapped player potential to boost performance and engage employees in ways that produce an exponential win-win for individuals and organizations. Gamification incorporates aspects and approaches from so many fields, including games, play, behavioral science, and motivation, that it makes sense to start with the fundamentals and work our way up to a practitioner-friendly definition. Nevertheless, before we define gamification, we must first define the other words.

1.2.1 Play

Play is a form of manipulation. Gamification incorporates aspects and approaches from so many fields, including games, play, behavioral science, and motivation, that it makes sense to start with the fundamentals and work our way up to a practitioner-friendly definition. Nevertheless, before we define gamification, let us define the other words.

There are no rules, no goals, and no real-world outcomes in play. The activity itself serves as the goal; it is autotelic. Yet, play is not limited to humans; animals also engage in it.

Dutch historian Johan Huizinga In his 1938 essay "Homo Ludens" state: Play is older than culture, for culture, however inadequately defined, always presupposes human society, and animals have not waited for man to teach them their playing. We can safely assert, even, that human civilization has added no essential feature to the general idea of play. Animals play just like men.

1.2.2 Game

A game is a problem-solving activity, approached with a playful attitude (Jesse Sechel). Games have rules and goals (they help solve a problem), but do not have a direct real-world outcome. Although it may give me a better understanding of how the real world works. Games can take many different forms. Sports, tabletop games, video games, role-playing games, business games, and simulations are the categories that academics have established. There are subcategories inside each of these categories. While some are somewhat abstract, others are really close to real-world situations. In his philosophical book Finite and Infinite Games, James P. Carse, Professor Emeritus of History and Literature of Religion at New York University, discussed some other crucial aspects of games. First, games must have players. Second, those players must choose freely to play. Whoever must play, cannot play. Third, games have a space where they take place. This can be a soccer field, a chessboard, or an online virtual world, to name a few examples. Fourth, games must have rules. Players need to accept the rules when they enter the game space. Fifth, games can be finite and infinite.

Serious Game

A serious game is a game designed with a primary purpose other than pure entertainment, such as education, training, health, advertising, or public policy. Serious games combine the engaging and interactive nature of video games with educational or informational content to create an effective tool for learning, training, and social change. What distinguishes a serious game from a non-serious game is an indirect “real-world” outcome. Serious games, on the other hand, try to emulate reality. Serious games teach you a skill, task performance, or cognitive decision-making that is applicable to real-world situations. A serious game, on the other hand, is a problem-solving activity based on a model of, and indirectly related to, the reality that is tackled with a lighthearted mindset. A serious game is a problem-solving activity built on a model of, and indirectly connected to, reality, approached with a playful attitude.

Game and Simulation

A simulation is something that has been specifically created to appear, feel, or act like something else. Games are often intended to be entertaining and interesting, and they frequently include competitiveness, strategy, and skill-based tasks. They can be played for fun or to hone certain skills like problem-solving, hand-eye coordination, or teamwork. Video games, board games, card games, sports, and other types of entertainment are all examples of games.

Simulations, on the other hand, are intended to mimic or simulate real-world circumstances, typically for training or educational purposes. They can be used to instruct people in specific skills or to mimic complicated systems, such as a flight simulator or a simulation of city planning. Simulations can be computer-based or physical, with varying degrees of detail and realism.

1.2.3 Gamification

Gamification is a process of enhancing a service with affordances for gameful experiences in order to support the users’ overall value creation (Kai Huotari, Juho Hamari).

In another way the use of game design elements in a non-game context. Gamification is the use of game-thinking and game mechanics in non-game contexts in order to engage users and solve problems.

Enterprise Gamification

Enterprise Gamification is an empathy-based process that introduces, transforms, and operates a service system with affordances for gameful experiences to assist players’ overall value creation while indirectly supporting an entity’s overall value creation. Or, in a lighter, more palatable version: Enterprise Gamification empathizes with people by incorporating game-like experiences into work and life, assisting them in fulfilling their interests and goals to the benefit of all parties concerned.

Gamification does not have the luxury of developing its own game dynamic. Finally, gamification must follow the logic and dynamics of the underlying business process. We are not starting from scratch. Gamification is frequently bolted onto a system. We consider ourselves fortunate when we are able to manipulate the system. We rarely construct from the ground up. These are the constraints we work under and that guide us.

Defining the Criteria

Gamification does not have the advantage of developing its own game dynamic. Finally, gamification must follow the logic and dynamics of the underlying business process. We are not starting from scratch. Gamification is frequently bolted onto a system. These are the constraints we work under and that guide us.

Enterprise

A corporation, association, non-profit, school, community, family, or society is considered an enterprise. In other words, any organization founded to pursue goals that an individual could not accomplish alone, and where collaboration or cooperation - as opposed to competition - is essential.

Player

Employees, third-party employees (such as vendors or contractors), customers, and members of the public, community, or society are all possible players. Design Thinking and other innovative techniques have introduced the concept of empathy to creativity. Empathizing with a player's frustrations with a product or service has evolved into the foundation of developing better products and services. Because understanding the motivations of players is critical to the success of gamification, gamification designers must take an empathetic approach. Gamification designs that blatantly focus on punishing players for undesirable behaviors, or that neglect player dimensions and set players against each other, fail to comprehend the players and their motivations and instead focus solely on what management desires. This is a certain method to fail when using gamification. Not attempting to understand the motivations of players is disrespectful to the players and will not result in a gameful experience that provides value for the players or the entity.

Collaboration

We never play alone because we are playing. We can play against other people or entities, beside them without interacting, or as an entity. When talking about games and gamification, the most prevalent reaction is that this is all about competition.

Simultaneity

It is not necessary for all players to play at the same time. It is possible that they are playing at the same time, but frequently players and their entities played some time ago, which could even extend to situations where players participated many years ago and stopped when their achievements, or more precisely their titles, are being challenged, such as the competition to break a certain world record.

Value creation

Value creation is a key aspect of enterprise gamification. Traditionally, with the start of the industrial age, mechanization and division of labor have made us more efficient in production and value creation. Unlike non-gamification methods that have focused on creating value for the company, gamification focuses on creating value for the players. This is not to say that we do not need to

add value to the organization. That is still crucial, but the method to get there is to first create value for the players. According to this viewpoint, enterprise gamification is a strategic approach to creating value rather than a unique one. A gamified marketing campaign is one component of a larger gamification plan that must be integrated into an entity's total value creation. Finally, we want to build a house, not just a brick.

Longevity

Long-term and short-term gameful experiences must both serve long-term value generation for both players and enterprises, according to enterprise gamification. We already know that players in finite games will do whatever to conclude the game by achieving the winning condition. Finite games, when played repeatedly, have a propensity to produce disequilibrium in the players' skills. Master players will be so familiar with the game that they will be able to predict moves, removing the element of surprise. Infinite gamers keep playing in the hope of being astonished. All play comes to an end when surprise is no longer conceivable. To ensure long-term success of gamification, we must keep gamers engaged by surprising them.

Autonomy and Freedom

Such a holistic view of gamification in the enterprise will lead to larger disruption. Successful players change the balance of power and influence in an organization. After all, these players demonstrate their abilities, accomplishments, and progress in a transparent manner. The information is in the gamified system. Each player is given the authority to choose who leads the organization at any time based on their current achievements. Rules must alter over time in infinite games, which is what we aspire for in enterprise gamification. This also means that enterprise gamification participants will have greater freedom and autonomy. Although any organization has power, that authority does not exist without the implicit agreement of the players.

System

A system is the set of rules, mechanisms, and components that comprise a game or gamified experience. This system is intended to provide a specific user experience while also achieving certain goals such as improving engagement, motivation, or learning results.

1.2.4 Roles

- Game Designer: A game designer is a person who designs and creates a game. A game can be a video, social, board, sports, card game, and whatever game type you can think of. The main focus of a game designer is to create a fun game for the player.
- Gamification Designer: A gamification designer is a person who creates the design for a gamified system. This person must understand the problem, the players, what motivates them, which technologies to include, and what incentives and rewards to be used.
- team Player: A player is a person who plays the game or interacts with the gamified system. There is a very good reason why the term player should be preferred: it keeps a gamification designer focused on what are the fun elements for a player.

- Gamification Master: A gamification master is a person operating a gamified system, as well as monitoring and interacting with the player community. The tasks include running the gamified system smoothly, enforcing rules, discovering cheating and unintended consequences, creating missions and challenges, handling disputes, and giving feedback, amongst many others. Their task profile is comparable to game masters and community managers.

1.3 Gamification Area

Developers that merely wish to increase the usability of their programs. Community managers, such as those in charge of the SAP Community Network, intended to get community members to blog and publish more. Training department colleagues who were interested in making learning more exciting and pleasant. HR colleagues, who wanted to onboard new workers faster, have employees go through compliance training, learn about the company and its benefits, and take ownership of their careers. Marketing and Branding personnel that have already had some experience to gamification through previous entertaining initiatives. Finally, there were those who were curious about how to make events more enjoyable.

1.3.1 Similarities and Differences between Game and Work

When we take the popular game Angry Birds as an example, somebody watching us playing the game without actually seeing the game would consider this as pretty repetitive. After all, the task of slinging a bird to hit pigs boils down to sliding a finger from right to left. But in a game, even repetitive tasks can be very entertaining, while the opposite is mostly true with work.

The feedback received in a game comes from multiple sides: there are not only the points, badges, and stars, but also visual and audio feedback. The structures crumbling, the birds and pigs exploding, and balloons popping are the visual feast for the player's eyes in the game. Not to forget the audio feedback that players receive from explosions, cheering birds, scratchy leather sounds, and the pigs trash-talking the player when he failed the level.

The only audio feedback in business software comes when we do something wrong. Failure is another interesting area. Games are designed that in many cases players fail. Failing a level, characters dying, and loosing virtual goods are natural parts of the game that – as unpleasant as they are for a player – give valuable feedback about an approach or game strategy and make the player more skilled. Failure in a game is institutionalized; it is part of learning and becoming better.

In some games, failure is depicted so spectacularly that players have created their own subculture on most epic failures. This is in stark contrast to work or school. Failing is stigmatized, which deprives us from learning and the experience of risk-taking.

Game players have also more insight in how to level up or get promoted than an employee at work has. As an employee, we never know what qualifies us for getting promoted to the position of vice president or director. We also don't really know, how the people on these positions today actually got there. We know very well that the workplace is not a merit-based system. Even if we tell ourselves "you earn what you deserve" – after all that's the underlying mantra of a capitalist system – being promoted at work has often less to do with a job well done, but more with how well-networked somebody is. These similarities can bring us synergies if we bring them together. It's not just a one-way exchange where only work can profit from games. It also gives game designers a chance to

have a real-world impact.

1.3.2 Games Versus Gamification

Gaming and gamification are concepts that are connected but not the same. A game is a structured activity that is generally competitive and is intended to entertain, engage, and challenge players. Games have well-defined rules, goals, and consequences, and they usually include some form of feedback or reward system. In contrast, gamification is the use of game-like aspects and techniques in non-game situations such as education, marketing, or workplace training. It entails using game design ideas and techniques to engage and encourage people in non-gaming tasks. While games and gamification have certain similarities, they also have significant differences. Games are often stand-alone activities designed to be enjoyed on their own, but gamification is a tactic for increasing engagement and motivation in other activities. Another distinction is that games have distinct winners and losers, whereas gamification typically incorporates a more collaborative approach that rewards participants for meeting particular goals or milestones.

	Game	Work
Tasks	repetitive, but fun	repetitive, and boring
Feedback	constantly	once a year
Goals	clear	contradictory, vague
Path to Mastery	clear	unclear
Rules	clear, transparent	unclear, in-transparent
Information	right amount at the right time	too much and not enough
Failure	expected, encouraged, spectacular, brag about it	forbidden, punished, better not talk about it
Status of Users	transparent, timely	hidden
Promotion	meritocracy	kiss-up-o-cracy
Collaboration	yes	yes
Speed/Risk	high	low
Autonomy	high	mid to low
Narrative	yes	only if you are lucky
Obstacles	on purpose	accidental

Figure 1.1: Game vs Work

The Game Designers' Perspective

From the standpoint of a game designer, the goal would be to provide engaging, enjoyable, and rewarding gameplay experiences for players. be in charge of developing the game's mechanics, systems, and laws, as well as generating the content, stages, and story components that comprise the game world. However, gamification designers take a seemingly mechanistic approach by applying game design elements to business software, a website, or a process that is not in context. But, the end effect is far from resembling a gaming experience. This appears to be a misunderstanding of what a game is to a game creator.

The Gamification Designers' Perspective

A gamification designer's perspective would be focused on motivating and engaging people in non-game contexts using game design principles. The goal would be to incorporate game elements such as points, badges, leaderboards, and challenges to make tasks and activities more enjoyable and rewarding. Gamification designers would need to understand the target audience as well as the project's specific goals before designing game mechanics and systems that align with those goals. For example, if increasing employee productivity is the goal, they can devise a system in which employees earn points or prizes for completing tasks or meeting deadlines. Gamification designers must also take into account user motivation, engagement, feedback, and behavioral psychology. I would need to design a system that is simple to use and intuitive, while still tough and rewarding enough to keep consumers interested. Furthermore, designers must evaluate the efficacy of the gamification system and make necessary improvements to guarantee that it achieves the expected goals.

1.3.3 Leveling Up from Gamification to Enterprise Gamification

Gamification 1.0

Gamification 1.0 refers to the early stages of gamification, when the emphasis was on leveraging game features like points, badges, and leaderboards to inspire and engage people in non-game contexts. Because it largely relies on these two game features to drive user behavior, this method is commonly referred to as "pointsification" or "badgification." Gamification 1.0 was primarily focused with creating an environment of rivalry and status in users, as well as giving extrinsic rewards for performing tasks or meeting objectives. Users would be more motivated and engaged in their tasks if game elements were introduced into non-game contexts such as education or the workplace.

Gamification 1.0 deals mostly with gamification under the following conditions:

- Consumer-oriented: Driven mainly by entertainment and marketing, the typical user participated on a voluntary base in the game, and, depending on the domain, we saw a large variety of players. Soccer moms, TV show audiences, scavenger hunt participants, shopping and media websites, and so on.
- Insular: It's the one movie, the one product launch, and the one shopping site that is gamified, but not the overall experience for all parties involved.

- Not subtle: Badges are popping up everywhere, all the bells and whistles are shouting at you, and the system cries "GAME".
- Competition: Because of the common misconception that games are about competing, most gamified solutions reward competitive rather than exploratory or collaborative behavior.
- Extrinsic rewards: It's very hard to figure out the right way to appeal to and reward intrinsic values, especially when you deal with a very diverse crowd of users. That's why the easy and quick way has overwhelmingly been the use of extrinsic rewards.
- Fun and entertainment: Because of the focus on consumers as players, fun and entertainment are the center of the experience.
- Short-lived: Many examples were finite or failed to keep up interest and engagement over extended periods.

Nevertheless, the limits of this technique have grown increasingly evident as it became clear that after users had won all of the available rewards, they might quickly lose interest in the game mechanics. Furthermore, some users may believe that the awards are insignificant or do not adequately reflect their achievements.

Gamification 2.0

Gamification 2.0 is a more advanced and comprehensive approach to gamification that goes beyond the fundamental game mechanics of points, badges, and leaderboards. This method focuses on creating more engaging and meaningful experiences for users by utilizing a number of strategies like as storytelling, feedback, social connectivity, and personalization. Gamification 2.0 aims to create experiences that are more intrinsically motivating for users, meaning that the motivation comes from within rather than from external rewards or competition. This is accomplished by creating experiences that appeal to users' basic human needs, such as autonomy, competence, relatedness, and purpose.

During this phase, designs will transcend beyond simple rewards and unsubtle amusement.

- Employee-oriented: While a consumer has a choice to use a gamified application, process or website, an employee typically has no choice. The requirement of having to play can quickly turn pleasure from games into negative stress.
- Integrated: We will see a trend from isolated instances of gamified apps to an approach that considers most systems and processes. That also means that goals and reward systems need to be synchronized. The gamified applications shall work towards the same corporate goals. The reward systems must be balanced. If certain applications reward proportionally more points for relatively lesser work, the value system will be out of balance.
- Subtle: Instead of having blinking badges and points rolling up like a slot machine, the sustainable approach of using subtle, even often nearly unnoticeable game design elements will dominate, to cater to the more conservative users in the business world.

- Collaboration: Corporations and organization exist because people collaborating and cooperation can produce more than individuals working alone. Rewarding collaborative over competitive behavior will be the default for most domains.
- Intrinsic rewards: Short-lived gamification approaches will be too costly. A heavy focus on extrinsic rewards will not sustain a mid and long-term gamification strategy. Therefore successful corporations need to appeal to the intrinsic values of their workforce.
- Autonomy and mastery: Instead of career planning that gives false hope and the false intrinsic reward of climbing the career ladder, corporations will focus on enabling employees to achieve autonomy and mastery, as well as helping them see a clear path towards such goals.
- Data-driven: In order to achieve all the above-mentioned goals, data accumulated through gamified applications will become crucial. When you start tracking each and every activity of users, corporations will assemble a larger data set than any business transaction system will generate.

1.4 Success and Failure Rates

1.4.1 ROI-related Examples

LiveOps Inc.

which runs virtual call centers, uses gamification to help improve the performance of its 20,000 call agents, who are independent contractors located all over the U.S. The company began awarding agents with virtual badges and points for tasks such as keeping calls brief and closing sales. Leaderboards allow the agents to compare their achievements.

Results:

- Some agents have reduced call time by 15%
- Sales have improved between 8% and 12% among certain agents
- Reduced training from an average of four weeks to 14 hours
- Trained agents outperformed peers by 23% in call handle time and 9% in customer satisfaction

InvestorVille

Commonwealth Bank of Australia created a property investment simulation named InvestorVille. This is a virtual world where players can try their hand at investing in rental property, without the risk of actually buying one. The simulation is based on actual property data.

Results:

- The simulation generated about 600 loans
- 56,600 visitors, 13,660 registrants, and 34 home loan applications in the first six weeks
- Project costs for InvestorVille were around 400,000 Australian Dollars

Autodesk 3D

To help users learn about the software Autodesk 3D Max, the free trial onboarded the users. An intriguing story line was created with a reward system to incentivize users and understand the software fully. In-game benefits were coupled with a grand prize of a license to the Autodesk Entertainment Creation Suite Ultimate Edition 2013.

Results:

- 29% increase in channel revenue per trial start
- 54% increase in trial usage
- 15% increase in buy clicks

1.4.2 Training and Education-related Examples

MathLand

A special education teacher used game design elements to address problems that she had with students.

Results:

- MathLand led students to a 17% improvement in statewide assessment
- attendance increased by 13% in the first two years
- standardized test results moved upwards by 22% at the end of year three

AstraZeneca

Go To Jupiter is a game-based learning solution, used to teach 500 agents about a new medicine. AstraZeneca agents earned points to be the first to reach a Stadium, which represents the official launch event of the medicine and where agents, answering questions using a remote control, could earn additional points. In the web game, agents received points by answering quizzes and playing different mini-games focused on the features of the new product.

Results:

- high usage rates 97%
- Most of the agents were using the platform outside of their work time
- 95% of the users completed each teaching session

Deloitte Leadership Academy

Deloitte created a gamified training program called Deloitte Leadership Academy where learners are competing with peers to achieve their learning plans. The leaderboard was an important element, as it created a status-oriented competition amongst users inside the organization.

Results:

- 46.6% increase in the number of users that return to the site daily
- 36.3% increase in the number of users that return to the site weekly
- an average of 3 badges per active user
- top user has collected 30 badges in a few weeks
- after only a few weeks one user has earned the Leadership Academy Graduate badge which is expected to take 12 months to achieve

1.4.3 Healthcare and Wellness-related Examples

Gamification in Healthcare and Wellness has a huge potential to increase health and fitness, reduce medical costs, and make people happier.

PatientPartner

Is a mobile game app that aims to boost adherence to a treatment plan and take medications. When patients don't take their medications or adhere to a treatment plan, this has a negative outcome on the healing process and costs. Patients are asked to play the game for 15 minutes while waiting in the doctor's waiting room. The game unfolds by telling a fictional patient's health story, like a clinical case. Reminiscent of a Choose Your Own Adventure book — in a more interactive, engaging form — the player decides at critical points what to do about the game character's health.

Results:

- In one clinical study, use of the app increased medication adherence by 37%

Another trial resulted in:

- an increase of medication adherence from 58% to 95%
- diet adherence increased by 24%
- exercise adherence increased by 14%
- "HgbA1C" decreased from 10.7% to 9.7%

Blue Shield of California Wellvolution

Healthcare provider Blue Shield of California's Wellvolution (including Shape Up Shield and other programs) is an eight-week-long, social-media fueled challenge that uses an online platform to let employees form teams, post comments in forums, set team and personal fitness goals, and give virtual high fives for encouragement.

Results:

- In the past three years, ... 80% of Blue Shield employees have participated in at least one of its wellness programs
- During that period, there has been a 50% drop in smoking prevalence and a similar increase in regular physical activity among employees
- The incidence of hypertension has fallen by two-thirds, and disability claims are down among participating workers

1.4.4 Community-related Examples

SAP Community Network

The SAP Community Network (SCN) is a platform where SAP employees share news and updates about products and technology, and a place where customers or consultants go first when they encounter a challenge in an SAP project.

Results (after one month):

- activity increased by 400%
- activity generating points increased by 2,210%
- community feedback rose by 96%
- a total of 53,028 badges were earned

EMC2

Computer storage company EMC2 gamified their community with Badgeville.

Results:

- increase of 25% in reply to discussions (in the first 2 weeks)
- registration +3%
- page views +12%
- visits +10%
- unique visitors +10%
- created a document +9%
- replied to thread +15%
- file downloaded +10%
- videos watched +41%
- total activity +21%
- 2012 engagement +9%

1.4.5 ERP-related Examples

SAP ERP

A prototype for gamification using SAP ERP was introduced. The researchers evaluated the concept within a comprehensive user study with 112 participants, based on the technology acceptance model using partial least squares for analysis.

Results:

- tele-presence was improved by 29.75%
- interface improved by 23.4%
- flow improved by 30.353%
- enjoyment improved by 53.414%
- perceived ease of use improved by 36.123%
- perceived usefulness decreased by 3.03%

1.5 Challenges

In gamification, we examine a task by asking multiple questions. After all, the goal of gamification is to change behaviors and habits. Once we've identified that there is a behavioral problem to solve, we can proceed and follow a checklist like this one:

1. What is the mission?
2. What is the current behavior that we want to change?
3. Why do people show this current behavior?
4. What is the root-cause for this behavior?
5. What is the desired behavior?
6. Why do you want to change it?
7. Who's benefiting from the change?
8. How can the player benefit from the change?
9. Can the activity be learned?
10. Can feedback be given to the player in a timely manner?
11. Can the activity be measured?
12. What are the metrics?

1.5.1 The mission

Good company leaders do more than simply manage; they also plan ahead. What are the objectives for the coming period? Do we want to enhance revenue, improve employee training, improve quality, enter new markets, or eliminate waste? These goals may be more or less aggressive and reasonable, but someone must put statistics behind them and a deadline for achieving them. These high-level objectives must be broken down and personalized to each individual in the organization. However, breaking the goals down into smaller components may interfere with the aim. If the players lose sight of the bigger picture, they will rapidly get disinterested.

1.5.2 Current Behavior

To understand current company behavior, various elements that influence how firms operate nowadays must be considered. These are some examples:

Customers require businesses to create tailored experiences that fit their needs and preferences since they are more knowledgeable and connected than ever before. As a result, businesses are focused on strengthening customer connections and employing data analytics and AI-powered solutions to better understand and analyze consumer behavior. The use of cloud computing, IoT, and other digital technologies is changing the way businesses function. These technologies provide increased

agility, scalability, and cost-effectiveness, as well as assisting enterprises in using new technologies such as machine learning to improve business operations. Consumers are increasingly expecting that firms act in a socially responsible way and address social and environmental challenges. As a result, businesses are becoming more involved in promoting sustainability, decreasing carbon emissions, and supporting community activities. In today's global world, businesses face fierce rivalry. Businesses are focused on innovation, agility, and cost-effectiveness to stay competitive, as well as exploring new business models and income streams. Enterprises must also negotiate complicated regulatory systems and comply with a variety of legal obligations. This can be difficult for firms, especially those that operate in numerous jurisdictions.

1.5.3 Desired Behavior

Once the reasons have been determined, specifying the intended behavior makes it simpler to deal with the bigger issue. The CRM system needs the sales representatives to input more specific data. Easy? Wait a minute. That still doesn't explain how we can alter it or why we want to.

1.5.4 Change The Behavior

It should achieve the initial aims by converting the present behavior to the desired behavior. But if the objectives conflict with those of the individuals who should be working with you to achieve them, this is only an illusion. While the company's objective must be kept in mind, the explanation should concentrate on the participants' reasons for embracing and implementing such a change.

1.6 The User

When user experience designers seek to understand the problem and how to address it, they interview and observe users interacting with the software or tool in the real world. Normally, a small number of such user studies are conducted, which are then compiled into what is known as a Persona. A persona is a prototype user with various user attributes.

1.6.1 Player Type

- Killers are players who desire to battle with others, win over others, and let everyone know that they won. They are highly competitive and thus do not value collaboration.
- Achievers are gamers who want points, levels, equipment, virtual items, and anything else that provides them with a sense of progress and achievement. They will go to extraordinary efforts to obtain incentives, even if these do not aid in game success. They are motivated by the prestige and fun of owning those products. A certain type of achiever is even willing to spend considerable amounts of money on in-game purchases to gain products.
- Explorers are players who enjoy exploring the virtual world in its full extent. They want to explore every small detail of the globe and feel unfairly restricted when a game limits their options. Even if they have explored every corner of the game world, they can log in again and select a different player avatar to discover corners that can only be explored by this character.

- Socializers engage in gaming to interact with other people or computer-generated characters. The game itself is unimportant as long as it allows you to play with others.

1.6.2 Personality Type Models

Jonny Shaw from NakedPlay. Comand Chethan Ramachandran from Playnomics clustered players in eight distinct personality types:

1. Strategist: Diligent, proactive, solo players that like a lot of control over their environment and their play. Typical game: Minecraft. (32%)
2. Politician: Intuitive, proactive, social gamers trying to get ahead intuitively by adapting their life and people into activities. Typical game: Chore Wars. (22%)
3. Collectivist: Diligent, reactive, and social. They love badges. Typical game: Foursquare. (11%)
4. Competitor: Diligent, proactive, social players that are all about gaining respect, and beating the other player. (11%)
5. Soloist: Diligent, reactive, solo players. Typical game: Drop 7. (7.5%)
6. Socialite: Intuitive, reactive and social. Typical game: Draw Something (7% of all types)
7. Scientist: Intuitive, proactive and a solo player. Typical game: Cut the Rope. (6%)
8. Habitualist: Intuitive, reactive and enjoying solo play. These types seek receptive pleasure feedback, even to the point of overindulgence. Typical game: Slot machines. (5%)

1.6.3 Gender

Flurry, a big data and analytics company, estimates that 40% of traditional game players are female, while 53% play mobile and social games. Women represent an overwhelming number of players in social and mobile games. And that figure appears to be rising as the video game market shifts away from hardcore console games and toward social and mobile games. According to Trendstream's Tom Smith, women are particularly drawn to short, casual games with an active community, such as FarmVille or Pet Society.

Hilmar Nordvik and Benjamin Amponsah's research, as well as game designer Brenda Laurel's, resulted in a list of things that each gender prefers to see in games. Men, according to studies, prefer:

- Mastery
- Competition
- Destruction
- Spatial Puzzles
- Trial and Error

while women prefer:

- Emotion
- Real World
- Nurturing
- Dialog and Verbal Puzzles
- Learning by example

These distinctions explain why males never ask for directions (they prefer trial and error) and why a spatial problem like Foldit, a game that assisted scientists in folding DNA structures for finding treatments, may reject half of the prospective (and homosexual) players. Women, on the other hand, only appreciate mastery when it is meaningful. Nonetheless, they enjoy nurturing and being connected to the real world and emotions.

1.7 Game Mechanics and Game Rules

The complexity of a system is determined by how various game mechanics used in it interact with one another. The use of many game mechanics does not necessarily make the game complex, or give it more strategic depth. With just a few mechanics in use, inherent complexity and strategic depth can be achieved. For instance, chess is one of the most complex games despite having only a few rules and mechanics for how the pieces can move. Game rules are (printed) instructions that the player is aware of; game mechanics are hidden from the player.

1.7.1 Space

Every application takes place in some sort of environment. In games, this could represent a chess board, a soccer field, or the "Who Wants to Be a Millionaire?" TV studio. This is the community, the transaction screen, the conference hall, or the classroom in the gamification space. Furthermore, although some locations are quite real, others are more abstract and adaptable. The position of a player or game element can have a significant impact on the present state of the game and whether or not players are successful.

1.7.2 Objects, Attributes, States

Something must be present in order to fill a space with meaning. Typically, this is an object with at least one attribute and a current state. In Angry Birds, that would be one blue bird (the object) that has the ability to split into three birds (the characteristic) but has not yet done so (the state). A blog would be the object in a gamified community, with content, photographs, and videos as properties and comments and hits as states.

1.7.3 Actions

Actions are what a player does with the things in space. There are two types of actions. The operational acts, in which a player posts, shares, or modifies anything, and the resulting actions,

which are only significant in the context of the greater picture. The resulting actions are inextricably linked with the goals and define how the player uses the action to attain the goal. For example, you may blog about a specific topic every day to become a blogger of the week, or you could assist your support colleagues to reduce overall response times.

1.7.4 Goals And Goal Setting

While these are the rules that govern the game, gamification designers must not overlook the most crucial rule, which underpins all of the others: what problem are we attempting to solve? Issues necessitate a solution. The goal is to find a solution and solve the problem. And they must have three distinct characteristics:

1. Goals and problems need to be concrete. If goals and problems are vague, players don't know what to do.
2. Goals need to be achievable. If the goal is unrealistic, too difficult to achieve, or conflicting, players will become frustrated and stop playing.
3. Goals need to be rewarding, the solution to a problem satisfying. Keeping the player in the right balance between difficulty and player-skills may be already rewarding enough. But you may also want to add fun and pleasure to it.

1.8 Gamification Design Elements

1.8.1 Classification

Game design components can be classified into the following categories:

- Mechanics
- Dynamic
- Feedback
- Psychology
- Interface
- Aesthetics
- Motivation / Justification / Meaning
- Rule
- Game characteristic

Mechanics

Game mechanics are the systems and rules that govern how a game is played. They are the fundamental building blocks of a game that allow players to interact with the game world and each other.

Dynamic

Dynamics are results from the use of mechanics in game play. These might have either positive or negative consequences. If players bond after playing a game together, or if select players enjoy a better standing among their peers as a result of their successes, this dynamic is deemed beneficial. If the players refuse to complete duties due to a lack of rewards, the dynamics have shifted negatively.

Feedback

Feedback is given to players whenever they do or achieve something in a game. We examine how and in what form feedback is provided, as well as who provides it. Leaderboards, progress bars, badges, levels, status, chain schedules and contingencies, free lunch, virtual objects, progression dynamics, or rolling physical goods are examples of feedback components.

Psychology

Irrationality can be employed in a gamified system because, as scholars like Dan Ariely have demonstrated, irrationality can be predicted. When we do something frequently, we tend to do it again. We made and established a habit. We are like an item that is on its way and it is difficult to reverse its direction. After we've gotten the players to develop this habit, we may use behavioral momentum to make an application stickier. Yet, once the underlying causes for such behavior have faded, habits can lead to irrational behavior.

Interface

The interface is chosen - the device on which a gamified program may be accessed and played - determines game adoption. Player styles are preferences for how and where players want to interact, and providing a variety of options can lead to longer and more immersed play.

Aesthetics

How and when information is displayed to the player is a design decision. The cascading information theory provides the player with only the information required to complete the assignment. It is beneficial to maintain the player in the flow zone, according to Mihaly Csikszentmihalyi's Flow-theory. Too much information overwhelms gamers who don't have enough time or haven't yet mastered the necessary skills.

Motivation / Justification / Meaning

Eager optimism is a motivator for self-motivation. It is the urge to move quickly to overcome an obstacle, paired with the player's confidence that there is a realistic chance of victory. Self-motivation may also be a powerful force when people believe they are productive, autonomous, and creative in their work. The intriguing paradox is that working hard in a game might make you happier than doing nothing, especially if the task is worthwhile.

Rules

The purpose of rules in gamified systems is to give players structure, direction, and motivation. Rules are a crucial component of gamification because they enable players to have a consistent and clear experience, which can increase motivation and engagement.

Game Characteristic

A characteristic that creates a viral effect is one when the gamified application requires players to invite other players to complete the task or proceed to the next level.

1.9 Gamification Design Thinking

Design Thinking is an empathy-based approach to innovation that places the user at the center of improving a product, service, or process. IDEO, a design and innovation agency based in Palo Alto, pioneered Design Thinking. The design thinking process perfectly fits what we require for gamification design. We get extremely close to understanding the player's motivations by learning about the challenge, observing the player, and constructing a player's point of view. This foundation enables us to use aspects from our gamification toolbox to generate ideas for a prospective design, build a prototype, and test it with the player.

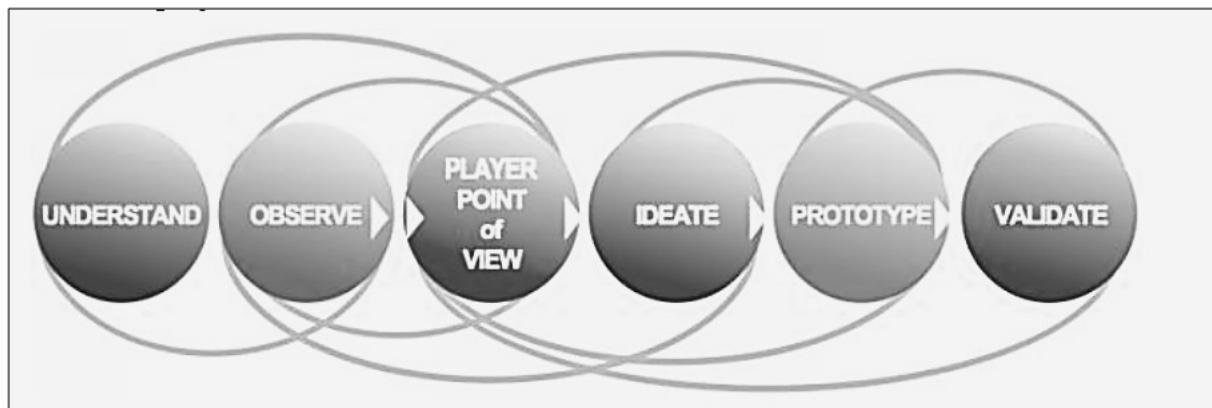


Figure 1.2: Gamification Design thinking

1.9.1 Understand

The initial step of knowing the problem ensures that we are not attempting to design a solution for the incorrect problem. Some of the stages to get a better hold on the underlying problem include asking the Five Whys, delving in to uncover the root-causes, and removing all causes that are not behavior-related.

Observe

Seeing players in their natural environment is the next step in gamification design thinking. Visit them at their workstation, travel in the passenger seat with them, and walk into the classroom. Take note of any sticky notes on the monitor, memorabilia on display, or electronic equipment used. Remember to snap pictures.

Ideate

After understanding the problem and the player's incentives, it's time to brainstorm ways to engage the player. But how can you come up with new ideas? One method is to become acquainted with various gamification designs and examples. That could be ideal for your scenario. Another smart method is to know several games and combine them with your situation.

Prototype

When utilizing the system, a user can choose to enter a playful mode. While we can utilize our design to target it and make it easier for a user to become a player, we cannot guarantee it. That is, a gamified system must meet both the playability and usability requirements of the system. It is necessary to conduct both playability and usability testing. Legal and governance reasons may force us to design for both types in some countries and organizations, as these influence how much of the gamification design we can turn on.

Validate

A gamified system must follow the rules for both the system's usability and playability. Testing for both playability and usefulness is necessary.

1.10 Balancing

We need to balance the gamified application now that it has been designed. However, balancing involves more than just selecting how many points players should earn for specific actions. To prevent discrimination, balancing may also be a legal necessity. The same opportunities as full-time employees must be available to part-time workers.

1.10.1 Metrics, Scores and Data

The generation of a massive data trail of the players' activities, accomplishments, and progress through gamified systems is likely the least understood aspect of gamification. This is a fundamental feature of games. The system must keep track of the player's behaviors in order to reward them, unlock features, and level them up. The generated data provides players with feedback on their own and other players' development as well as managers and gamification masters with information on the system's overall efficacy.

1.10.2 Gamification Score

It should come as no surprise that gamification data provides a wealth of information. The value is enormous for corporations, recruiters, and, of course, players. Finding the correct player (read: employee or team member) for specific tasks (read: jobs or projects) becomes not only easier, but also more dependable, by tracking the players' activities, achievements, and development through the systems. There's no reason to rely on references that can't be confirmed. There's no need to rely on resumes that can be complete fabrications. Even while some of the material in resumes may be verified through educational institutions (such as graduation, grades, and certificates), acquiring

them needs effort - and as we've seen in previous high-profile examples, even CEO candidates for huge internet companies were not fully investigated.

1.11 Gamification implications

Werbach and Hunter (2012) define six phases or steps for a good gamification implementation, which is known as the six D's of gamification. These six steps are the following:

1. Defining business objectives to understand the target goal and make it clear. For the authors, the objectives can be defined by listing them in priority order and explaining them;
2. Delineating desirable behaviours after the objectives were defined and reasons for gamification explained. It is necessary to delineate what should be expected from the users and their activities and behaviours in the system or game;
3. Describing the players to know the relationship the game will have with them. That is, whether they are employees or clients, what can motivate them to continue in the tasks, all items to be described in this step;
4. Devising cycles of activities to allow the players to remain interested in participating and overcoming the proposed challenges. Type of feedback to be given to the players or gamers should be considered, including how they can be engaged with the loop of activities based on the tripod of motivation, action, and feedback;
5. Don't forget the fun, in which the users should participate in the game voluntarily and enjoy accordingly;
6. Deploy adequate tools to verify whether there are already defined or developed ones for implementing the gamification proposal, including possible tools to be used with the best cost-benefit (Werbach and Hunter, 2012).

Werbach and Hunter (2012) propose that these steps can be used to create a gamified process if they are well-structured and chained. However, the authors do not guarantee that following these stages will result in a good gamified process, because it is vital to understand whether the process makes sense in the context, whether the pieces are effectively designed, and whether the engagement with the game is pleasant.

1.12 Gamification in human resource

Human resources management has highlighted this understanding that puts the Human element at the center of the organization in a modern management approach along with the changing industrial processes. In order to maintain a competitive advantage over the long term and employ more skilled labor, businesses must increase the impact of their human resources operations.

In light of this, it is essential to utilize and assess each resource. Another way to describe human resources management is as a discipline that encompasses decision-making, planning, regulating,

managing, and controlling actions related to the provision, employment, and development of human resources necessary to give the organization a competitive advantage. These activities must be planned so that they can meet the needs of their staff while accomplishing company objectives and carrying out their social obligations.

By fostering competition amongst the teams, human resource management can also boost employee motivation, reinforce staff loyalty, and promote long-term efficiency. As a result, firms that adopt digital, game-based apps for human resources procedures as opposed to conventional human resources applications have gathered more data in less time. This approach will guarantee a superior human resources procedure for the employer and the company. Because of this, it must manage both its strategic functions and its operational roles holistically in terms of human resource management.

It is feasible to state that it will be more effective in both long and short-term quantitative and qualitative goal creation. Looking at these goals in general, they can be listed as continuing to operate, making a profit, and growing. Although it has a legal existence, which gives firms legal personality, it is its employees who give it social personality. To attain these objectives, firms must adopt a human-centered management style. So one approach to attain these objectives is for their employees to be successful and efficient.

Companies must create innovative designs in order to get the most out of their staff for these goals. As a result, gamification is a novel method for incorporating new game ideas and aspects into these processes. Gamification is a notion that extends beyond gaming. It is done to draw people's attention and direct their behaviors in accordance with their corporate aims. It goes beyond prizes and points to ensure staff participation and motivation in processes through the use of games.

Human interactions are at the center of human resource management and gamification-based resource requirements. Recruiting, hiring, learning, development, and training, active involvement, engagement, retention and recognition, and motivation are all important. There are suggestions that this gamification produces broad results. The concepts discussed are more closely related to the gamification approaches familiar to the human resource management class. As a result of the use of gamification in human resources, it will be possible to advance to other management areas. The gamification method is easy to implement and is also used to achieve more successful results with methods that require technical expertise, advanced planning or coding . Basically, human resources management practices and strategic competitive advantage and successful results are viewed from two different perspectives. One of them is institutional theory and the other is resource-based view. Being competitive is possible with the differentiation of companies' resource-based perspective. The basic goals of gamification applications are to make processes more efficient by increasing internal employee performance, motivation, and loyalty; on the outside, it is to create a customer base and increase customer loyalty in line with the business's strategic goals such as profitability and growth.

The areas where gamification technique can be used can be categorized as follows:

1. Attract
2. Onboarding
3. Learning, Development, and Training
4. Engaging
5. Retaining
6. Recognition
7. Motivation

1.12.1 Attracting

Numerous businesses are looking for creative staff. Less organizations, however, have altered their recruitment and selection processes to find and select such candidates. Providing tasks and difficulties for personnel recruitment and selection can be an excellent way to identify and supply talent (Georgiou et.al., 2019). Users can, for example, create a personal gaming site on the Top Coder community website where they can manage their games, gamification dynamics, scores, and social gaming networks (www.topcoder.com). Similarly, it promotes the accomplishment of the desired talent in staff selection by ensuring the determination of programming skills through contests.

1.12.2 Onboarding

The hiring process can be made more effective and enjoyable by integrating gamification elements into onboarding processes. The onboarding process begins with ensuring that the individual adopts the institution from the moment they accept the job offer. Gamification aspects can be useful in the process of developing a long-term job adaption program that engages employees and fast prepares them for their new jobs by offering early instruction and feedback (Lipson, 2021). The introduction of gamification features can inspire employees to learn in small steps to increase their competency by detecting their learning styles and providing feedback on their progress.

The onboarding process is one of the most common gamification methods in today's businesses. Onboarding is often a well-defined process having a beginning, middle, and end. Employees must consume a considerable quantity of information, create relationships, and begin navigating the business in order to successfully onboard. Information and activities can be "stacked and sequentially" to gamify this process. As a result, as they proceed through the process, employees earn points and badges. Additional game components, such as missions and levels, can be utilized to further structure the process and create a sense of progression.

1.12.3 Learning, Development, and Training

The use of gamification concepts to promote learning and development diverts workers from outmoded knowledge concepts based on pushing the limits of their learning capacities. An employee's journey toward mastery can be supported by gamifying learning and development. A carefully

crafted gamification can assist a worker in establishing their own competence by enabling failure and risk-taking in a safe environment.

The Compliance Game created for Ziggo is one illustration. The goal of the Compliance Game initiative was to increase staff awareness of safety, compliance, and integrity procedures. Businesses want their employees to learn, adapt, and lead other employees by stepping forward to adopt each staff member's conduct (Buckley and Doyle, 2016).

Making learning easier through storytelling is a different strategy. Everyone enjoys hearing stories. The narrative technique, which encourages attentive listening, inspires curiosity and want to learn, and touches the heart, is also an excellent communication tool used in commercial settings for human resources management, particularly when educating staff members. If they are a part of the story, the core idea will be more easily recalled by the staff.

Thus improving engagement and completion rates for online learning is another objective of learning to play. To reach broad audiences, learning leaders are currently using online learning. However, the dropout rate is worryingly high, resulting in wasted money and time. Another objective is to assist and close the learning-making gap. Moreover, many workplaces do not favor online or classroom learning. This is one way that gamification can help close the achievement gap.

1.12.4 Performance management

Gamification is an innovative form of performance management that has become more well-known in recent years. Gamification, or adding features of games like badges, points, leaderboards, and prizes, may make the performance management process more interesting, participatory, and motivating for staff members.

Employee engagement and motivation may be raised by employing gamification in performance management, which is one of its main advantages. Employees are more likely to be involved in the performance management process when given clear goals and objectives and when the process of obtaining those goals is made more exciting and rewarding. This may result in better productivity and performance, as well as greater work satisfaction and staff loyalty.

The performance management process may become more objective and transparent with the use of gamification. Employees may monitor their development and understand how they are performing in comparison to their peers by receiving real-time feedback on their performance and tracking progress using a gamified system. This might contribute to the development of a fair and open performance management system, enhancing worker satisfaction and lowering the possibility of prejudice or discrimination. Gamification may also increase the pleasure and enjoyment of the performance management process for employees. Employees can experience a sense of success and satisfaction from their job by introducing game-like aspects into the process, such as challenges, quests, and prizes. This may make the workplace more upbeat and interesting while assisting in the reduction of stress and burnout.

1.12.5 Engaging

Gamification is changing the way employees engage and can be achieved in previously unseen ways. Curiosity, as a result, improves aesthetic attractiveness and employee interest. It emotionally

engages with the player and draws them into a world that must be learned (CIPD, 2012). Games build emotional engagement for the player in this direction. By appealing to an understanding of entertainment, using these notions in an organizational setting can boost employee engagement (Lazzaro, 2004). It is claimed that gamification approaches used in the workplace, like games made for entertainment, attempt to increase engagement. Furthermore, gamification tries to observe, encourage, and learn attitude changes (Armstrong, 2006). It is clear that the method of gamification is increasingly popular for the purpose of developing a proclivity for teamwork and management.

1.12.6 Retaining

Gamification can help in employee retention by encouraging users to participate in the activity at least once a week. The key to long-term gamification, according to Burke (2014), is to replace external rewards with essential internal rewards. As a user engages in a gamified game, platform, or program, they are rewarded with more meaningful incentives if they can maintain momentum by ensuring that the challenge fits their skill level. This entails comprehending how meaningful internal incentives are for employees who participate, as opposed to the more standardized traditional external rewards. If, when gamifying the process, the employee tries to focus on internal driving factors in the long term, this does not indicate that external driving forces are unnecessary. External motivational components, for example, are particularly effective in the short term for introducing individuals to the desired notion and meeting them. Moreover, gamification principles, such as points and leaderboards, can be effective for performing more mundane but important administrative chores in human resource management, such as speedy reporting. Furthermore, making the career development process more transparent with virtual guidance and badges for event completion and progress can make these processes more enjoyable. A more meaningful long-term goal for some employees may be related to their own development and happiness on a more personal level. The game Mindbloom Life (Mindbloom's Life Game), for example, teaches the user how to live a better life. It is a simple game that tries to improve the user's quality of life by rewarding them for doing the things that truly matter. As a result, gamification is a fun, easy, and effective technique to boost employee satisfaction.

1.12.7 Recognition

The notion of reward, which has been used to modify people's behavior for ages, is also one of the basic principles for gamification. The gamification system seeks to do this by adding points, levels, leaderboards, awards, or badges to a real-world setting. in order to gain these incentives, people must be more linked to the current circumstances (Nicholson, 2015).

Under the context of company principles, a gamification platform may be developed to allow workers to socialize with one another through a single platform. Biggstars, for example, provides a web and mobile-based appreciation and reward program that attempts to improve employee performance and productivity by inspiring people in a social setting. Employees that understand and internalize corporate values through the appreciation and reward platform will contribute to increased productivity by performing above-average. Moreover, it is well recognized that the output of the appreciated individual grows.

1.12.8 Motivation

In general, motivation encompasses desire, need, and impulse. Understanding the motivation process requires an awareness of the links between these ideas. Motivation management in businesses is the desire of workers to mobilize the person through instruments such as money, education, appreciation, reward, and accomplishment (Aktan, 1999). A good piece of fiction should undoubtedly employ all components in a balanced way and include both internal and external reasons. Because it is well understood that the prize will never be sufficient on its own. As a result, it is claimed that performance management in today's firms, in the form of "reach the objective and receive incentives," is no longer applicable. It is argued that proper modeling cannot be accomplished only by external incentive (Aristigueta and Denhardt, 2014). To achieve this goal, entertainment must include factors that stimulate internal motivation, such as self-development, obtaining status, learning, and feeling connected to a community (Akn and olak, 2012). In the game idea, which also incorporates volunteering, if participation in the game attempts to affect the behaviors of the individual, it must be intrinsic. As a result, gamification is a very efficient approach for human resources to accomplish long-term success and goals. It is expected that administrations that adopt gamification systems, which are not an end in itself but rather a means to an objective, will be successful. The gamification method that sparked the revolution in human resource management is a one-of-a-kind tool that pushes businesses to abandon the old notion of recruiting and selection in favor of fresh and current ways. Gamification tactics are recommended to address the three most significant difficulties in the recruiting process: recruitment efficiency, workforce diversity, and employee retention. Job simulation games appear to be favored, particularly for companies looking to use gamified recruiting techniques (Bina et.al., 2021). According to research, gamification in general gives several benefits when used to the recruiting process. Gamification in hiring should not be a choice, but rather a standard for companies to select employees who will be most suitable for the organization (Nenadi, 2019). From the perspective of human resource management, gamification is not about having an immersive experience, but rather about applying gamification components and mechanisms to assist a company achieve employee involvement and other organizational goals. According to research, using gamification in human resources procedures is a creative, inventive, and cost-effective approach of assessing individuals, particularly during the recruiting process.

Chapter 2

Introduction

During the last decade, the trending topic of gamification, most widely understood as the use of game elements in non-game contexts, has experienced a major popularity boom (Deterding et al., 2011). The application of game design elements such as points, badges, and leaderboards became widespread across society (Rapp et al., 2019). A tremendous amount of research has been conducted over the years in an attempt to create frameworks and taxonomies for gamification and game design features. System, design, architecture, and, most recently, the impacts of gamified systems have all been studied (Nacke and Deterding, 2017). Current researches have focused on the use of game design aspects to rethink and improve human resource management (HRM) methods and technologies. In this regard, a number of recent academics have focused on investigating the impact of game design aspects on employee behavior as well as methods for implementing gamification in HRM (e.g. Arajo and Pestana, 2017; rgle, 2015; Kumar and Raghavendran, 2015).

Dr. Lena Murawski who currently designs and implements gamification at OBI GROUP Holding has conducted a systematic literature review. This study contributes to the field of human resources research by examining 45 research papers, aiming to explore areas of application and outcomes of the use of gamification in HRM. Propositions are outlined along with elaborating risks and approaches on how to mitigate the risks of using game design elements in HRM.

In this research she explains that we should summarize the current research landscape about gamification in HRM, including approaches to meaningful gamification design, as well as discuss potential risks of gamifying HRM practices and tools, in order to advance research on gamification in HRM toward a greater understanding of research findings in previous studies.

To address the research question, "In which areas of HRM is gamification implemented and what are the reported outcomes of it," the first section of this article focuses on the "what" of gamification in HRM. The second question, "How can gamification be implemented in HRM?" elaborates on the "how" of gamification design by looking at the components that should be merged and outlining potential hazards. The current study does a thorough literature evaluation in order to provide answers to these issues. Scientists may evaluate the use of gamification in HRM critically by analyzing and synthesizing previous research findings, techniques, and potential applications of the use of game design aspects in HRM.

The study uses a systematic literature review methodology to go through the literature already on gamification in HRM. The most well-known digital libraries for the management domains were used for the literature search: Web of Science, Scopus, and EBSCO. These databases contain a

huge number of full-text resources in the field under study. These also include nearly all peer-reviewed business and management journals, which are known for publishing high-quality research. The chosen databases allow you to filter high-quality contributions in the search parameters. This page contains research articles that were published in peer-reviewed journals, indicating that the material was examined by outside professionals (Bornmann, 2013). Proposals from unpeer-reviewed books and publications, as well as writing that has not yet been traditionally published, are not accepted. The analysis includes contributions from professional publications that reflect empirical investigations, secondary analyses, or literature reviews.

To perform the automated searches in the digital libraries selected, Boolean operators were used. The following search string was inserted in every database: “gamif*” AND (“learn*” OR “train*” OR “motivati*”) AND (“organization” OR “management”). The search term gamif* was chosen because it considers all possible forms derived from the root (i.e. the noun gamification and the verb gamify, in all its forms). To ensure that widely comparable studies are included in the analysis, this review builds on the definition of gamification as “the process of making activities in nongame contexts more game-like by using game design elements” (Sailer et al., 2017: 372). This definition suits best because Sailer and colleagues (2017) combine different foci of gamification by drawing on the definitions according to Werbach (2014) and Deterding and colleagues (2011). Thus, gamification is considered the integration of game design elements that evoke user experiences typical of games (Deterding et al., 2011; Sailer et al., 2017; Werbach, 2014). Building on previous reviews on gamification, this article assumes effects of gamification on learning processes, training, and motivation (Hamari et al., 2014; Sailer and Homner, 2020). Hence, to review current literature of gamification referring to HRM, the terms “organization” and “management,” were added.

Criteria	Inclusion	Exclusion
Results of the literature search	Boolean search string: “gamif*” AND (“learn*” OR “train*” OR “motivati*”) AND (“organization” OR “management”)	Other
Literature Study	Published in peer-reviewed journals Empirical study, secondary analysis, review of literature	Other Other
Language	English	Other
Investigation object	Application of gamification in organizations (i.e. relevant topics for HRM)	Serious games; no application of gamification in HRM (i.e. research subjects other than employees of a company)
Context	Organizational, managerial context	Other

Figure 2.1: literature search system

The literature search was conducted on 17 January 2020. Figure 1 describes the procedure and the selection of relevant research contributions for the analysis conducted in this study.

Following an initial assessment of titles and the elimination of duplicates, 258 articles were evaluated based on their abstracts. A total of 119 items were eliminated. The most common cause for rejection during the screening of titles, abstracts, and full texts was that the study aim did not fit the research interest of this paper (e.g. the use of gamification in education or students as research

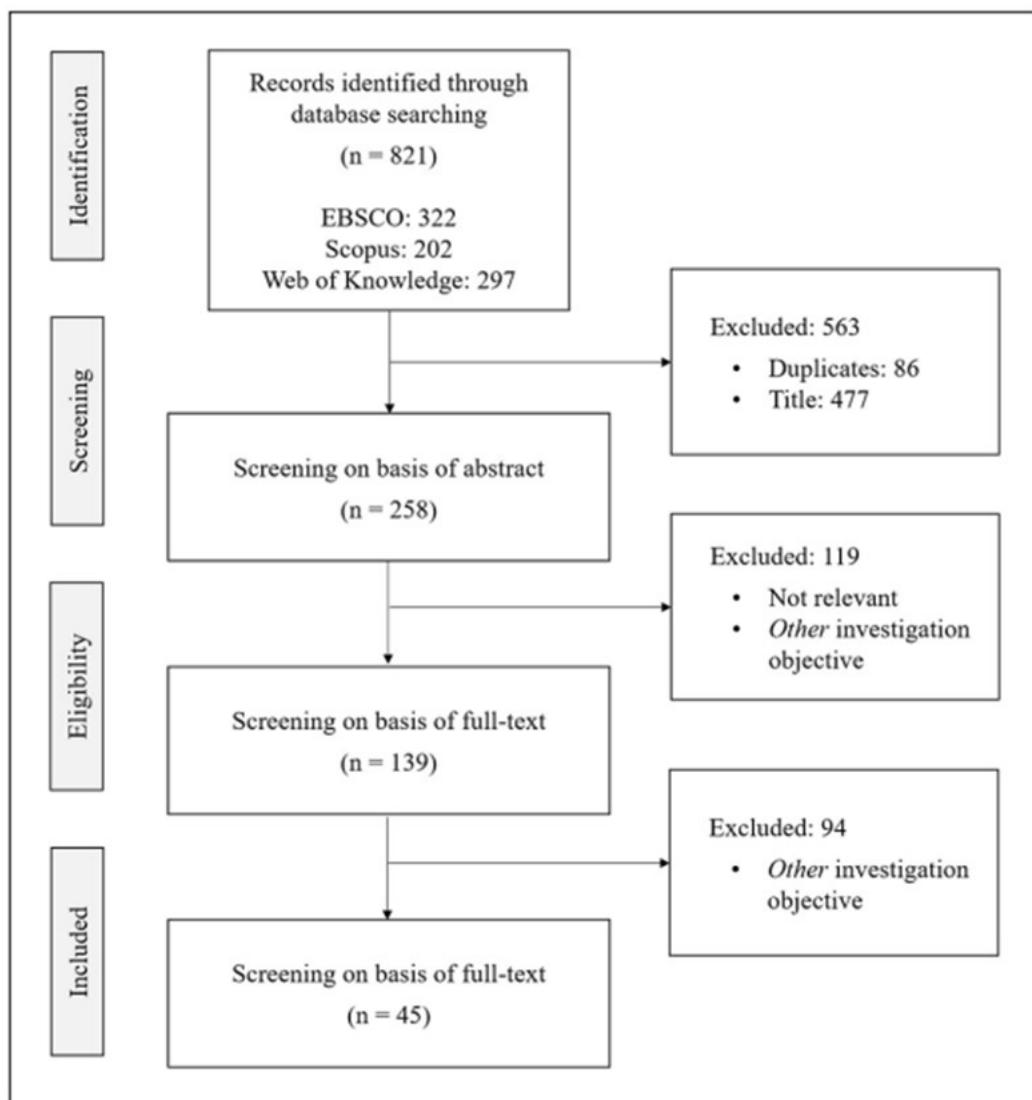


Figure 2.2: Process diagram of literature review

subjects). The selected 45 publications were then categorized by category, research kind, empirical research type, addressed issue/research field, and, if appropriate, game design features, participants, and measurable impact.

2.0.1 Gamification in HRM

This section aims at answering the first research question of this study, “In which areas of HRM is gamification applied and what are the reported outcomes of it? 2018).

Increase employee motivation, engagement and performance. More than a third of the research (n = 18) examines the effect of game design elements in employee motivation, engagement, and performance. Recent study has shown that gamification is an effective method of engaging employees and inspiring them to improve their work-related abilities (Dubey et al., 2016; rgle, 2015; Jabagi et al., 2019; Ruhi, 2015). According to current research, game design aspects can influence

Author(s)	Year	Category	Research type	Empirical research type	Addressed issue/research field	Game elements	Participants	Impact
Abedi et al.	2018	Talent Management	Solution proposal	Case Study	Enhancing performance	Rankings, points, leaderboard		
Adams and Makramalla	2015	Training	Solution proposal	Conceptual Research Review	Gamification in cybersecurity awareness trainings	Points, leaderboard, badges, avatar, shared purpose/goal, story		
Ahmed and Sutton	2017	Knowledge Management	Solution proposal	Conceptual Research Review	Overview of gamification in knowledge management			
Algashami et al.	2017	Team Work	Solution proposal	Case Study	Risks of gamification in enterprise team work			
Araújo and Pestana	2017	Knowledge Management	Solution proposal	Case Study	Enhancing knowledge sharing	Points		
Armstrong and Landers	2018	Training	Solution proposal	Conceptual Research Experiment	Value of gamification in trainings			
Buil et al.	2019	Talent Management	Solution proposal	Conceptual Research Experiment	Gamification for talent acquisition			
Chamorro-Premuzic et al.	2017	Talent Management	Solution proposal	Conceptual Research	Discussion about gamified assessment tools that focus on enhancing the user-experience in personnel selection	Competition, team work	n = 239	Measured (+)
Clegg et al.	2018	Training	Solution proposal	Case Study	Conceptual requirements for a gamified learning environment			
Dessureault	2019	Motivation/ Engagement/ Performance	Solution proposal	Conceptual Research	Modernization of fleet management in mining	Points, levels, competition, collaboration		
Dubey et al.	2016	Other	Review	Conceptual Research	Enhancing motivation for trainings			
Ergle	2015	Motivation/ Engagement/ Performance	Solution proposal	Case Study	Increasing employee engagement, employee motivation, and performance	Points, badges, ranks, levels, time pressure, tasks, virtual worlds, virtual trade		
Friedrich et al.	2020	Knowledge Management	Review	Conceptual Research	Enhancing motivation for knowledge sharing activities	Points, badges, leaderboard		

Figure 2.3: Search Data Resources

Author(s)	Year	Category	Research Type	Empirical Research Type	Addressed issue/research field	Game Elements	Participants	Impact
Georgiou et al.	2019	Talent Management	Evaluation research	Experiment	Gamification in employee selection in order to support organizations to map out prospective employees' soft skills	Storylines, feedback, avatars, voice overs	n = 97	Measured (+)
Herranz et al.	2014	Motivation/ Engagement/ Performance	Evaluation research	Case Study	Description of the implementation/ process of a gamification introduction	Points, voting systems, rewards, team work, progress bars, leaderboard		
Herranz et al.	2016	Motivation/ Engagement/ Performance	Evaluation research	Case Study	Description of the implementation/ process of a gamification introduction	Game elements of the Octalysis framework (Chou, 2015)		
Herranz et al.	2018	Motivation/ Engagement/ Performance	Evaluation research	Case Study	Description of the implementation/ process of a gamification introduction	Game elements of the Octalysis framework (Chou, 2015)		
Ivan et al.	2019	Motivation/ Engagement/ Performance	Solution proposal	Experiment	Employee motivation for SPI initiatives	Points, badges, leaderboard, progress, levels, missions, quiz, event feeds		
Jabagi et al.	2019	Motivation/ Engagement/ Performance	Solution proposal	Conceptual Research	Enhancing gig-workers' motivation	Social features (forums, chatting), ratings, badges		
Jain and Dutta	2019	Talent Management	Solution proposal	Conceptual Research	Conceptual model to support gamification to meet the challenges of Millennials	Challenges, evaluation, leaderboards, badges, level, digital certificates		
Jorge and Sutton	2017	Training	Review	Conceptual Research	Model that evaluates game-based learning environments			

Figure 2.4: Search Data Resources

Author(s)	Year	Category	Research Type	Empirical research type	Addressed issue/research field	Game elements	Participants	Impact
Kalyanaraman and Anoucia	2015	Training	Review	Conceptual Research	Integration of gamification in e-learning systems	Goals, points, rewards, leaderboards, progress, levels, challenges, achievements, badges, feedback (i.e. the use of social feeds and profiles)		
Kananen and Akpinar	2015	Motivation/ Engagement/ Performance	Solution proposal	Case Study	Enhancing motivation of salespeople	Points, leaderboard		
Kornevs et al.	2019	Training	Solution proposal	Case Study	Training in procurement processes	Points, social media tool	n = 506	Measured (+)
Kumar and Raghavendran	2015	Motivation/ Engagement/ Performance	Solution proposal	Case Study	Increasing employee engagement and employee motivation and to form organizational culture	Points, badges, achievements (bonus points), leaderboard	n = 30	Measured (+)
Liu et al.	2018	Motivation/ Engagement/ Performance	Evaluation research	Experiment	Increasing job motivation, satisfaction, and performance of employees in manufacturing	Points, badges, achievements (bonus points), leaderboard		
Marache-Francisco and Brangier	2015	Motivation/ Engagement/ Performance	Review	Conceptual Research	Discussion about gamification at work			
Marlow et al.	2016	Team Work	Review	Conceptual Research	Review and research agenda on gamification in team work			
Miller et al.	2018	Training	Evaluation research	Case Study	Improving training outcomes for IT desk service	Storyline, levels, points, leaderboards, team work, rewards, achievements, challenges, documentation		

Figure 2.5: Search Data Resources

workers' perceptions of their employment as more demanding and exciting (Liu et al., 2018; Sarangi and Shah, 2015). While evaluating the use of gamification to improve motivation, engagement, and performance, a lot of studies take into account the rising degree of digitalization in enterprises (e.g. Herranz et al., 2018; Kumar and Raghavendran, 2015; Yin et al., 2013). Kumar and Raghavendran (2015) argue that in today's workplace, innovative thinking and knowledge exchange inside the firm are more important than just doing tasks. Similarly, Shahri and colleagues (2019) believe that the current "digital incarnation of motivation" (Shahri et al., 2019: 2) increases job pressure and stress. Shahri and colleagues' experiment in 2019 discovered that game design elements increase digital motivation, or the "use of software-based solutions to change, enhance, or maintain people's attitude and behavior toward specific tasks, policies, and regulations," which can result in greater well-being at work (Shahri et al., 2019: 1). Herranz and colleagues (2018) focus on the effects of gamification in software process improvement (SPI), presuming that employee engagement is the main challenge with SPI. They emphasize the utilization of game design features as a method to improve employee comprehension of the value of SPI projects through interaction between the teams and the business (Herranz et al., 2018). Ergle (2015) argues that contests in companies may stimulate innovative, participative thinking and behavior, as well as increase internal communication. The author discusses a gamified application that incorporates data about internal initiatives, pending decisions, and commercial concepts. Employees may understand the reasoning behind strategic decisions by reading corporate news that is connected to the application. Based on a thorough investigation, the author discovered that this increases employee engagement and motivation (rgle, 2015). These findings are consistent with the findings of Kumar and Raghavendran (2015), who discovered that using contests in businesses might lead to a shift in organizational culture (i.e. a sense of pride). Consider the study of Kananen and Akpinar (2015), who believe that game design elements such as point systems, awards, leaderboards, and badges (i.e. the usage of social feeds and profiles) lead to greater work motivation. Similarly, Woniak (2017) discovered that professionals would support the implementation of gamification in an existing incentive structure with delayed benefits through later redemption of points rather to getting money bonuses (Woniak, 2017). Furthermore, a number of previous research have provided crucial insights into the use of gamification to help Millennials deal with the issues they confront (e.g., Jain and Dutta, 2019; Sox et al., 2014; Trees, 2015). Recent literature identifies meaningful work experiences, learning and development opportunities, and the ability to engage in learning activities as Millennials' primary expectations (e.g., Eddy et al., 2010; Howe and Strauss, 1991; Skiba and Barton, 2006). According to Jain and Dutta (2019), the main characteristics of Millennials include strong confidence, team orientation, and a drive for success. According to Sox and colleagues (2014), important obstacles of satisfying Millennials at work include a great need for self-actualization and complete feedback, as well as a weakness of not being able to deal carefully and deeply with assignments. According to Jain and Dutta (2019), Millennials will perceive game design aspects in learning environments as a familiar chance to actively participate to learning processes. According to the authors, gamified HR solutions will allow Millennials to engage in corporate choices and procedures, as well as grow individually, creatively, and intellectually (Jain and Dutta, 2019). According to Jain and Dutta (2019), gamification can lead to greater acceptability of HR practices since game design elements such as badges can satisfy both the demand for success and the need for technology-driven tools at work. Trees (2015) introduces a social networking solution for enterprises that enables regular feedback, social learning,

and cooperation. Based on an examination of current research contributions and survey data, the author discovered that gamified platforms can aid in the onboarding of Millennials as well as the promotion of knowledge exchange between experienced employees and new colleagues. Furthermore, Trees (2015) observes that the usage of social networking provides a viable strategy for satisfying Millennials and providing them with a sense of belonging inside the organization in order to enhance retention rates. According to the author, elder colleagues were wary of the technology since social media at work might distract people from their tasks (Trees, 2015).

Improve training in organizations. The use of gamification to improve training results has received significant study attention ($n = 10$). According to recent research, gamification improves employee confidence in task completion and enhances motivation in a learning setting (e.g., Jorge and Sutton, 2017; Stadnicka and Deif, 2019). Numerous studies examine existing literature to present models and frameworks that characterize the use of gamification in training (for example, Armstrong and Landers, 2018; Jorge and Sutton, 2017; Kalyanaraman and Anouncia, 2018; Park and Kim, 2019; Stadnicka and Deif, 2019). Jorge and Sutton (2017) emphasize the necessity of making the workplace more enjoyable, building on Csikszentmihalyi's (2014) flow theory. They suggest that gamification provides a promising opportunity to modify behavior in relation to organizational goals and objectives, as well as to boost engagement and retention in the learning environment by promoting a sense of flow (Jorge and Sutton, 2016). Similarly, Miller and colleagues (2018) claim that gamified training promotes employee loyalty and consumer happiness by improving training efficacy. To improve IT training results, the authors describe a gamified software solution that includes game design components such as stages, points, leaderboards, teamwork, and prizes. According to Park and Kim (2019), badges as a measure for assessing student knowledge and abilities boost engagement in a learning environment. Petruzzi and Amicucci (2015) validate the use of game design elements to foster a self-reflective attitude toward one's own conduct by providing instant feedback on newly acquired knowledge (Petruzzi and Amicucci, 2015). Kornevs and colleagues (2019) took it a step farther. They examine the rising complexity of the procurement process as well as the necessity for better expert training. They discovered that using gamification helps drive people to acquire and use new information (Kornevs et al., 2019). Moreover, Stadnicka and Deif (2019) argue that gamified training sessions should not only contain knowledge production but also enhance motivation to deal with certain topics, based on the ARCS (attention, relevance, confidence, and satisfaction) model of motivational design (Keller, 1987). As a result, Adams and Makramalla (2015) address the usage of avatars, which allow employees from departments other than IT to view a cyber-attack through the eyes of a hacker. The authors propose that by using gamification in trainings, employees from various departments of the firm will be more conscious of cybersecurity (Adams and Makramalla, 2015). According to Clegg and colleagues (2018), gamified learning environments may be used as information platforms to improve customer service (Clegg et al., 2018).

Optimize talent management measures. A number of studies ($n = 8$) have studied game design elements in talent management measures (Buil et al., 2019; Chamorro-Premuzic et al., 2017; Georgiou et al., 2019; Tansley et al., 2016). The use of gamification in talent discovery and evaluation centers is discussed in recent research (e.g. Georgiou et al., 2019; Tansley et al., 2016).

Particularly, Georgiou and colleagues (2019) indicate that game design features can assist in identifying employees' soft talents and lower the expenses associated with poor recruitment. According to the authors, the selection of avatars, storytelling, rewards, and progress bars may all be used as a supplementary indicator of soft skills (Georgiou et al., 2019). The possibility of using game design aspects for talent detection has been confirmed by Chamorro-Premuzic and colleagues (2017). Using research from the past (e.g., Foroughi et al., 2016; Quiroga et al., 2015; Unsworth et al., 2015) that examines cognitive skills and the mental processes necessary to succeed in video games, Chamorro-Premuzic and colleagues (2017) assert that people who enjoy playing online games and role-playing have improved coordination and leadership skills that employees use in their daily work.

Enhance knowledge management activities. A number of studies ($n = 6$) consider the use of game design elements in knowledge management activities (e.g. Abedi et al., 2018; Shpakova et al., 2017; Swacha, 2015; Tsourma et al., 2019). According to recent research, game design elements such as points, badges, and potential rewards for knowledge sharing are effective tools for improving the quality of knowledge sharing and cooperative behavior in corporate cultures that value feedback and openness (e.g. Arajo and Pestana, 2017; Friedrich et al., 2020; Tsourma et al., 2019).

2.0.2 Outcomes of gamification in HRM

In total, seven articles use quantitative research measuring the effectiveness of gamification in HRM whose reported outcomes are described below (Buil et al., 2019; Georgiou et al., 2019; Kumar and Raghavendran, 2015; Liu et al., 2018; Shahri, et al., 2019; Yin et al., 2013; Wozniak, 2017). Researchers find empirical evidence that gamification can enhance employee engagement (Kumar and Raghavendran, 2015), as well as employee motivation, and job satisfaction (Liu et al., 2018; Shahri et al., 2019). Furthermore, it has been shown that the application of game design features can improve talent acquisition (i.e. raise applicants' attitude toward the organization and perception of it as an attractive place to work) (e.g. Buil et al., 2019; Georgiou et al., 2019). A recent study has also attempted to look into the function of gamification in corporate culture transformation. Kumar and Raghavendran (2015) discovered that gamification improves organizational characteristics such as "networking opportunity, enjoyable and engaging environment, and teaming opportunity" (Kumar and Raghavendran, 2015: 10). Similarly, Georgiou and colleagues (2019) argued that game design components can elicit desired behaviors and predict work performance when compared to a control group (Georgiou et al., 2019). There is no empirical study that assesses the impact of gamification on staff training and knowledge management.

2.0.3 Applying gamification in HRM

So far in this, this article has concentrated on the "what" of gamification in HRM, looking at application areas and reported outcomes. Progressing on to the "how" of gamification design, the following answers the second research question "How might gamification be utilized in HRM?"

2.0.4 Designing gamification in HRM

This review reveals that HRM-related literature on gamification mostly applies badges, leaderboards, levels, achievements, and points in HRM (e.g. Araújo and Pestana, 2017; Dessureault,

2019; Ergle, 2015; Liu et al., 2018). Nevertheless, current research appears to indicate that just implementing gamification mechanisms does not result in enhanced HR practices and tools (e.g., Hamari et al., 2014; Herranz et al., 2018; MaracheFrancisco and Brangier, 2015). Rather, recent evidence shows that meaningful gamification design (i.e., that elicits expected behavior) takes into account the characteristics and demands of the workers (e.g., Georgiou et al., 2019; Ivan et al., 2019; Sailer et al., 2017; Sox et al., 2014; Stadnicka and Deif, 2019). Hunicke and colleagues (2004: 5) emphasize the importance of human-centered gamification design, claiming that "by understanding how formal decisions about gameplay impact the end user experience, we are able to better decompose that experience, and use it to fuel new designs, research, and criticism, respectively." Furthermore, various academics have emphasized the significance of creating games through iterative approximation and continual improvement (e.g., Georgiou et al., 2019; Ivan et al., 2019). As a result, most researchers working in the field of gamification in HRM agree that gathering feedback on gamification environments from as many individual employees as possible, as well as adapting the design, ensures that the use of gamification becomes increasingly effective (e.g., Georgiou et al., 2019; Ivan et al., 2019). In this context, academics develop models and frameworks that are particularly tailored to the environment and needs of both people and the organization, and which elicit expected behavior through iterative approximation and continual improvement (e.g. Georgiou et al., 2019; Ivan et al., 2019; Pflanzl and Vossen, 2018; Sox et al., 2014).

2.0.5 Risks of using gamification in HR practices and tools

It is generally agreed that potential risks should be taken into account when designing and implementing gamification in HRM, although the needs and characteristics of the employees ultimately determine the choice of game design elements (e.g., Algashami et al., 2017; Lai, 2001; Marlow et al., 2016; Sailer and Homner, 2020). According to Sailer and Homner (2020), elements of game design that offer positive feedback can boost motivation, but when such input is negative, it may be seen as controlling and may lower motivation. According to Shahri and colleagues (2019) and Algashami and colleagues (2017), performance transparency (achieved through leaderboards) might, on the one hand, eliminate perceived injustice but, on the other hand, can lead to pressure and unproductive comparison (Algashami et al., 2017). In addition, using collective performance indicators, incorporating game design aspects into big teams might result in social loafing (Kumar and Raghavendran, 2015). Consider the study by Algashami and colleagues (2017), which implies that leaderboards can cause intimidation as well as clustering within teams and the separation of high-performing team members, as an illustration of the use of gamification in teamwork. The authors claim that components of game design that offer feedback might cause high-performance teams to disband and those who frequently receive negative feedback to have a fall in self-esteem (Algashami et al., 2017). Dr. Lena Murawski explores the seemingly multifaceted research landscape about gamification in HRM through a systematic literature review. This article summarized existing HRM-related literature of gamification, and systemized the findings in this regard into four potential application areas of gamification, being (1) supporting employee motivation, engagement, and performance, (2) improving training outcomes, (3) supporting talent management measures, and (4) fostering knowledge management activities.

The most commonly utilized area of concentration among these categories is the application of game design features to improve motivation, engagement, and performance in the workplace. Gamifica-

tion proponents now underline the necessity of holistic approaches to gamification design that take into account the employee's requirements and characteristics, since they have a significant impact on the efficacy of game design features. Additionally, various experts have identified possible hazards associated with the use of game design aspects in HRM. In this context, there have been several attempts to address these challenges in the HRM-related literature on gamification. Scientists create frameworks and models that approach gamification design iteratively by receiving input from as many receivers as possible, being aware of and minimizing potential dangers, and continuously refining and adjusting the design. Yet, despite the benefits of utilizing quantitative methodologies to examine the usage of game design features in HRM (Mekler et al., 2015; Rapp et al., 2019; Sailer and Homner, 2020), only seven of the recognized researchers utilize empirical research to quantify the real effects of gamification in HRM. So far, a closer examination of indicator-based research on the benefits of gamification in HRM reveals unexpected trends. In contrast to several studies in the literature (e.g., Mekler et al., 2015; Sailer and Homner, 2020), this research presents compelling evidence in favor of gamification's beneficial behavioral and motivational impacts on employees. Recent research suggests that the incorporation of game design features can enhance HR processes and tools (e.g., Buil et al., 2019; Kumar and Raghavendran, 2015; Woniak, 2017). This conclusion might be seen as HR scientists being aware of potential gamification dangers and taking them into account when applying gamification (e.g. Arajo and Pestana, 2017; Jorge and Sutton, 2016; Park and Kim, 2019; Ruhi, 2015). Furthermore, the research highlighted in this review focus on the conditions under which gamification works in the specific field of application (e.g., Abedi et al., 2018; Chamorro-Premuzic et al., 2017; Dubey et al., 2016), rather than "how" it works in certain situations. In contrast, Nacke and Deterding (2017) discovered that gamification research is transitioning from researching systems, designs, and architectures to investigating the consequences of gamified systems. While it is widely acknowledged that gamification positively improves employee behavior and motivation, there is less agreement on the indications and elements that define gamification. Although researchers frequently refer to Deterding and colleagues (2011) when defining gamification (Liu et al., 2018), views differ on which game elements represent a gamified system. If there is no consensus on the description of game design elements that make up a gamification system, study findings on the efficacy of gamification will be difficult to compare, transfer, and so generalize. As a result, HR scientists will need to learn more about how the gamified system (i.e. a collection of game design elements) and the design of a single game design element determine whether potential risks of gamification occur (e.g., Algashami et al., 2017; Armstrong and Landers, 2018; Marache-Francisco and Brangier, 2015; Mekler et al., 2015; Sailer and Homner, 2020). As a result, this study emphasizes the importance of conducting indicator-based research on the effects of gamification in HRM to better understand "how" and "when" the usage of game design features brings value to businesses. Nevertheless, while this systematic literature analysis contributes to HR research and provides valuable insights into ongoing research on gamification in HRM, it has limits. Systematic literature reviews should constantly be maintained up to date to account for the continually rising quantity of study findings in this subject, and this provides merely a glimpse of HRM-related gamification literature. Furthermore, the relatively limited number of papers discovered might be attributed to the review's stringent criteria. Nonetheless, these criteria assure or increase the likelihood of the study's rigor.

According to the findings of this study, HR experts are only getting started in their investigation

of the phenomena of gamification. Thus far, there is widespread consensus that gamification may help enhance HR procedures and tools. Yet, academics should continue to implement and study the impact of individual game design components and gamification systems on employee behavior in as many different areas as feasible. Based on this diverse set of cause-effect interactions, more general assertions about "how" and "when" gamification adds value to HRM may be formed. As a consequence, more literature reviews like this one will assist explain the findings, allowing researchers to integrate their study into the existing research landscape.

Chapter 3

Literature Review

3.1 Attracting

Innovative people are in high demand across many industries. Yet, fewer companies have modified their hiring and selection procedures to identify and choose such candidates. Including tasks and challenges in employee recruitment and selection may be a great method to find the needed skills and staff (Georgiou et.al., 2019). Users can, for instance, build a personal gaming website on the Top Coder community website where they can manage their games, gamification dynamics, scores, and social gaming networks (www.topcoder.com). By ensuring that programming abilities are determined through contests, it also makes it easier to attain the talent needed during employee selection. Such innovative hiring and selection procedures may also contribute significantly to the strategic goals of businesses and the employer brand. Modern e-recruitment systems use Internet technology to draw potential job candidates and hire them, whereas recruiting is a means of attracting, choosing, and filling openings inside the firm (Ghazzawi and Accoumeh, 2014). The initial phase in the recruiting process, which involves analyzing needs, specifying job openings, and luring prospects, is where web-based technologies are most frequently employed. This process is known as e-recruitment (Kim and O'Connor, 2009).

Gamification can be used to improve employer branding by actively and entertainingly showcasing the company's values, culture, and mission. Candidates who share the company's values and are seeking a workplace culture that is similar to their own may be drawn to the position as a result. Gamification is highly suited for each stage of the recruitment process because its core consists of providing numerous elements and procedures in order to engage individuals. In a normal recruitment situation, applicants are guided through a series of well-defined processes, giving them time to prepare and articulate responses. With gamification, totally new systems that are not related to current traditional tasks may be implemented, prompting potential candidates to perform them without previous preparation (Wozniak, 2015). This merger of gamification with recruitment is sometimes referred to as "recrutainment," since it motivates applicants to be more engaged during the recruiting process while providing recruiters with a greater opportunity to objectively examine the prospects' ability and performance (Korn and Brenner, 2017).

Recrutainment activities come in a variety of formats, including gamified job applications, virtual reality experiences, escape rooms, and online tests. The objective is to give candidates a positive and pleasurable experience while evaluating their qualifications for the position.

Gamification systems may improve the company's HR branding and serve as a distinct competitive advantage. Some of the advantages of incorporating gamification into the recruiting process are as follows (Dineen and Solitis, 2011):

- The elimination process is way faster as companies can test specific skill sets such as innovative thinking, creativity and time management.
- The candidate can easily garner ideas on the role and the organization while making it fun and vibrant.
- On-the-job performance of a candidate can be assessed by offering simulated scenarios, thereby unraveling behavioral traits and capabilities.
- Gamification is a smart and attractive way of interviewing and screening possible applicants. It makes recruitment more interactive and adds to the brand value of a company, given its youthful and energetic verve.

Additionally, gamification may be utilized to highlight an organization's culture and principles, which can be a key element in attracting top employees. Potential employees can get a better idea of what it would be like to work there by developing a gamified experience that represents the company's values and goal.

Several studies have shown that offering more job and organizational information increases candidate attraction. A simulation that's used in a gamified recruiting process, for example, might be configured to include a wealth of organizational/job information. The recruiting process that incorporates gaming might thus be seen as an instrument for spreading organizational knowledge. Additionally, gamification can affect attitudes in both direct and indirect ways. According to the idea of signaling, job searchers use the knowledge they already have to interpret ambiguous or limited information about the position and organizational characteristics. For instance, an organization that employs the use of gamification in its recruitment process may lead individuals to infer that the organization is technologically advanced, trendy and innovative. A Gamified recruitment process may work to influence attitudes through changing belief and affect through signaling of organizational attributes. The mere exposure effect suggests another mechanism through which gamification can change attitudes. According to the theory of the mere exposure effect, familiarity leads to positive emotion and attraction. Exposing game players to the brand frequently through gameplay, logo placement, and so on takes advantage on the mere exposure impact to boost the organization's affect. At its most basic, gamification may use mere exposure to improve familiarity and attraction to businesses. The benefit of a gamified recruiting process is its capacity to attract a diverse audience through effective game design. In other words, the Theory of Planned Behavior (TPB) states, based on research in psychology, that human behavior is driven by three factors: behavioral beliefs, normative beliefs and control beliefs. Behavioral beliefs address whether an individual considers the effects of a behavior to be favorable or negative. Normative beliefs encompass the opinions of others, whether the individual's social group approves or disapproves of their actions. Finally, control beliefs define an individual's perceived control over their behavior, as well as the perceived ease or difficulty of performing the specified behavior. These beliefs, once combined,

influence behavioral intentions, which are both an antecedent and predictor of actual behavior. Returning to TPB, if an individual believes that engaging in a certain behavior will result in a positive event (having fun), that their social group also approves of their engagement with the game (social media feedback), and that they have a sense of mastery over the game elements (control beliefs), the behavior of seeking out and engaging (playing) with the gamified process is more likely to occur. Furthermore, gamification is strongly related to social media. The essence of games (fun) enables their flexibility and drives them over social media platforms such as Facebook, LinkedIn, Twitter, and others. The ability of gamified recruiting applications to reach a large audience is extremely beneficial to enterprises. This might be the defining characteristic of a gamified recruitment process. The capability to engage a large audience in the organization's gamified recruiting process. This concept is consistent with the best recruitment practices. Attracting the most applications and expanding the applicant pool from which the business may pick the most competitive candidates. We argue that gamification may be an engaging medium for efficiently disseminating organizational information to a broad audience, hence increasing the organization's candidate pool.

Gamified recruitment processes will appear more attractive to job applicants than traditional recruiting methods because of engaging game dynamics. This process is described through the TPB and ¹ELMs of persuasion. Gamified recruitment processes are more social media fluid relative to traditional recruiting processes, able to reach a dynamic audience and subsequently, increase application rates due to its engaging nature.

Furthermore, according to the Attraction, Selection, and Attrition (ASA) hypothesis, candidates are a) drawn to firms with similar values, b) more likely to be selected by these companies, and c) less likely to quit them once hired.

A construct used to describe the congruence of individual values and organizational values are the Person-Organization fit (P-O fit). P-O fit and attraction/job choice have a good association, according to research. Applications for hiring that are gamified might be created to the characteristics and values of the company. An example is the simulation game "Quest for Oil" which was developed by Maersk, a global maritime, oil, and gas firm.

Users in this simulation take control of an exploration ship that is used to buy ocean drilling permits. Users have the choice to start drilling for oil after obtaining the land titles. The user is instructed by qualified advisors before they start drilling and "playing" the game. The goals of drilling for oil will be briefly discussed by a drilling engineer. The user is asked to run an environmental check each time a new action is taken.

These environmental inspections may encourage people to believe that the organization is environmentally friendly, and may even influence their overall perception of the industry. Referring back to Figure, early opinions regarding the oil and gas business may be negative.

Engagement with the gamified application may result in a greater ELM state, leading to a stronger attitude shift (from negative to favorable). An environmental check may impact both the belief component (e.g., the oil and gas business cares about the environment) and the affective component (e.g., I choose environmentally friendly enterprises) of an attitude.

Furthermore, these gamified recruiting procedures may be tailored to exploit organizational characteristics in order to boost perceived fit. In other words, they may provide information about

¹Elaboration Likelihood Model, which is a theory in social psychology that explains how individuals process and respond to persuasive messages.

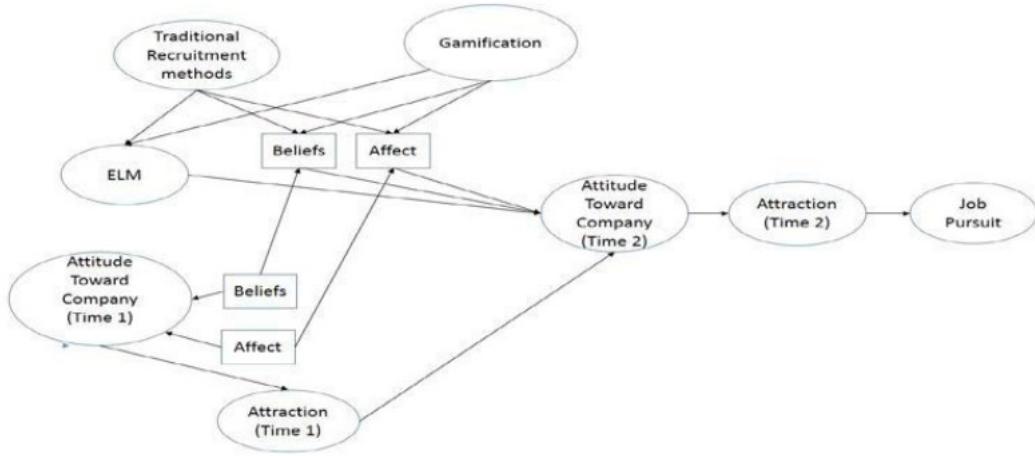


Figure 3.1: Proposed model for a Gamified recruitment process by Sam Chow and Derek Chapman

the firm, such as its competitive compensation, supremacy in its field, and emphasis on work-life balance. A gamified recruitment process can be designed to leverage organizational attributes and emphasize attributes with which the organization is recognized, increasing P-O fit.

Gamification of the recruiting process may be beneficial in attracting the attention of a larger number of potential applicants while also affecting their sentiments about the organization/industry. This attitude shift may then influence perceived organizational attractiveness and, as a result, appear in job-seeking behaviors. Furthermore, in order for a business to maintain a competitive advantage over its competitors, newer technologies must be adopted.

3.2 Recruiting

Many recruiters and managers employ common interview questions that don't seem to be very good at predicting a candidate's future performance. Throughout his 20 years of research on job interviews, Bradley University's Professor Allen Huffcutt found a number of issues with the hiring process in general and the interview process in particular. Regular interview questions disregard a lot of essential information. The top 10 interview questions, according to Huffcutt, are as follows:

1. Why should I hire you?
2. What do you see yourself doing five years from now?
3. What do you consider to be your greatest strengths and weakness?
4. How would you describe yourself?
5. What college subject did you like the best and the least?
6. What do you know about our company?
7. Why did you decide to seek a job with our company?
8. Why did you leave your last job?
9. What do you want to earn five years from now?
10. What do you really want to do in life?

With the exception of question 6, every other question covers semi-insightful, self-evaluative, predicting, or previous knowledge, to which candidates cannot or will not respond truthfully. Yet, hiring managers assume that because they have expertise assessing people, they can evaluate an applicant following these questions. This is known as "diagnosis bias," and it tricks us into thinking we have a thorough comprehension of other individuals. As Huffcutt points out, answers to more organized questions concerning a candidate's talents are more significant.

Research shows that as aptitude test predicts performance just as well as structured test. . . . then when you have identified your top candidates, you use and unstructured interview to really sell them on taking the job, get them excited about the company. This is when gamification can be helpful. Instead of immediately inviting applicants to job interviews, they play games that imitate the work environment and measure their ability. The term "recruitment" is well titled.

3.2.1 Implementing a model for gamification in recruitment

The introduction of every new technology or procedure is packed with risks. As a result, creating any game for the recruiting process needs careful consideration and continual monitoring. Before implementing Gamification into the recruiting process, there are a few things to consider. Gamification in the recruiting process should encourage prospects to interact with the organization's career pages and social media profiles. Furthermore, the Commission should be designed in such a way that it has access to many candidates in various geographical locations. Participation in Gamification produces data in the form of game performance and feedback. The game must be created so that the employer may learn more about the potential applicant or participant. Even after the recruiting process has been completed through gamification, it may assist the business in both the selection process and the increased awareness of the selected applicants. As a result, firms must approach serious games for recruiting and selection in a different way than they do for other management activities such as learning, training, and development. The following model purposed by Scholars, Zanina Kirovska, Saso Josimovski, Martin Kiselicki.

Organizational goals are important: When incorporating gamification into any organizational process, it is critical to establish clear goals for why the firm needs gamification and what the KPIs will be (key performance indicators).

Engaging: As mentioned before, Gamification in recruiting should encourage prospects to interact with the organization's career web pages and social media profiles. The material should be concise, engaging, and interesting, but it must always integrate Gamification concepts. Surveys and page ratings are two examples of how to boost the site's involvement level. In addition, the Gamification should be designed in such a manner that it has access to many applicants' touchpoints across various geographical areas.

Unveil the real candidate: Participating in Gamification generates data in the form of game performance and feedback. The game should be structured in such a way that it allows the employer to learn more about the possible applicant or participant. This would assist the employer in the process of elimination, and the employer is now better informed about the selected candidates, shortening the time to hire (Howden, 2019).

Informative: The game should not only engage the player or candidate, but it should also assist the recruiter and give the player organization insights.

Different games for different approach: Businesses must approach serious games for recruitment and selection in a different way than they do for other management operations such as learning, training, and development.

Security issues: There is a lot of opportunity to rig the game in games; hence, there is a huge demand for security to construct serious games for hiring reasons. When a player cheats in a training setting, he eventually cheats himself because he misses out on learning chances, but when it comes to hiring, the entire business is deceived.

3.2.2 Mechanism for gamification in E-Recruitment

Competitions and leaderboards

Utilizing public competitions, such as launching an online quiz show in which participants must correctly answer all of the company's questions in order to win, is an effective tactic in gamification. Money, complimentary items, or even a famous title might be awarded as a prize. It can employ a record-breaking board or title holders to make the game even more competitive. This excites the prospects / recruits and motivates them to apply again for those who are not rated. In this approach, the applicants / recruits raise awareness of the organization and educate future prospects. Furthermore, by collecting an email address to enter the contest, they may supply a pool of people that may be suitable for your team.

Simulations and puzzles Gamification can be useful as an assessment technique. For thousands of years, interviews have been employed, yet they are biased. Furthermore, before visiting your facility, candidates may quickly prepare the correct replies to interview questions. Yet, gamified estimations may involve real-world testing of applicants' abilities and actions in the job. This involves the use of virtual interns in a simulated office to quickly identify potential new workers. Players (candidates / recruits) on the other hand, get the opportunity to see if they will love working there. In the selection phase, simulations and puzzles may be utilized to swiftly reduce your talent pool based on opportunities and behaviors. These games can assess problem solving, creative thinking, conflict resolution, time management, and even how candidates deal with stress. As a consequence, new workers will be able to satisfy job requirements.

Rewards and badges In e-recruitment, badges and awards are common gamification components. They can be utilized to motivate candidates to carry out particular tasks or actions throughout the hiring process. These incentives can take many different shapes, including digital badges, certificates, or physical incentives like gift cards or items. Badges are digital representations of the applicants' successes or accomplishments. These badges are often visible on the applicant's profile, letting employers know how engaged, committed, and competent the applicant is. An applicant might obtain a "Resume Wizard" badge for finishing their resume in a predetermined amount of time or a "Interview Pro" badge for excelling during an interview. These badges provide as a visual incentive for the applicant to finish tasks and distinguish themselves during the hiring process. Rewards, on the other hand, are tangible or intangible incentives given to candidates in exchange for accomplishing particular tasks or exhibiting exceptional performance throughout the recruiting process. These benefits may include gift cards, invitations to special events or resources, or even job opportunities. Candidates are encouraged to participate more actively and meaningfully in the hiring process by rewards and badges. These gamification components inspire candidates to strive for excellence in their performance by fostering a sense of competitiveness among them. Therefore, the use of badges and incentives can increase candidates' enjoyment, engagement, and memory of the hiring process while also giving employers a useful metric for gauging candidates' engagement and performance.

Personalized feedback

Crucial component of gamification in e-recruitment is personalized feedback, which gives candidates personalized feedback based on how they performed during the hiring process. This feedback is personalized to the applicant's unique strengths and shortcomings, enabling them to recognize their areas of strength and improvement. Written feedback, video feedback, and real-time feedback are just a few of the different ways that personalized feedback can be given. An applicant might, for instance, be provided with written feedback on their cover letter or interview performance, emphasizing areas for improvement. As an alternative, candidates might get video feedback that offers a more thorough evaluation of their performance, including with concrete examples of what they did well and where they need to improve. Applicants that receive personalized feedback have a clear idea of what they need to do to increase their chances of being hired. Employers can effectively connect with applicants through this method, giving them insightful information about their performance and suggestions for future growth. Personalized feedback can be a potent motivation for candidates as a gamification technique, encouraging them to continue participating in the hiring process and enhancing their performance over time.

Using gamification systems and procedures, where each action may be changed in a little or significant way, can be highly beneficial for e-recruitment tools. By incorporating gamification into standard interview procedures, one may include interactive exams, quests tied to the firm, behavioral assessments, and other business challenges to make the screening process more engaging, interesting, and relevant. Also, it will encourage candidates to think about hypothetical workplaces and allow employers to assess a candidate's aptitude, creativity, and problem-solving skills.

Companies might force prospective applicants to play a game (use a gamified application) instead of requiring them to submit their CV and cover letter and respond to a number of qualifying questions. This has various benefits:

- **Candidates who finish the game have the strongest motivation** Job searchers are likely to submit a large number of applications, often without giving much thought to whether they genuinely like the job or organization. Playing a game involves work and commitment, causing individuals to pause and consider if it is worth their time. Applicants who are less interested may self-select out, resulting in a higher number of relevant applications.
- **Those with less experience can be evaluated more readily.** If you're looking for entry-level salesmen and you receive dozens (if not hundreds) of applications from recent grads. Because resumes don't provide much information, you may unintentionally dismiss people with great potential. But, by inviting them to play a game, you may quickly determine their genuine talents and abilities.
- **You can evaluate people who have diverse experience.** If you evaluate candidates based on their relevant experience, you may be rejecting people who are changing careers or industries. These individuals may have varying levels of experience, but they may also have transferrable talents and the capacity to adapt. Games allow them to demonstrate their true abilities and agility.
- **You can engage candidates.** Gamification in recruitment makes your hiring process more participatory, and it may help represent an exciting and fun business culture, attracting more

quality prospects. There is a potential stumbling block here: candidates may question if games are an effective hiring criterion.

Here are some examples of gamified systems regarding to recruiting stage:

1. The gamified "My Marriott Hotel" app from Marriott International is designed to draw in and hire prospects for its properties. Players may manage their own virtual hotel on the app while learning about the many duties and jobs involved in running a hotel. Marriot Hotels has applicants run through exercises in a virtual kitchen to see what it means to work in such an environment. A player must decide how much fish to order, create business plan, and deal with unsatisfied customers.

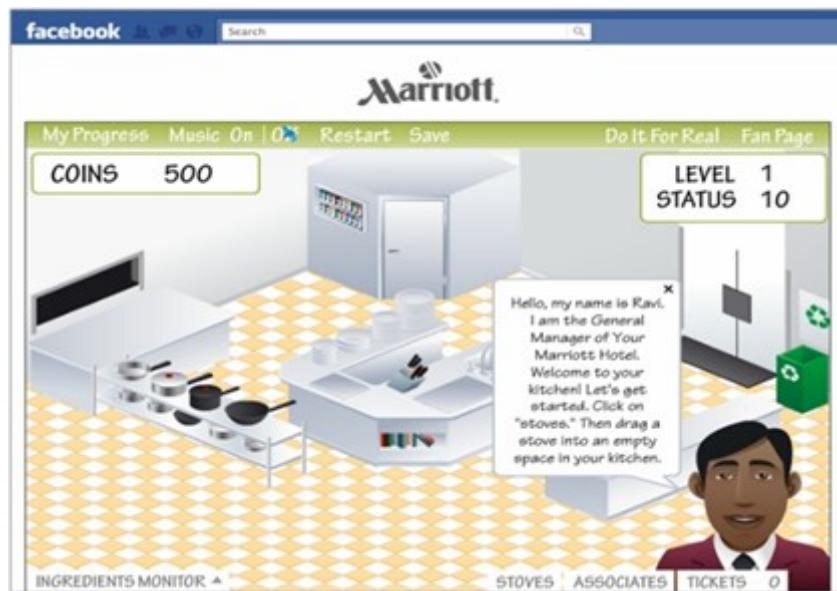


Figure 3.2: Marriot Hotel App

Only players who show that they can handle stress in the kitchen and deliver the orders in time are invited to apply at Marriott. A player first sees an empty hotel kitchen and a list of tasks to perform when they launch the app. The goals include activities including recruiting and training employees, ordering supplies, and preparing and serving food to clients. By fulfilling these duties, players gain points and virtual gold that can be used to enhance their kitchen's appliances and recruit new workers. Players move through the game, unlocking new levels and challenges that require more sophisticated abilities and techniques. Players may, for example, be required to manage many hotels, deal with unforeseen incidents such as equipment breakdowns or food sickness, or cater to special events such as weddings or conferences.

Players are introduced to the many jobs and duties involved in hotel operations throughout the game, including front desk management, housekeeping, and food and beverage service. This might assist candidates learn more about the hospitality business and the numerous career possibilities accessible.

Players can submit their scores and information to Marriott International at the end of the game for consideration in the company's recruitment process. This enables Marriott to identify

applicants who have exhibited the skills and talents required for success in hotel operations and perhaps offer them jobs inside the firm.

2. Game of Threats by PCW

PwC employed a gamified evaluation known as "Game of Threats" to evaluate applicants' cybersecurity skills. The evaluation is meant to replicate a cyber assault scenario, and participants must use their knowledge and abilities to defend against the attack. When a player

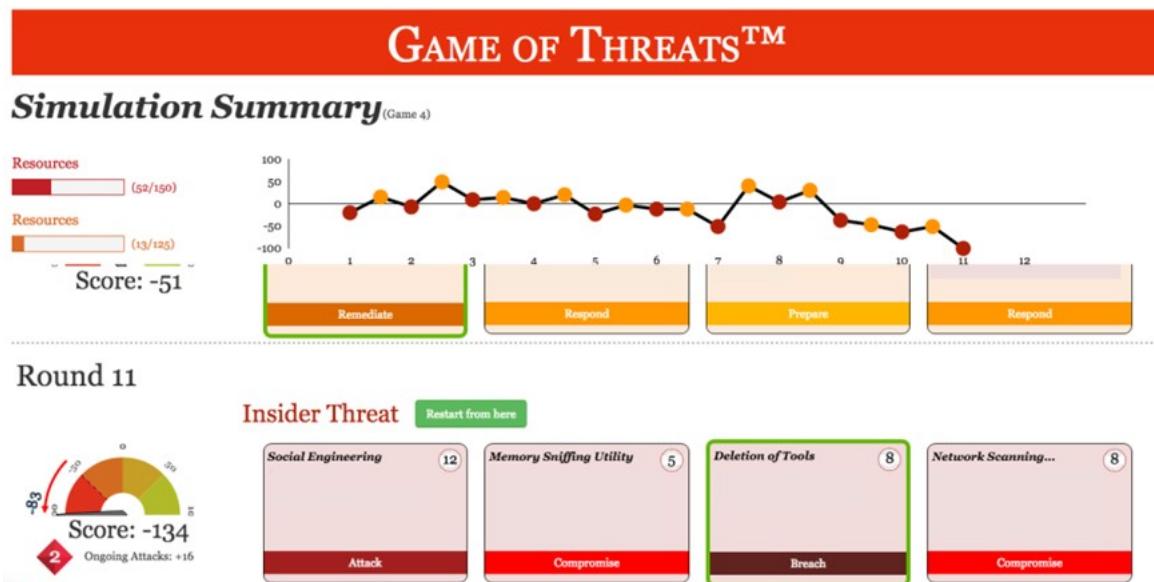


Figure 3.3: Game Of Threats App

initially launches the game, they are confronted with a number of cybersecurity situations and tasks. These scenarios might include detecting and stopping malware attacks, discovering and mitigating network vulnerabilities, or responding to a data breach. Each scenario is presented in a game-like fashion, complete with a virtual environment and interactive features that need strategic decisions and action on the part of the player. Throughout the game, players are given information and feedback on their performance, such as their score, the time it takes to complete each scenario, and feedback on their decision-making and problem-solving abilities. This information may be used to assess the player's potential for a cybersecurity job, as well as to highlight areas for development and improvement. Players can submit their scores and information to PwC at the end of the game for consideration in the company's recruitment process. This enables PwC to identify people with high cybersecurity abilities and expertise and perhaps offer them job possibilities within the organization.

3. L’Oreal’s Brandstorm

gamified recruiting campaign is intended to attract and recruit applicants for marketing and management roles. The campaign consists of a series of challenges and games designed to assess applicants’ creativity and strategic thinking abilities.



Figure 3.4: L’Oreal’s Brandstorm App

When a candidate first enters the Brandstorm competition, they are provided with a real-world marketing dilemma that L’Oreal is facing. The challenge often entails developing a marketing campaign for one of L’Oreal’s product lines, and applicants must devise a creative and successful approach for reaching and engaging target consumers. L’Oreal provides applicants with a variety of materials and tools to help them prepare for the challenge, such as online lessons, case studies, and access to industry experts. Candidates may also create groups with other participants in order to cooperate and develop ideas. Candidates have several weeks to create and submit their marketing campaign concepts when the challenge is made public. The suggestions could include things like social media interaction, branding, advertising, and product design. Following the submission of the proposals, L’Oreal evaluates them and chooses a shortlist of finalists to compete in the following round of the competition. The top contenders are invited to a live event where they pitch their ideas to a panel of judges and take part in a variety of other tasks and games meant to evaluate their innovation and business savvy. Candidates get the chance to demonstrate their abilities to L’Oreal during the competition and learn more about the company’s culture and principles. Candidates who are enthusiastic about marketing and management and who are interested in working for an organization that values creativity and innovation may be drawn to the position as a result. Top-performing contestants may be given employment offers by L’Oreal after the competition or invited to take part in its training and development initiatives. Overall, Brandstorm is a successful and entertaining method for L’Oreal to find and hire exceptional individuals for its management and marketing jobs.

4. Heineken "The Candidate"

The "The Candidate" gamified recruiting campaign from Heineken aims to attract in and hire applicants for its worldwide management trainee program. The campaign incorporates a number of tasks and activities that put applicants' abilities in areas like creativity, problem-solving, and cooperation to the test.



Figure 3.5: Heineken The Candidate

They are given a variety of challenges and assignments during the Candidate competition that are intended to mimic the daily activities of a Heineken employee. The difficulties can involve creating a marketing strategy, resolving a logistical issue, or creating a brand-new product idea. Heineken gives applicants with a variety of materials and tools that help them prepare for the challenges including as online lessons, case studies, and access to Heineken personnel who can provide support and advise. Candidates get points and perks such as virtual badges and prizes as they move through the tasks. They may also network with other participants and Heineken workers while learning more about the company's culture and ideals. Heineken assesses the candidates' scores and performance at the end of the competition and picks a shortlist of finalists to participate in the next round of the recruiting process. The finalists are invited to a live event where they will take part in additional challenges and activities designed to assess their abilities and eligibility for the management trainee program. Heineken employs The Candidate throughout the competition to spot high-potential applicants who have proven they possess the abilities and traits required to succeed in the organization's management trainee program. Candidates who are enthusiastic about the beer industry and are drawn to working for an organization that values innovation and creativity are also drawn to the

competition.

5. Multipoly is a recruiting simulation by Hungarian division of the Multinational accountancy and consultancy firm PricewaterhouseCoopers. Potential candidates are invited to participate in the virtual reality world of PwC as trainees, working for a year at the company.



Figure 3.6: Multipoly App

The game is used for selection, as applicants must attend trainings, join a community, negotiate with clients, and solve numerous exciting tasks, along the lines of the game Monopoly. For each accomplished task players receive points and get a step closer to getting hired.

The purpose of these gamified applications is to replicate a work environment in advance, allowing both the applicant and the organization to gather useful insights that will aid in their respective judgments. Advantages are present on both sides, as candidates may determine whether the work is a good match for them, and organizations can analyze not just employee performance, but also abilities, communications, personalities, and other necessary characteristics for the job position.

3.3 Onboarding

Nowadays, engaging new recruits and onboarding them into the business is both a difficulty and an opportunity. According to research, the first 90 days of work determine a major portion of an employee's long-term commitment and longevity with a business. According to an Abardeen group research, new recruits who participate passionately in the onboarding process become more productive faster. As a result, employers have a great potential to improve employee engagement and retention through an efficient and successful onboarding approach.

Despite the fact that most firms recognize the value of a well-designed onboarding program, it is seldom executed due to a variety of practical restrictions. The causes are numerous, but they mainly fall into one or more of the following categories:

1. **Different Joining Dates:** Employees join at various times throughout the year, making it challenging to conduct new hire onboarding as soon as an employee joins. Once a significant number of new workers is ready for training, new hire onboarding is often done biweekly or monthly. Meanwhile, many "still to be onboarded" new hires may establish attitudes that are difficult to modify.
2. **Distributed workforce:** With new hires arriving from all across the country, arranging a cohesive onboarding event is not just a logistical headache, but also financially prohibitive.
3. **New Gen Workforce:** Conventional classroom learning methods are not as engaging and popular with the current generation of workers who have grown up with social networks, gaming, mobile phones, and the internet. They are always connected, impatient, and have an extremely short attention span. As a result, the traditional method of x days or y weeks of introduction with presentations and lectures does not resonate with the current generation.
4. **Productivity:** Companies are unable to afford long training periods to get new workers up to speed given the demanding work environments and demanding schedules of today. The sooner a new employee starts producing, the better for the company. Moreover, because it is a recurring process, onboarding new hires takes up a lot of time each month for senior management and trainers, who would want to use this time more productively on their existing projects and deliverables.

There is a big potential to leverage technology and new learning approaches effectively to tackle these challenges and produce a win-win solution for organizations, employees, and solution suppliers.

As an example, **MindTickle** collaborated closely with a Fortune 100 company's recruitment team to assist them with new hire onboarding. For the first time, the corporation conducted campus recruiting in India, and they hired over 300 extremely brilliant individuals from the premier universities across the country. They were handed offers in December, but they were to join the firm in tiny groups between June and August. When offers were made, the following changes occurred in the company's recruitment team:

- Retaining top talent/reducing pre-employment attrition: Because most of these students were exceptionally skilled, they were receiving offers from many firms. The company had spent a

large amount of time and effort in hiring these applicants, and they did not want to lose them during the interval between offer and joining.

- Various joining dates/batch sizes: If done manually, the onboarding procedure must be completed many times for each joining batch.
- Minimize training time: The firm had hired these personnel for extremely vital tasks, and the sooner the new recruits settled in and were productive, the better. They were seeking for ways to quickly settle new recruits, educate them on the firm's rules, goods, and processes, and absorb them into the organization.
- Absorption into the business's social fabric: Because new recruits are often nervous about their positions, teams, relocation, and so on, getting acquainted with other workers and connecting on a social level with the firm is critical in the initial few days of a new hire.

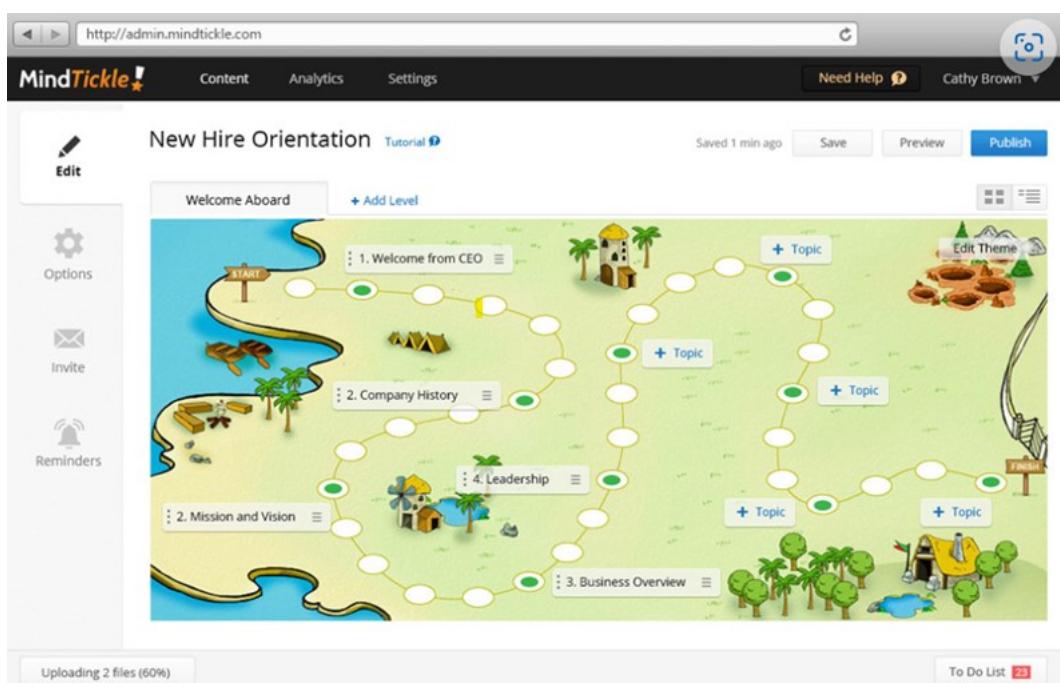


Figure 3.7: MindTickle

MindTickle designed and executed a two-step solution to address the issues.

1. Pre Joining Engagement with the new hires between day of offer and day of joining

To address the issue of employer branding, retention, and social group formation, MindTickle introduced "HiFli," a fun and social game for all new employees across all universities. It was designed as an online quiz in the style of a hot air balloon race, based on general knowledge and facts about the firm.

- **Branding and retention:** The new employees were asked to take part and win medals by answering random questions about the organization. There was a dynamic leaderboard with social updates that showed all participants' progress. This competition created a strong pull factor, and new workers spent a significant amount of time learning

about the firm, its policies, vision, goal, and products, among other things, in order to score higher. This game created a strong incentive to interact with the information and learn more about the brand. In a study conducted following the launch of the HiFli game, more than half of new employees stated that "they are now more aware of the organization and look forward to joining.

- **Social interactions:** The "HiFli" game was built in such a method that new employees had to engage with one another by sending messages, seeing one other's profiles, having talks, and so on in order to progress. All of this resulted in the formation of a strong social group even before these new recruits met face to face. The bonding and team building virtually resulted in a strong pull factor, and with the exception of a handful of them, every new recruit joined the organization. Badges were presented to new recruits for their social connections. Nearly 85% earned the specified badge. To maximize social contacts, about 70K mails were sent amongst the new hires.

2. Post Joining Orientation of the New Hires

After addressing the concerns of branding, retention, and social onboarding, the next major hurdle was to onboard new recruits in the organization in a fast and productive manner.

- MindTickle was provide all the new hire induction related material (eg. Policies, documents etc) from the company and the MindTickle team absorbed that into its gamification framework to create an interactive online learning experience.
- As soon as they joined, all new recruits were given the internet URL for this game. Onboarding was presented as a journey in which customers had to go via several spots on a map, learn about the organization, and overcome certain tasks. All of this could be done at the users' leisure and did not necessitate an obligatory class room full-day session.
- A Small contest was developed in which the top scorers for each month received rewards. As a consequence of the healthy competition, 95% of the participants participated, and 75% finished the full procedure on their own. This resulted in considerable cost and operational savings. It also enhanced productivity because they could be provided with this connection as soon as they joined.

The following design elements were carefully implemented in the design of MindTickle's online new hire onboarding platform and were crucial in obtaining the desired results:

1. **Setting user expectations:** The content and material given to participants were carefully prepared to create user expectations in terms of time commitment necessary, expected benefits, and gameplay.
2. **Content Design:** The platform offered the learning information and exercises/challenges in a compelling way such that the user did not abandon it due to weariness and/or attention deficit.
3. **Accessibility:** The platform design assured that players could access the online game in a straightforward and easy-to-remember manner.

4. **User experience:** To develop a consistent and pleasant user experience, effort and attention were dedicated to how to minimize any difficulties that users may encounter. Many cycles of user experience research and user interaction improvement were required to ensure that the user experience was intuitive and smooth.

some additional gamified application onboarding systems, such as the ones listed below:

1. **New employee scavenger hunt:** This involves creating a scavenger hunt game where new employees have to explore the office, meet colleagues and complete tasks to learn more about the company culture, values and policies. This can be a fun and interactive way for new hires to get to know their colleagues and the workplace.
2. **Gamified orientation:** Companies can create an interactive online orientation program that includes games and challenges to teach new employees about the company's products, services, and policies. This can include quizzes, videos, and interactive scenarios to engage new hires and make the onboarding process more enjoyable.
3. **Virtual reality (VR) onboarding:** VR technology can be used to create a virtual onboarding experience where new hires can explore the office, meet colleagues and learn about the company culture in an immersive and interactive way. This can be a fun and engaging way to introduce new hires to the company's environment and values.
4. **Learning management systems (LMS):** LMS platforms may be gamified to increase new hires' interest in and enjoyment of learning and training. To motivate staff to finish training courses and advance their abilities, this might incorporate gamified quizzes, interactive situations, and leaderboards.

1. New employee scavenger hunt:

- Trivia game: This can involve creating a quiz or trivia game that tests new hires' knowledge of the company's history, products, and services. The game can be created in an interactive format, such as a Kahoot or Quizlet, to make it more engaging.



Figure 3.8: Kahoot

- **Photo scavenger hunt:** This might entail making a list of objects or locations that recent hires must discover and photograph while at the workplace or nearby. This might involve discovering a certain workplace perk, snapping a photo with a specific coworker, or visiting a local monument.
- **Team-building challenges:** This can involve creating a series of team-building challenges that new employees must complete in groups. The challenges can be related to communication, problem-solving, and collaboration, and can include activities such as building a tower out of spaghetti and marshmallows or completing a puzzle as a team.
- **Video challenge:** This can involve creating a video challenge that new employees must complete, such as introducing themselves in a creative way or creating a short skit that showcases the company culture and values.
- **Office orientation:** This can involve creating a series of tasks that new hires must complete to get to know the office and its amenities. For example, finding the coffee machine, locating the IT help desk, or finding the nearest restroom.

These are only a few illustrations of the kind of activities and games that might be incorporated into a new employee scavenger hunt. Making training interesting, participatory, and enjoyable is vital, as is assisting new hires in learning about the company's culture, beliefs, and policies.

2. Gamified orientation

The HR department may design an online orientation program with gamified components including interactive situations, quizzes, and awards. This is how it might work:

- **Welcome video:** To introduce new recruits to the corporate culture and principles, the HR staff might create a welcome film to kick off the orientation session.
- **Interactive scenarios:** The orientation program may contain interactive scenarios that replicate real-world circumstances that recently hired employees would experience in their position. For instance, they could be requested to finish a purchase order, answer a client inquiry, or settle a dispute with a coworker.

Players in the game **The Office** are stranded in an office and must work out puzzles and riddles to get out. The game calls for skills in problem-solving, critical thinking, and attention to detail.



Figure 3.9: The Office

- **Quiz Questions:** The orientation session may involve quizzes with questions about the background of the business, its offerings, and its human resources practices. By adding time restrictions, scoring, and leaderboard elements, the quiz questions may be made more interesting through gamification.
- **Rewards:** For completing every step of the orientation program, new recruits can win awards like badges, points, or certificates. To promote friendly rivalry among new recruits, the prizes might be shown on a leaderboard.
- **Feedback and evaluation:** The orientation program could include a segment at the conclusion where new recruits can comment on the orientation procedure and offer changes. With the help of this input, the orientation program may be improved to better serve incoming new employees.

3. Virtual Reality

The onboarding process may be improved through a variety of approaches thanks to VR technology.

- **Virtual office tour:** Using a VR headset, you may give prospective recruits a tour of the various departments, conference rooms, and facilities of the company. This can make it easier for new employees to become accustomed to the office's layout and feel more at home there. To help new workers acclimate to their workplace and learn about



Figure 3.10: VR corporate Facilities

the corporate culture, virtual tours of company facilities, such as offices, factories, or warehouses, can be employed. The building can be explored, the company's principles and regulations can be learned about, and new hires can get to know their coworkers by incorporating interactive components like quizzes, scavenger hunts, or challenges.

- **Role-playing situations:** VR may be used to recreate real-world situations that new employees might face in their positions. For instance, a salesperson can be trained to produce a sales presentation, and a customer care representative can be prepared to manage challenging client encounters. This can boost new recruits' self-assurance and help them perform better at work.
- **Safety instruction:** In a simulated setting, VR may be utilized to give new employees safety instructions. For instance, they may receive training on how to handle emergencies like fires or medical emergencies without endangering others. This can guarantee that new recruits are ready for any possible workplace safety risks.
- **Product demonstrations:** Virtual reality (VR) may be used to give new recruits a virtual tour of a product, demonstrating how it functions and how to utilize it to wow consumers. New employees may feel more competent to represent the company's goods and services as a result.
- **Cultural immersion:** Virtual reality (VR) may be used to provide new employees with a simulated environment in which to experience the company's culture and values. They might take part in online team-building exercises or online workplace gatherings, for instance. As a result, new recruits may feel more a part of the workplace community and develop better bonds with their coworkers.

HR may provide new recruits an immersive and interesting experience throughout the onboarding process that will make them feel more prepared and in control of their new work. Additionally, it may increase new hires' engagement and retention, which will enhance their productivity and job satisfaction.

4. **Learning management systems** LMSs are software applications that are used to organize, distribute, and track e-learning initiatives such as online courses, quizzes, and other interactive material. Here are some examples of how an LMS can be used in the human resource onboarding process:

- **Centralized learning platform:** A learning management system (LMS) may be used to offer new recruits with access to a centralized learning platform where they can access all of the training and learning resources they require for their work. On-demand training modules, movies, and other materials may be included.
- **Onboarding checklist:** LMS may be used to develop onboarding checklists for new recruits, guiding them through the different steps of the onboarding process. This can assist in ensuring that all new recruits complete the essential responsibilities and training prior to beginning their position.
- **Assessment and tracking:** An LMS may be used to assess and track the progress of new recruits during the onboarding process. This can assist HR in monitoring the performance of new recruits and identifying areas for improvement.
- **Personalization:** A learning management system (LMS) may be used to tailor the onboarding experience for each new recruit. They can, for example, be given tailored training courses depending on their function, department, or skill level.
- **Feedback and evaluation:** An LMS may be used to collect feedback on the onboarding process from new recruits and identify areas for improvement. This feedback can be used by HR to refine and improve the onboarding process for future new hires.

HR can create a more efficient, effective, and interesting learning experience for new recruits by incorporating LMS into the onboarding process. This can assist increase their work performance, job happiness, and overall company retention.

3.4 Talent Management (Learning, Development, and Training)

In gamification-based training programs, game aspects are used to give real-life work circumstances (York and deHaan, 2018). In order to achieve corporate goals, gamification-based training programs are matched to strategic objectives (Schobel et al., 2020). Research reveals that gamified training programs provide a unique ecosystem of learning that creates interest among the learners and increases their engagement with the content (Landers and Armstrong, 2017; Coull et al., 2017; Pereira, Oliveira, Vieira, Lima, and Paes, 2018). Motivation, engagement, academic achievement, sociability, and teamwork have all been studied in academic and industrial gamification studies. Developers use numerous training components in games, such as leaderboards, badges, challenges, group competition, levels, narrative, points, feedback, avatars, social points, feedback, prizes, likes, and accomplishments, to encourage learners to take control of their learning path. These features give information about the training materials and increase participation in the training program. Yet, research on the usefulness of gaming aspects and learning outcomes is still sparse (Gokhale and Kulkarni, 2022; Tu, Hsieh, and Feng, 2019; Aldemir, Celik, and Kaplan, 2018).

Learning theories have been developed based on various disciplines such as education, psychology, sociology, and neuroscience (Zimmerling, Hollig, Sandner, and Welpe, 2019). Learning theories were once largely focused on education; however, their application has recently expanded to cover other areas such as human resource management (Gupta and Gomathi, 2017).

In the case of gamification and its impact on learning outcomes in students or employees, researches have extensively applied the self-direction theory, flow theory and goal-setting theory (Huang et al., 2019; Magylaite, Ceponiene, Jurgelaitis, and Danikauskas, 2020; Rachels and RockinsonSzapkiw, 2018; Groening and Binnewies, 2019; Nishihara, Parwak, Edogun, Park, and Lee, 2020). Gamification has also been studied through the lens of the cognitive evaluation theory, behavior reinforcement theory, social comparison theory, rational choice theory, self-efficacy theory, constructivist learning theory and technology-enhanced training effectiveness model (Lopez and Tucker, 2019; Landers and Armstrong, 2017; Rachels and Rockinson-Szapkiw, 2018).

The most often utilized theories are the self-determination theory, the flow theory, and the goal-setting theory (Gupta and Gomathi, 2017). The self-determination theory is concerned with elements that contribute to an individual's sense of autonomy, competence, and capacity to connect to training programs (Nishihara et al., 2020). According to this hypothesis, the greater the satisfaction of learners, the greater their motivation to self-learn (Buil, Catalan, and Martnez, 2020). The flow theory suggested by Csikszentmihalyi is the second most widely utilized theory (2017). According to the hypothesis, learners are motivated by challenging learning environments, which creates a flow toward more learning (Rachels and Rockinson-Szapkiw, 2018). The third theory, goal-setting theory, aids in the identification of elements that encourage learners to reach learning objectives (Groening and Binnewies, 2019).

The self-determination theory highlights the elements that should be included in any gamification program to encourage learners to participate in the course and take control of their learning journeys

(Dale, 2014). The flow theory of learning highlights the elements that might keep the learners' learning flow running (Bai, Foon, and Huang, 2020). The goal setting theory advocates defining learning goals and then constructing gamification material to drive learners to achieve them (Fortes Tondello et al., 2018).

Studies have reported improvements in the academic performance of the participants involved in gamification-based learning (Sanchez, Young, and Jouneau-Sion, 2017). Studies also report to an increase in engagement in the learners, while also promoting collaboration and behavioral change (Huang et al., 2019; Landers and Armstrong, 2017; Wu, 2018; Bouchrika, Harrati, Wanick, and Wills, 2019; Buckley and Doyle, 2017). However, the benefits of gamification can only be realized when the games include the right elements of selfmotivated learning (Ding, 2019; Bouchrika et al., 2019; Buckley and Doyle, 2017; Baxter, Holderness, and Wood, 2017; Morschheuser, Hamari, and Koivisto, 2016).

Several game elements are applied in any gamification program. The studies (Denden, Tlili, Essalmi, and Jemni, 2017; Hallifax et al., 2019; Klock et al., 2020) indicate that points, leaderboards, challenges, ranking and scores are the most popular gaming elements applied in the gamification-based training programs.

- Points: Points means score points which provide feedback to the individual in the gamified training program.
- Leaderboards: Leaderboards are the engagement-based activities that reflect the higher score achieved by the trainees in the gamification training program.
- Challenges: Challenges are the motivation actions to accomplish a task in the training program.
- Ranking: Ranking is the display of points and position of the training participants and teams in the gamification program.
- Badges: Badges are the symbols assigned to the participants to accomplish a task in the gamified training program.
- Progress bars: are the tools to provide feedback to the participants in the gamified training program.
- Narrative: is the method of information provided to the participants for taking the right actions in the gamified training program.
- Medals: are the visual representation of achievement in a gamification training program.
- Storyline: Story includes information related to the backstory and the ongoing plot of the game in the training program.
- Levels: provide information to the participants on the gamified version of content progression in the training program.
- Certificates: are the symbols of mastery achieved over a particular skill in the training program.

- Virtual goods: are the products and services that are applied in the gamified training program.
- Achievement: indicates the participant's merit in the gamified training program.
- Avatars: are the icons which represent the application of product and services in the training program.

There are three aspects that might be consider. First, we'll look at how to utilize self-determination theory to select aspects to include in game-based programs for businesses. Second, while building a corporate training program, consider the compatibility of gamification features. Finally, assess the impact of gamification features on training program learning results.

The self-determination theory of learning is concerned with an individual's self-determination and self-motivation to achieve predetermined goals. From the standpoint of a gamification-based training program, it is critical to understand the effect of learning theory and its impact on game features and learning outcomes. This section discusses self-determination theory, game components, and learning results obtained through gamification-based training programs.

3.4.1 Self-determination theory

The self-determination hypothesis was proposed in special issues of modern educational psychology (Ryan and Deci, 2000). Throughout time, the self-determination theory has found widespread application in the context of education and training (Tansley, Hafermalz, and Dery, 2016).

This approach is founded on three learner needs: autonomy, competence, and relatedness. Autonomy is defined as a sense of initiative and ownership over an action. Competence is the capacity to learn new concepts, and relatedness is the ability to connect to the topic and feel a feeling of belonging with the task (Ferguson, Van den Broek, and Van Oostendorp, 2020). The three components of the self-determination theory must be fundamental aspects of the course design process from the standpoint of gamification.

Game Elements

There are three types of game elements: dynamics, mechanics, and components (Landers and Armstrong, 2017). The dynamic element includes the game's high-level characteristics that must be examined and maintained, such as emotions, story, and advancement. The mechanics component contains of procedures that engage players through progressing activities, such as challenges, competition, and collaboration (Landers and Armstrong, 2017). The third category comprises components that are either mechanical or dynamics in nature, such as accomplishments, avatars, badges, and level points (Landers and Armstrong, 2017).

Learning outcomes

Learning evaluation is the systematic collection of information related to the training program. Constructive understanding of the specified outcomes is evaluated based on the learning outcomes (Kraiger, Ford, and Salas, 1993). Learning outcomes are multifaceted, which implies that changes in cognitive, emotional, or skill capacity may indicate learning. Kirkpatrick (1976, 1987) presented a training assessment model that comprises four levels of evaluation: trainee emotions, learning,

behavior, and organizational results. Learning outcomes are assessed in this paradigm by analyzing the amount to which trainees have acquired relevant principles, facts, or abilities (Alliger and Janak, 1989). Typically, the training community has only considered behavioral or verbal knowledge improvements as learning objectives (Bloom, 1956; Gagne, 1984). To progress the Moving toward a theoretically established system of learning outcomes is required for both the science and practice of learning outcomes (Kraiger et al., 1993). The study contains three learning outcome categories, participant awareness, employee involvement, and employee engagement in the training session, drawing on Blooms et al. (1956) and Gagne's (1984). To elaborate on the study's constructs, awareness includes aspects of knowledge related to the training program and its relationship to the learning outcomes (Schmidt and Ford, 2003); employee involvement, as the name implies, refers to employee involvement in training programs (Wolf and Zwick, 2008); and engagement includes the employee's level of engagement in the training program (Wolf and Zwick, 2008). (Chandani, Mehta, Mall, and Khokhar, 2016).

Praveen Kulkarni, Prayag Gokhale, Y.M. Satish and Basavaraj Tigadi conduct a research to evaluate the impact of the learning theory on gamification-based training program in a corporate ecosystem. The empirical research technique is used as the research strategy since the study is based on the responses from the trainers using gamified training programs.

The study seeks to achieve three goals: first, understand the role of self-determination learning theory in aiding in the design of an efficient gamification-based training program; second, understand the compatibility of the gamification elements in a corporate training program; and third, understand the influence of the game elements on the learning outcomes of the corporate participants in the study. They employed the formative research approach to determine the effect of gamification on the learning outcomes of any business training program based on the study strategy and objectives.

In Their research Data is gathered using a survey-based process. Trainers from software development businesses in Bangalore are among those taking part in the gamification-based training program. Data is gathered from a database of registered software businesses. Bangalore-based NASSCOM. Bangalore, popularly known as India's Silicon Valley, is home to over 5,000 businesses. A total of 200 human resource managers and trainers from these software development businesses were polled using a standardized questionnaire to evaluate the predicted links. They got answers from 114 people, 104 of whom were men and ten of them were women. The demographic information of the responders is supplied.

The data is collected using a five-point Likert scale, with 1 being the lowest and 5 being the greatest (1 = strongly disagree) and (5 = strongly agree). A questionnaire was distributed to participants. The questionnaire's goal was to assess their view of gamification in training and how it affected learning results. Based on self-determination theory and other gamification aspects, the following constructs were constructed for the study: autonomy, competence, relatedness, game elements, employee awareness, employee involvement, and employee engagement. The components are operationalized as reflecting constructs in the study.

The study applies smart partial least square (PLS) software to conduct the path analysis. The traditional PLS are measured as a combination of indicator weights without including the mea-

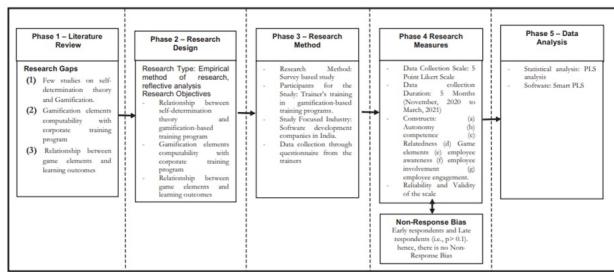
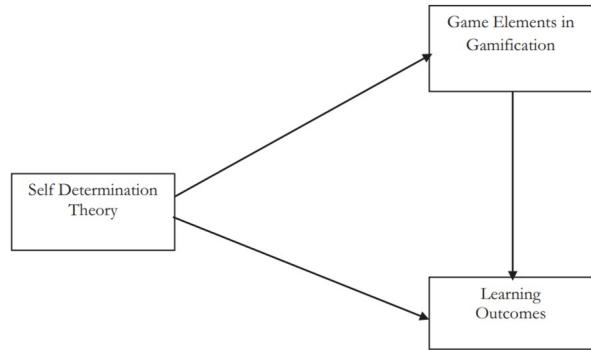


Figure 3.11: Self-determination theory

Variable	Frequency	(%)
<i>Gender</i>		
Male	104	91.23
Female	10	8.77
<i>Designation</i>		
Human resources manager	103	90.35
Training manager	11	9.65
<i>Age</i>		
25–35	17	14.91
35–45	55	48.25
45–55	42	36.84
<i>Experience</i>		
2–5 years	18	15.79
5–10 years	39	34.21
10–15 years	45	39.47
15 years and above	12	10.53

Figure 3.12: Profile of participants

surement errors (Henseler et al., 2014). Measurement errors often serve as additional indicators that correspond to actual indicators; together, real indicators and measurement errors might create bias. Kock (2017) opines that without looking at the errors of estimating, the use of compounds instead of factors leads to other known sources of bias. Path coefficients tend to be weak in relation to their corresponding true values. Thus, recent developments in the construction approach over traditional PLS strategies have helped to close the gap between factor-based and composite-based structural equation modeling strategies (Kock, 2017; Sarstedt, Hair, Ringle, Thiele, and Gudergan, 2016; Anderson and Gerbing, 1988).

Cronbach alpha (Cronbach, 1951) is used to assess the constructions' reliability. The results, as given in Table 3, reveal that the values are more than 0.6. The technique's composition is checked using average variance extracted (AVE), and the findings are more than 0.50. (Flynn, Huo, and Zhao, 2010). Tables 4 and 5 show the results of discriminant validity and cross-loading for discriminant validity. The overall loading of each element ($|f_i|$ is larger than 0.5, and the combined reliability scale coefficients are greater than 0.7. (Flynn et al., 2010).

Reflective constructs	Composite reliability	AVE
Self-determination	0.856	0.664
Game element	0.861	0.572
Learning outcome	0.812	0.654

Note: AVE = average variance extracted

Figure 3.13: Composite reliability for all reflective constructs

The evaluation of the models focuses on estimating the validity of the constructs. The model includes composite reliability, item-wise reliability, AVE and estimating discriminant validity.

The model provides reliability and validity of the variables and so they are included in the model (Henseler, Ringle, and Sarstedt, 2012). The reliability results in Table 3 are over 0.7, testifying to the internal consistency among the constructs. AVE needs to be > 0.5 to reflect the validity of the variables.

Next table demonstrates that the variables have adequate convergent validity (Hair, Black, Babin, and Anderson, 2014). Figure 3 shows loadings greater than 0.70, which is within the permissible range (Dommeyer, Gross, and Ackerman, 2016). This shows that the study's reliability analysis was satisfactory.

Variables	Game element	Learning outcome	Self-determination
Game element	0.756	—	—
Learning outcome	0.658	0.808	—
Self-determination	0.776	0.799	0.815

Figure 3.14: Results from discriminant validity

Discriminant validity needs to be above the minimum value of 0.5 (Dommeyer et al., 2016). Discriminant validity of the constructs shows higher values of more than 0.5 in AVE, refer to last 2 tables. Further, cross-factor loadings are shown in next Table and Figure. After analyzing the validity and reliability of the measurement model, the proposed structural model is analyzed (Hair et al., 2014).

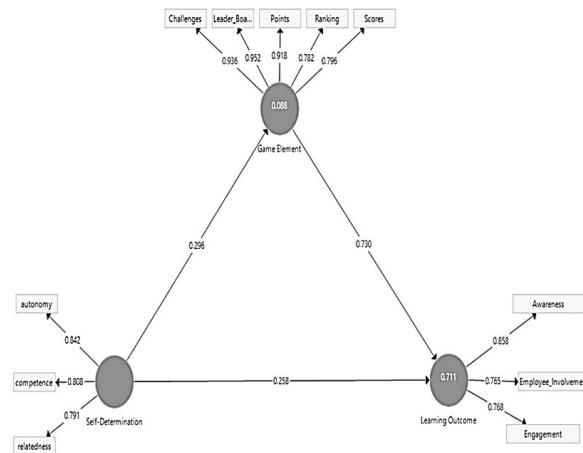


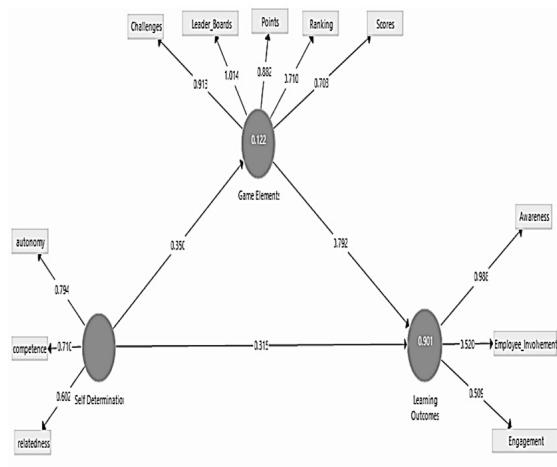
Figure 3.15: Conceptual model with PLS algorithm calculation

To analyze the significance of the structural relationship, they evaluate the path coefficients and their corresponding significance levels. To evaluate them, it is necessary to verify the significance

Constructs	Self-determination	Game elements	Learning outcome
Autonomy	0.842	—	—
Competence	0.808	—	—
Relatedness	0.791	—	—
Challenges	—	0.936	—
Leaderboard	—	0.952	—
Points	—	0.918	—
Ranking	—	0.782	—
Scores	—	0.796	—
Awareness	—	—	0.858
Employee involvement	—	—	0.765
Engagement	—	—	0.768

Figure 3.16: Cross-loading for discriminant validity

of learning outcomes through the t-values and the strength of the relationships. This information is presented as follow:



	Loadings	SD	T-stat	p-value	2.5%	97.5%
Self-determination – Game elements	-0.219	0.222	0.027	0.008	-0.684	-0.287
Self-Determination – Learning outcomes	0.455	0.457	0.054	0.001	0.122	0.015
Game elements – Learning outcomes	-0.026	0.283	0.012	0.011	-0.234	0.457

Notes: SD = standard deviation; T-Stat = t-statistic

Figure 3.17: Structural model assessment results

The results from path coefficients show that the self-determination learning theory and learning outcomes are negative predictors of game elements. However, self-determination learning theory has a positive association with learning outcomes. The second assessment in the PLS model is the value of R². This value is assessed through 0.65. All above loading values are considered as substantial relationship; 0.33 as moderate relationship; and 0.19 as weak relationship (Chin, 1998).

Next Table provides the R² values obtained for the study. These values show that self-determination theory to game elements has a weak relationship (0.255); self-determination to learning outcomes has a substantial relationship (0.706), and game elements to learning outcomes have a moderate relationship (0.317).

The results with regards to f² values are interpreted as 0.02 as a small effect, 0.15 as a moderate effect and 0.35 as large effects on the latent variable; refer to next plot.

Self-determination on game elements shows 0.001, which is a small effect; self-determination on learning outcomes is 0.042, which is a large effect, and game element on learning outcomes is 0.171, which is the moderate effect.

	Original sample (O)	Sample mean (M)	SD	T-stat	p-values
Self-determination – Game elements	0.255	0.254	0.045	5.633	0.11
Self-Determination – Learning outcomes	0.706	0.306	0.043	7.061	0.00
Game elements – Learning outcomes	0.317	0.719	0.029	24.47	0.07

Notes: SD = standard deviation; T-Stat = t-statistic

Figure 3.18: Caption

	Loadings	SD	T-stat	p-value	2.5%	97.5%
Self-determination – Game elements	0.001	0.216	1.215	0.022	0.331	2.611
Self-Determination – Learning outcomes	0.042	0.011	0.301	0.00	0.001	0.040
Game elements – Learning outcomes	0.171	0.422	0.305	0.089	0.423	3.522

Notes: SD = standard deviation; T-Stat = t-statistic

Figure 3.19: f2 results

The results from the cross-validation redundancy value, which is greater than 0, have a predictive relevance. From the results shown in Table 9, it is observed that self-determination is 0.383, which is greater than 0, while learning outcomes is 0.071, which is also greater than 0.

Variables	SSO	SSE	Q ² (=1-SSE/SSO)
Self-determination	1086	669.9	0.383
Game elements	1086	1086	0.000
Learning outcome	1448	1345.73	0.071

Notes: SSO = sum of squares of observation; SSE = sum of square errors

Figure 3.20: Cross-validated redundancy

The game element value is 0.000. The standardized root means square residuals (SRMR) are in the range of 0.10 and 0.08, which is considered good fit. The results, refer to following table, show that SRMR is less than 0.08.

The theoretical framework for gamification is divided into three sections: learning theories and gamification, gamification features, and application of the constructs in building game-based learning. Existing academic literature on the application of gamification-based training in the corporate eco-system is examined in this study to provide an answer to the influence of self-determination theory on gamified elements and learning outcomes, namely awareness, involvement, and engagement, among corporate training program participants.

A study of the literature reveals that the self-determination theory has been used to find game features to incorporate in gamified learning in order to improve learning outcomes in academic contexts (Aldemir et al., 2018; Baydas and Cicek, 2019; Ding and Yu, 2018; Huang et al., 2019).

Examines the application of self-determination theory with game elements, albeit in a business context, and discovers a negative link between the two. Nonetheless, previous research has shown that gaming components are helpful at engaging learners. Yet, in terms of learning theory and game features, our findings are not encouraging.

The reason for this distinction is that corporate trainers must first examine and include into their training design game elements that are suitable for the training objectives. As a result, they

	Saturated model	Estimated model
SRMR	0.054	0.044

Note: SRMR = standardized root means square residuals

Figure 3.21: Model fit

must contain gaming aspects that can enhance and increase learning results. As a result, findings reveal a negative link between gamification training program gaming aspects and learning outcomes.

Engagement, socialization, achievements, performance, cooperation, enjoyment, and behavioral change have all been studied in relation to the self-determination theory (Huang et al., 2019; Landers and Armstrong, 2017, Wu, 2018, Bouchrika et al., 2019; Buckley and Doyle, 2017). Results indicate a good association between self-determination theory and gamification design in terms of increasing employee knowledge, involvement, and engagement with course material. As a result, They argue that the self-determination theory has a favorable impact on training results in the corporate ecosystem's gamified training programs.

Gamified training uses gaming aspects to convey the course material. According to previous research, the most common game aspects include points, leaderboards, challenges, rankings, and scores (Denden et al., 2017; Hallifax, Serna, Marty, Lavoué, and Lavoué, 2019; Saleem, Noori, and Ozdamli, 2022; Klock et al., 2020). The results of the current study suggest that in order to support good communication and learning outcomes, game features should be chosen in the context of corporate culture.

Theoretically, findings imply that earlier research on gamified learning is highly helpful for creating gamified training for professionals and students in higher education (Sotos-Martinez, Ferriz-Valero, Garca-Martinez, and Tortosa-Martinez, 2022).

Nevertheless, Their findings vary in that they show that it is critical to include the appropriate game features in order to have a good influence on training outcomes. These findings add to previous theoretical discussions regarding the importance of gamified training in corporate training (Saleem et al., 2022; Haruna et al., 2021). Findings suggest that bonding types of game components, as reflected by learning outcomes, are useful for making training programs more effective in the company.

From a practical standpoint, these findings are illuminating for trainers and organizations, as well as training policymakers. To accomplish learning goals, training programs must determine the appropriate game features. Trainers and human resource managers must examine and comprehend game aspects that are appropriate for training programs and company culture. Managers must contact with employees on a frequent basis to reconfirm that the game features chosen are appropriate for their profiles as well as the program's training plan.

Examples of self-determination games:

- **Duolingo:** Duolingo is an app for learning languages that incorporates gamification to make the process more entertaining and exciting. A variety of game-like elements included in Duolingo, including points, levels, and incentives, encourage students to keep using and honing their language abilities.
- **Minecraft:** A variety of disciplines, including coding, arithmetic, and history, have been taught using this game in the classroom. Students may explore and build in a virtual environment using Minecraft, which helps foster their ability to think critically and solve problems.
- **The Sims:** The Sims is a life simulation game meant to teach soft skills including communication, time management, and decision-making. The Sims allows students to design and manage virtual individuals, which can aid in the development of empathy and emotional intelligence.

3.4.2 Flow Theory

Csikszentmihalyi (1975) coined the phrase "flow state" to describe a positive sensation or "optimal experience" that individuals enjoy as a driving element in their everyday activities, such as work, sports, and artistic performance (Faiola et al. 2013). The idea of "autotelic experience" (from the ancient Greek ο, or "self-goal"), according to this author, is the key to comprehending flow state. Autotelic experience is the consequence of an action or event that generates its own intrinsic motivation, rewards, or incentives, with no outside objectives or rewards.

According to Csikszentmihalyi (1990), nine aspects are required for an activity to induce a flow state:

1. clear goals
2. immediate feedback
3. a match between personal skills and challenges
4. merge of action and awareness
5. facilitate concentration on the task
6. aid a sense of control
7. loss of self-consciousness during the task
8. sense of time changed
9. the experience of becoming "autotelic"

Flow Models

Over the time, different conceptual models have been proposed in order to describe flow state. These models established parameters to position the flow state among other emotional states and to measure flow state level, through flow state scales and others instruments. Csikszentmihalyi (1975) was the first researcher to propose a model to describe flow state. He proposed the flow as

an emotional state opposite to apathy, located between arousal, anxiety, worry control, relaxation, boredom. In the first model, Csikszentmihalyi describes seven different emotional states related to flow:

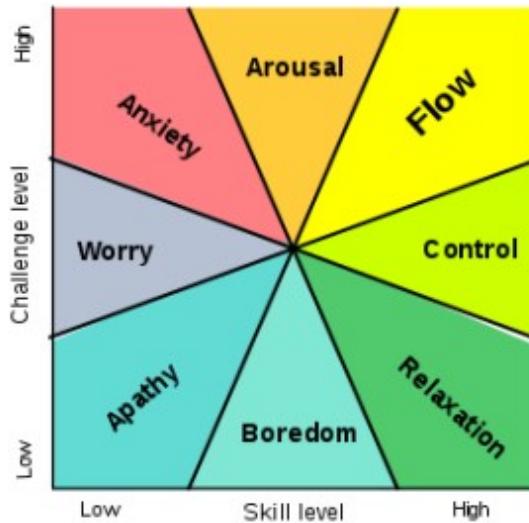


Figure 3.22: Csikszentmihalyi original flow model

(i) Arousal refers to the physiological and psychological condition of being awakened or of sense organs being stimulated to the degree of perception. The reticular activating system in the brainstem, the autonomic nervous system, and the endocrine system are all activated, resulting in increased heart rate and blood pressure as well as a state of sensory awareness, mobility, and ready to respond.

The next clause, (ii), refers to exercising newly learned abilities after initial mastery. The phrase is also frequently used to describe the educational philosophy that results from this type of practice. (iii) Anxiety is a feeling that is defined by an unpleasant feeling of inner turmoil. Pacing back and forth, somatic complaints, and rumination are common nervous behaviors that are associated with anxiety. The next emotional pertains to (iv) relaxation, which is the low-tension emotional state of a living thing in which there isn't any arousal from things like wrath, worry, or terror. (v) Worry is the outcome of a proactive cognitive risk analysis conducted to avoid or resolve predicted prospective hazards and their potential consequences. It refers to unpleasant thoughts, pictures, and emotions that are repeated and uncontrollable. Vi) Boredom is an emotional or psychological condition experienced when a person is left without something specific to do, is uninterested in his or her surroundings, or believes that a day or time is boring or tiresome. It is almost the exact opposite of flow. Finally, (vii) Apathy is the complete opposite of flow. It is a lack of feeling, emotion, interest, and care. Indifference or suppression of feelings like worry, enthusiasm, motivation, and/or passion are also examples of apathy. According to the original Csikszentmihalyi model, flow is an emotional state that people can experience while engaging in particular activities, particularly those that offer a balance between a person's skill level, the challenge of the activity, and immediate feedback. It is a state that is completely immersed in a feeling of energized focus, full involvement, and enjoyment in the activity's process. Essentially, the state of flow is defined by total involvement in one's work and the loss of all sense of place and time (Csikszentmihalyi 1975).

To implement a game based on flow theory we have to consider following elements:

1. Clear goals and challenges: Learning experiences based on gamification should offer clear objectives and challenges that are in line with the learner's capabilities and skill level. This keeps students concentrated and interested in the learning process.
2. Instant feedback: Gamification-based learning experiences should give learners rapid feedback so they may track their development and modify their learning tactics as necessary.
3. Balance of skill and challenge: To avoid overwhelming or under-stimulating the learner, the learning experience should be structured to strike a balance between the learner's present level of competence and an appropriate amount of challenge.
4. Sense of control: Students should have a sense of control over their learning process so they may make important decisions and choices that influence their development.
5. Immersive experience: Gamification-based learning activities should be planned to produce a totally absorbing and captivating experience that arouses the learner's interest and cultivates a sense of satisfaction and fulfillment.

Numerous video games use aspects of the flow theory to give players engaging and immersive experiences. Here are a few examples:

- Brain Age is a series of brain training games that push players to enhance cognitive abilities such as memory, concentration, and problem-solving. The games are meant to steadily grow in complexity while also providing rapid feedback to assist players in improving their abilities.
- Code Combat is a game-based coding platform that guides users through numerous tasks and objectives to teach them how to code. As users learn new coding skills and create their own projects, the platform gives them a sense of control and mastery.
- Typing Club is a typing tutor that combines gamification to make typing more interesting and entertaining. As users increase their typing speed and accuracy, the platform gives clear objectives and challenges, timely feedback, and a sense of development.
- SimCity is a city-building game in which players develop and administer their own virtual metropolis. The game gives players a sense of control and mastery as they learn to manage resources, solve challenges, and make decisions that affect their city's prosperity.

Based on SLR investigation of Wilk Oliveira dos Santos, Diego Dermeval in Brazil journal in 2007 (Flow Theory to Promote Learning in Educational Systems: Is it Really Relevant?) The Flow Theory offers three advantages: increase in students or employees' learning, more in-depth reflective process, and students satisfaction.

The findings also imply that Flow Theory may be helpful in addressing a number of issues, including students' feelings of accomplishment, enforcement of creativity and imagination, exploratory behavior, ability to accept changes and adaptations, happiness, satisfaction, and cheer, flashes of intensity, influences on empathy and game interest, internal locus of control, perceived usefulness and ease of use, and sense of cognitive presence.

3.4.3 Goal Setting Theory

Goal setting theory is a motivational theory that highlights the need of setting precise and difficult goals in order to increase performance. According to the notion, creating explicit objectives enhances the possibility of reaching them, and setting difficult goals might lead to increased effort and performance. Goal setting theory has been extensively researched and utilized in a variety of settings, including education, sports, and business. The two core of Goal Setting theory are:

1. There is a linear relationship between the degree of goal difficulty and performance. The linearity of this relationship was supported in several empirical studies, except when the individual reached the limit of their ability to perform the task or when commitment to a highly difficult goal collapsed.
2. Difficult goals lead to higher performance than no goals at all or abstract goals such as “do your best.” Therefore, goal-setting theory posits that optimal performance is achieved when goals are specific (the objective to accomplish is clear) and difficult (the achievement of the goal requires considerable effort).

In the late 1960s and early 1970s, Edwin Locke and Gary Latham developed the hypothesis. They suggested three ways in which goal-setting might enhance performance:

1. **Direction:** Goals provide direction and focus for individuals by setting clear objectives to work towards.
2. **Effort:** Goals encourage people to put forth more effort and work harder in order to accomplish them.
3. **Persistence:** Goals motivate people to persevere in their efforts, especially in the face of problems and impediments.

According to goal setting theory, precise and hard objectives are more successful than generic or simple ones. Specific objectives give clear direction and success criteria, whereas hard goals encourage greater effort and a higher sense of achievement when attained.

Individuals and organizations can utilize the following strategies to put goal setting theory into practice:

- Establish clear, specific, and challenging goals: Goals should be clear, specific, and challenging enough to motivate people to work harder and achieve more.
- Regular feedback and encouragement can assist individuals in tracking their success, adjusting their efforts, and remaining motivated.
- Create a plan of action: Making a plan of action can assist individuals in breaking down goals into smaller, manageable tasks and tracking their progress toward achieving them.

Goal mechanisms

Goal-setting theory posits that goals affect performance through four mechanisms: choice or direction, effort, persistence, and knowledge or task strategy. Furthermore, self-efficacy has a prominent

role in goal-setting theory.

Choice or direction is the first mechanism that mediates the link between goals and performance. When someone has a goal in mind, it makes it easier for them to focus their attention and effort on those activities that will help them achieve that goal and away from those that won't. Aside from specific goals, many gameful systems also present the next best actions that, when carried out, will lead to the achievement of the goals. According to goal-setting theory, this helps users focus their decisions toward goal achievement, resulting in higher performance.

The effort mechanism or mediator is the second mechanism or mediator. When a person decides on a goal and decides to pursue it, effort is mobilized in proportion to the difficulty of the goal. One of the purposes of using gamification is to increase the user's motivation to complete the activities and achieve the goals. In theory, gameful systems might drive users to work harder to achieve their objectives than standard goal-setting mechanisms. As a result, goal-setting theory suggests that gamification might lead to higher applied effort due to enhanced motivation.

The persistence mechanism is the third one. According to studies, people are more likely to put more effort into an activity when the aim is clear and challenging than when the goal is hazy or simple. Many games encourage users to fail and try again until they master the skills needed to succeed, without fear of serious consequences. Gameful systems can also be designed to provide this safe space for experimentation and learning. This is particularly important when achieving the goal requires learning new skills or improving current skills.

The fourth mechanism is task strategy or knowledge. This means that having specific, challenging goals motivates a person to use any necessary prior knowledge or abilities. The individual could be prevented from achieving high performance if they don't now possess the requisite information or abilities. The intensity of tasks should be balanced according to the user's expertise, according to numerous gameful design methodologies. This can facilitate the development of an easy learning curve that enables users to practice the necessary skills as they go.

Recent studies have also demonstrated that positive affect, or the pleasant feelings experienced while performing the tasks, and causal attribution for performance, or the belief that one is directly responsible for their success in achieving the goals, can affect self-efficacy and, consequently, the level of goals that the person is willing to pursue. Users may feel personally accountable for their accomplishment thanks to feedback tools and the story. A story or theme that portrays the user as the "hero" or as a contributor to a "epic goal" may frequently achieve this. In addition, they can feel that they are a part of something bigger than themselves, boosting their confidence in their ability to support a greater cause.

Types of goals

Goal-setting theory has also proven the need of thoughtfully assessing the many sorts of objectives and how each type affects performance. There is a contrast between outcome, performance, and process (or learning goals).

Outcome goals

Refer to the achievement of a particularly precise goal. Many examples of gamification goals are outcome goals. Many goals, for example, involve completing specific tasks; thus, the outcome is well-defined. Outcome goals can be defined via challenges, quests, and exploratory tasks. For example, in Barata et al.'s gamified course, theoretical challenges asked students to solve problems relating to the themes taught in lectures, whereas lab challenges encouraged students to create creative material utilizing tools and techniques taught in lab courses. In certain gameful systems, winning the game may also be an outcome objective.

Performance goals

The term "performance goals" refers to exceeding one's own performance standards. Gamification often includes performance targets. Earning a certain amount of points, achieving a certain place on a leaderboard, or completing a certain number of tasks are all examples of performance objectives that are typically encountered in gameful systems. As a result, items like badges, awards, leaderboards, points, and levels might be useful in setting performance objectives. Some examples include the badges on Hamari's study, which established goals related to performing certain actions a certain number of times, or the target number of steps per day on Zuckerman and Gal-Oz's gameful physical activity tracker.

Process goals

Or learning goals are related to learning new skills. Research has shown that when the individual lacks the necessary skills or knowledge to accomplish a difficult goal, it is better to set a learning the goal instead of an outcome or a performance goal.

Furthermore, goal-setting theory states that stretch goals.² are difficult to achieve and may be impossible. They are frequently used as a supplement to mandatory goals and do not have to be met. Their goal is to encourage creative thinking.

Some side quests (optional quests) in video games can be difficult, but they are typically designed to be completed, so they are not nearly impossible as a stretch goal should be. Some games make it practically hard to complete all of the side tasks since some of them are really challenging. Similar to this, several video games provide accomplishments that are so challenging that very few players are able to complete them. Therefore, obtaining these achievements or finishing all side quests to the fullest extent could be a kind of stretch goal in these scenarios.

Goal-setting theory further distinguishes between proximal and distant objectives. Distal goals.³ are easier to achieve with the help of proximal goals. To keep the user interested, provide feedback, and promote learning in gamification, it is a suggested design approach to divide bigger or distant goals into smaller, proximate ones. . For instance, distal goals could be the game's or the story's chapters or levels, which, upon completion, could signify significant accomplishments. In contrast, proximal goals could be the user's immediate quests or tasks, the completion of which triggers

²Stretch goals are those that are exceptionally difficult and ambitious, generally requiring a great amount of effort to attain.

³Distal goals are long-term goals that are often more abstract and broader in scope than proximal goals, which are shorter-term goals that are more specific and concrete

the achievement of the distal goals. Alternately, finishing a number of chapters or levels could be proximal goals that lead to the game's completion (distal goal).

Setting optimal goals

In order to set goals, game must include following characteristics:

- **Specific:** goals in gamification (e.g., quests, challenges, tasks) usually explain specifically what needs to be done. Moreover, most gameful design methods posit that goals should always be clear and specific.
- **Measurable:** in gamification, it is always possible to measure when a goal is completed because the definition of a goal must always be accompanied by the respective definition of how to determine when it is completed, so the game can advance.
- **Attainable:** most gameful design methods suggest that the difficulty of the goals should increase with the user skills; thus, the goals should always be achievable if this recommendation is followed.
- **Realistic:** the system might not be able to evaluate the user's constraints (which might be external to the system); thus, it might be hard for the system to decide if the goals are realistic.
- **Time-bound:** some gameful design methods suggest using goals or tasks with time limits.

Gamification can act on the moderator variables that influence the relationship between goals and performance. Gameful design standards advise that the system should scale the complexity and enable users learn new abilities so that they always feel capable of pursuing the goals. Gameful systems often provide constant and actionable feedback that not only informs users about their present performance but also suggests at potential future actions toward the goals. Gamification can help users realize the value of their goals and encourage social connections, which can help them commit to them.

Gameful systems often give users both outcome and performance goals. They also often help users through the process of acquiring new abilities, but this is not commonly defined as a learning objective. Furthermore, gameful systems can provide users with both proximal and distal goals, demonstrating how achieving the proximal goals will help them achieve the distal goals.

Some example of Goal setting Gamified systems:

- MyObjectives is a performance tracking and goal-setting tool geared for enterprises. The method assists businesses in setting goals, monitoring their progress, and rewarding staff members who meet their targets.
- Talentsoft is a gamified HR system that helps organizations manage their talent acquisition, onboarding, performance management, and career development processes. The system uses gamification to motivate employees and improve engagement.

- Bunchball Nitro is a gamification platform that can be used for various HR-related purposes, such as employee engagement, training, and recognition. The platform uses game mechanics such as points, badges, and leaderboards to motivate employees and encourage desired behaviors.
- A role-playing game called Habitica transforms your life into a game. You create habits and goals, and you get rewarded for reaching them. The purpose of the game is to make establishing goals enjoyable and rewarding.
- SuperBetter is a game that turns your objectives into challenges to help you accomplish them. Goal-setting philosophy is included into the game to keep you motivated and on course.
- Fitbit is a fitness tracker that aids users in achieving their fitness objectives by applying the philosophy of goal-setting. The tracker offers prizes to users who meet their objectives for steps taken, calories burnt, and other indicators.
- Running software Nike Run Club encourages users by utilizing the notion of goal-setting. Running enthusiasts are rewarded for meeting their distance, pace, and other metrics targets via the app.

Gamified learning theory, which consists of two components: game element attribute categories and a process model, may be utilized to understand the potential influence of gamification (Landers, 2015). Employee development is almost universally recognized as a strategic tool for a company's long-term growth, productivity, and capacity to retain valuable employees. If companies disregard certain issues, the employee development process will be time-consuming for management, vexing for employees, and of dubious benefit to both. Furthermore, Bedwell and colleagues (2012) created game element attribute categories (Figure 31) in the context of serious games, which give a theoretically based yet practical framework for integrating specific game elements in the learning environment.

Theory of Gamified Learning Game Element Attribute Categories and Definitions	
Game Element Attribute Categories	Definitions
Action Language	The method & interface by which communication occurs between a player and the game itself.
Assessment	The method by which accomplishment and game progress are tracked.
Conflict/Challenge	The problem faced by players, including both the nature and difficulty of those problems
Game Fiction	The fictional game world and story
Immersion	The affective and perceptual experience of a game
Human Interaction	The degree to which players interact with other players in both space and time.
Rules/Goals	Clearly defined rules, goals and information on progress

Figure 3.23: Theory of gamified learning

These categories group together game characteristics that have previously been related to learning outcomes and can be used to nongame educational strategies. The process model (Figure 3.23), the theory's second component, explains the indirect influence. According to this viewpoint, gamification promotes learning through mediating or changing learning-related behaviors and attitudes. During the mediation process, game characteristics have an influence on learning-related behaviors and attitudes, which are the core mechanism for boosting learning outcomes. During the moderating phase, game components increase or reduce the existing link between learning-related behaviors and learning outcomes.

According to research of Dr. Sudhakar Gaonkar that conducted about learning and training via gamification, he counted 7 techniques for this matter.

1. **Coaching:** A more experienced or skilled individual provides advise and direction to an employee in order to help him or her develop new skills, increase performance, and improve the quality of his or her career. Coaching is defined by the fact that it is individualized and customized, that it has a specific business goal, and that it is usually done one-on-one over time.
2. **Mentoring:** Through official or informal mentoring programs, less experienced employees are paired with more experienced colleagues. Formal mentoring programs can help women and people of color reduce turnover, promote recruiting, and improve performance and the work environment. and people of color reduce turnover, promote recruiting, and improve performance and the work environment.
3. **Individual development plans:** Organizations might utilize an individual development plan to help employees learn faster (IDP). This document outlines an employee's aims, learning outcomes, and the support required to achieve his or her specific growth objectives. Adult learning practices, experiential learning, and symbolic interaction are all examples of beneficial IDPs.
4. **The 9-BOX grid:** The 9-box grid is a technique for evaluating an individual employee's current and potential levels of contribution to the organization. The grid is most used in succession planning to assess a company's talent pool and identify possible leaders. The 9-box grid provides a visual reference for performance appraisals that can include appraisal and assessment data, allowing managers to see employees' existing and projected performance.
5. **Cross-training:** Cross-training is the process of preparing employees to perform tasks that are not ordinarily assigned to them. Cross-training might be a one-time or sporadic fix, or it can be a long-term, systematic approach. Cross-training may not always lead to immediate progress, but it does show that an individual is eager to learn new skills. This range of skills could help him satisfy the requirements for future promotions.
6. **Job enlargement and job enrichment:** Enlargement entails increasing the complexity of an employee's job by adding extra tasks and responsibilities. Through more power, responsibility, and discretion, job enrichment adds dimension to an employee's position.
7. **Job shadowing:** More than merely following a coworker about all day is required for job shadowing. Shadowers gain a unique perspective on the organization and gain firsthand knowledge of the issues faced by employees in other departments. This viewpoint allows employees to see how their decisions affect other people.

3.5 Performance Management

The phrase "performance management," which is frequently used in human resources, has a specific connotation when it comes to assessing and overseeing an individual's performance. An organization must perform well, with performance also being described as "what you cannot measure or control if you do not define performance" (Armstrong and Baron, 1998) (Campbell, Gasser and Oswald, 1996). Moreover, it is said that performance is tied to both company operations and outcomes (Otley, 1999). Fitzgerald and Moon (1996) claim that performance has a multidimensional structure and that different variables affect how it is measured. According to Rogers (1994), because there is a close connection between strategic objectives, customer happiness, and economic contributions to the business, performance should be defined as the outcomes of labor.

An essential component of organizational effectiveness is performance management (Cardy, 2004). Performance management should be the top concern for managers since it is a crucial procedure for attaining company goals and is seen as the "Achilles Heel" in the management of human resources (Pulakos, 2009). The performance management process has a variety of models (Armstrong, 2000; Cardy, 2004; Das, 2003; Murphy and DeNisi, 2008; Pulakos, 2009). Many of these models concentrate on a predetermined set of factors for employees, which may include elements like performance evaluation, creating performance goals, and giving feedback. The stages or activities in performance management process models often include performance agreement and goal setting, performance monitoring and facilitation, performance assessment and feedback, and enhanced performance (Armstrong, 2000; Pulakos, 2009).

A definition of labor and excellent performance in modern times is more ambiguous (Fletcher and Perry, 2001). According to Fletcher and Perry (2001), the development of terms like emotional intelligence and the distinction between task- and context-specific performance highlight the multifaceted and dynamic character of performance (Borman and Motowildo, 1993). This list may be successfully expanded by include the ideas of adaptation (Pulakos, Arad, Donovan, and Plamondon, 2000), creativity (Tierney and Farmer, 2002), and proactivity (Bateman and Crant, 1993; Grant and Ashford, 2008), which describe the outcomes of the behavioral interaction (Macey et al., 2009). Modern business is dynamic and adaptable, thus improving performance in the workplace today involves more "facilitating performance"—creating the circumstances for better performance—than "performance management" (Das, 2003). According to Pulakos (2009), performance management and control systems must work together to synchronize gradual goals in a complete approach to performance improvement.

The process of setting goals, monitoring progress, offering feedback, and assessing results in order to enhance employee performance and meet corporate objectives is known as performance management. A organized approach to goal setting, performance feedback, and performance evaluation is provided by effective performance management systems. Here are some key performance management components:

1. Goal setting: Goal setting is the act of creating goals that are precise, measurable, attainable, relevant, and time-bound (SMART).
2. Performance feedback is the practice of giving employees with regular feedback on their performance, including constructive criticism and appreciation for accomplishments.

3. Performance evaluation is the practice of comparing an employee's performance against pre-determined criteria and goals.
4. Development planning: The process of identifying areas for improvement and developing a plan to enhance employee skills and abilities.
5. Performance improvement plans: The process of developing a plan to improve an employee's performance when they are not reaching expectations.

Performance evaluation is one of the key phases in performance management. The performance evaluation and feedback need to start at this point. The working teams' focus and attention are increased since the progress towards the objectives is routinely evaluated at least twice a year (Welch and Welch, 2009). In reality, more and more businesses are conducting performance reviews more frequently than once per year. Hence, a procedure with feedback is established (Cascio and Aguinis, 2011).

Those in charge of performance management must accomplish three things in order to correctly evaluate performance. Setting goals, establishing how to measure achievement, and offering progressive review and feedback are all examples of this.

This informs employees on what is expected of them, how to gauge performance, and where they stand at any given time. The performance appraisal process should not be unexpected; frequent evaluations should be done, and staff should be encouraged to feel comfortable with performance review. Managers utilize three main criteria to evaluate performance in this environment, particularly to encourage good performance, which is a rebellion (Cascio, 2006):

1. To provide sufficient rewards that employees value
2. To do it on time
3. To do it in a fair way

Performance management methods are focused with establishing goals, exercising decision powers, and monitoring and assessing performance. According to Edis (1995), performance is something that has been left behind, and that it is outside the scope of the aim.

A manager who recognizes performance helps individuals or teams understand what is expected of them and focuses on successful performance (Bernardin, Hagan, Kane and Villanova, 1998). In summary, employees must understand what good performance entails. As a result, three critical elements must be addressed. There are goals, metrics, and assessments.

One of the subjects that academics and practitioners are interested in is the study of factors that influence performance. According to the research, there are several elements that influence performance. It has been found that a variety of elements influence performance, which must be considered when controlling, monitoring, altering, and rewarding performance (Armstrong and Baron, 1998).

- Personal factors - the person's skill, confidence, motivation and commitment.
- Leadership factors - the level of encouragement, guidance and support provided by managers and team leaders.
- Team factors - the quality of support provided by colleagues.
- System factors - work and facility systems provided by the organization (labor tools).
- Contextual factors - internal and external environmental pressures and changes.

Traditional approaches to performance relate inequalities in performance to personal factors. Personal factors can, in fact, cause some or all of the situational or systemic aspects (Atkinson and McCrindell, 1997). In reality, evaluating individual performance should consider not only the acts of the individuals (the results), but also the conditions under which they must operate (Deming, 1986). This evaluation process should continue to perform as a manager and a leader, because what the practitioner is doing in terms of training, coaching, and guiding in the workplace is largely a mirror of management conduct (Isaac Mwita, 2000).

In recent years, corporate firms have prioritized issues relating to performance evaluation in the context of performance management. Nonetheless, the majority of organizational processes and systems have been digitalized and controlled through digital apps as a result of workers' more playful and pleasurable attitudes than functionality.

Bahman Hoseynli from Azerbaijan university and Ayhan Artar from Maltepe university conduct a model for performance evaluating based on gamification. This model is applicable to enterprise companies and can be created with support from teams of important information technologies, performance evaluators and managers, whether they are in the design, implementation, measurement or even the processes of the model.

The model given in the research is typically proposed without respect to sector, however it should be emphasized that sector application in each sector must take sector features into consideration. The first of these limits did not expose the performance evaluation apps. The theoretically presented model is not constructed and tested for application, which is the work's most significant drawback. At the same time, there are few research on gamification and performance evaluation in the literature. They attempted to solve a number of research issues and constructed a new model within these restrictions.

1. How can the performance evaluation system be entertained?
2. Why should a gamification based model be used to evaluate performance?
3. At what stages should a gamification based performance assessment system be prepared and implemented?
4. How can the design of a gamification based performance evaluation system be achieved?
5. What are the advantages of the gamification based performance evaluation model?

3.5.1 Gamification-based performance evaluation system

The gamification-based performance evaluation approach is based on the incorporation of game features into the standard performance evaluation system, the redesign of the online or mobile interface, and the planning and implementation of incentive programs. The following six phases can be used to prepare and deploy a gamification-based performance evaluation system:

- First Stage – Team Creation and Preparation
- Second Stage – Determination of Targets for Performance Measurement
- Third Stage – Determination of Rewards and /or Badges to be Awarded in the Case of Achieving Targets
- Fourth Stage – Design of Gamification
- Fifth Stage – Pre-test of Prepared Application / Model
- Sixth Stage – Implementation of a Gamification Based Performance Evaluation System

These are the characteristics that must be observed at each phase. Each stage may be distinguished by the features of the applicable industry and even by the culture of any business. Yet, the following elements are relevant to the stages of the gamification-based performance evaluation system.

First Stage – Team Creation and Preparation

This phase comprises of gathering the parties associated with the system for performance evaluation as well as gathering the essential information and technology connected to the system's and team's formation.

Second Stage – Determination of Targets for Performance Measurement

The goals must be defined in the second step in order to execute the performance evaluation. Goal setting has a track record of success. Although there has been success in improving performance in a variety of circumstances and cultures (Latham, 2004, 2011; Locke, 2004; Locke and Latham, 2002; Matsui, Kakuyama, and Onglatco, 1987), the fundamental idea may not generalize in all cultures (Gelfand, Erez, and Aycan, 2007). It is critical to establish whether the measuring aim will assess performance results or behavior. As a result, an organization should differentiate between behavior and measuring devices. Organizations remove and eliminate ambiguities and uncertainty regarding goals by quantifying them and monitoring whether they have been met, and give consistency and concentration to fulfill their mission. A distinct focus on performance can stimulate more performance by focusing on employee engagement in the performance review process.

Third Stage – Determination of Rewards and /or Badges to be Awarded in the Case of Achieving Targets

This step involves deciding on the rewards and/or badges that will be given out if the goals are met. There are incentive systems and badges in especially in gamification literature to demonstrate accomplishment. Badges are one of the most commonly explored and analyzed mechanics in

gamification activities. (2015) (Hamari et al.). The badge, according to Hakulinen, Auvinen, and Korhonen (2013), is a graphical sign that displays to the end user when it achieves success. Users have no practical purpose for badges. In other words, in a gaming or learning environment, badges are not worth the money. Instead, the subjective advantages of completing a difficult task drive the incentive to pursue the badges (Hakulinen, Auvinen and Korhonen, 2013). According to Montola, Nummenmaa, Lucero, Boberg, and Korhonen (2009), the usage of success badges influences user behavior despite the fact that badges have no monetary value (eg monetary value). Werbach and Hunter (2012) investigate games as a rewarding game (for example, self-motivation) as a more effective and gratifying alternative to standard motivational systems. Awards are an example of a beneficial external impact. According to Cameron and Pierce (2002), "external awards are prizes that originate from outside and are frequently managed by outsiders. According to cognitive theorists, rewards are detrimental to people's motives and subsequent engagement by undermining beliefs of individuality and autonomy and/or shifting perceived motivation to external reasons. According to Deci, Koestner, and Ryan (1999), if the performance requirements are met, the prizes are likely to be regarded as control, the perception of autonomy is undermined, and so the intrinsic motivation of employees is lowered.

Fourth Stage – Design of Gamification

This stage is focused with the gamification's design. Additionally, Werbach and Hunter (2012) believe that gamified systems do not have to be game-like, instead relying on human psychology. Daniels (1989) defines the performance management model as the systematic application of premises and the implications for enhancing existing behavioral performance. A target requests behavior and waits for a response. Understanding how these aspects interact will help managers to identify performance issues, implement remedial measures, and develop work environments and management systems in which high performance prevails and existing behavior changes (Isaac Mwita, 2000).

Fifth Stage – Pre-test of Prepared Application / Model

According to Shapiro and Varian (1999), users play online games primarily for fun and enjoyment. According to Wang (2011a), games are potent motivators of human behavior and that software applications are modified for gamification. In this regard, preliminary testing of the application/model produced at this stage is required, as is listening to employee feedback and re-examining any issues that may cause difficulties in the future.

Sixth Stage – Implementation of a Gamification Based Performance Evaluation System

This is the stage in which the system has been prepared, pre-tested and, as a result, no problems are encountered. While such studies are more varied and precise, it is more difficult to oversee and define objectives for employees in economies where knowledge and service intensity are prominent, according to Pulakos, Mueller-Hanson, and O'Leary (2008). As a result, modern performance management systems should focus on creating circumstances for knowledge employees to participate in order to support the required integrated performance in advanced economies. In other words, because performance is tied to management, current performance management is concerned with controlling the context in which performance happens (Jones, 1995). Miller (1977) voiced this

fundamental notion 30 years ago, and that boosting the productivity of knowledge workers should focus on the area in which the job is conducted.

Considering all of this, the gamification-based performance evaluation methodology developed in this study offers several advantages. The following are some of the benefits:

1. Gamification based performance evaluation gives employees a playful and enjoyable experience
2. Gamification based performance assessment helps to make a personalized measurement because each employee is made towards their own goals and characteristics
3. Because acting is more about emotions than functionality, and offering pleasurable experience, it can also increase employee commitment
4. Gamification based performance evaluation ensures that employees are able to achieve goals that they have been given for easier and more enjoyable fun

Furthermore, the use of various incentives can improve performance (Bonner and Sprinkle, 2002); however, measuring and rewarding only a portion of performance may have negative effects on overall performance (Burgess and Ratto, 2003; De Bruijn, 2002; Van Thiel and Leeuw, 2002; Smith, 1995; Tirole, 1994; Gray and Jenkins, 1993). There is a scarcity of empirical, broad-based research on the performance consequences of various performance management approaches in both public (Van Helden, 2005; Merchant et al., 2003; Heinrich, 2002) and private enterprises.

There are several models available for performance evaluation. In this study, a new model concept for a gamification-based performance evaluation system was presented. A six-stage procedure must be successfully completed in order to create and execute a gamification-based performance evaluation system. According to this, in addition to information and technology, employees' participation and managerial support are required in the performance review process. In the study, a six-step method was devised, and the steps to be followed at this level were highlighted. Several issues were attempted to be answered in this study, which is a model proposal for a gamification-based performance evaluation system, in accordance with the study's goal. In this context, it is explained why a gamification-based performance evaluation model is required, how to develop one, and the benefits of such a model. Although performance evaluation is central to performance management (Cardy, 2004), the entire process encompasses all organizational rules, practices, and design elements that interact to achieve employee performance.

This integrated perspective is a systematic approach to strategic human resource management and contends that human resource modeling, rather than a single activity, is required to meet corporate goals (Delery and Doty, 1996). When seen in this light, the fact that the performance-based performance assessment model is not confined to performance management units and that studies are conducted in each strategic human resource sub-unit will help to clarify the broad picture. According to Armstrong (2000), the performance management process provides an opportunity for the integration of all human resource initiatives. As a result, it is advised that additional research be conducted in order to enhance gamification-based practices in human resource sub-units, particularly in procedures connected to career planning, rewarding, training, certification, and appointment.

An example of gamified system regard to performance management is BetterWorks. BetterWorks is a platform for performance management that assists in goal-setting, progress monitoring,

and employee feedback. The software makes use of gamification to inspire workers and boost engagement. Employees may define and monitor their personal objectives with BetterWorks, as well as coordinate them with the organization's goals. The program enables staff to earn points and badges for meeting their goals and gives real-time feedback on progress. These gamification components encourage workers and make establishing goals an enjoyable and rewarding activity. BetterWorks offers tools for constant performance feedback, coaching, and growth planning in addition to goal creation and tracking. To offer a complete performance management solution, the platform connects with other HR systems, such as learning management systems and talent management systems.

Workday Performance and Talent Management is another example of a gamified performance management system. The enterprise-level human resources management system Workday has modules for talent and performance management. The system makes use of gamification to motivate workers and enhance output. The performance management feature of Workday enables businesses to define objectives, offer continuous feedback, and assess employee performance. Through the use of features like progress bars, leaderboards, and rewards for achieving goals, the system applies gamification to make the goal-setting process more interesting and motivating. Additionally, for completing training and development activities, employees can gain badges and points. Workday's human resources module contains tools for acquiring new employees, advancing their careers, and preparing for succession. With features like career pathing, development goals, and prizes for completing training and skill-building activities, the system employs gamification to boost employee engagement and involvement in career development activities. Workday helps organizations in improving employee performance, increasing employee engagement and retention, and achieving strategic objectives by utilizing gamification to make the performance and talent management processes more interesting and inspiring.

Development planning is an important aspect of performance management that entails developing a strategy for an employee's professional growth and development. The plan details the employee's objectives, development activities, and timetables for accomplishing them. Here are some steps to putting a development planning process in place:

1. Start with a skills evaluation to discover the employee's strengths and areas for growth. This may be accomplished through performance reviews, feedback from coworkers and customers, and self-evaluations.
2. Define development goals based on the skills assessment: Based on the skills assessment, define specified, measurable, attainable, relevant, and time-bound (SMART) development goals that match with the employee's career aspirations and the organization's objectives.
3. Identify development activities: Determine which development activities, such as training programs, work shadowing, mentoring, or coaching, will assist the employee in achieving their goals. These activities should be adapted to the demands and learning style of the employee.
4. Make a development strategy: Make a development plan including the employee's goals, development activities, and timetables for accomplishing them. The employee's manager should examine and approve the plan.

5. Implement the development plan: Once the plan has been developed, carry out the development activities and track the employee's progress. As needed, provide feedback and assistance.
6. Evaluate the development plan: Assess the efficacy of the development plan and make any changes. This might include updating goals, shifting development activities, or adjusting timetables.

Organizations may assist workers acquire new skills and talents, boost employee engagement and retention, and connect staff development with the organization's objectives by establishing a development planning process.

Last aspect of performance management is Performance Improvement Plan (PIP) which is a formal and organized approach used by firms to assist individuals in improving their performance. Setting clear performance expectations and goals for the employee, identifying areas where the person needs to improve, and developing a plan of action to address those areas are all part of the process. Here are some steps to putting a PIP in place.

First, Start with a skills evaluation to discover the employee's strengths and areas for growth. This may be accomplished through performance reviews, feedback from coworkers and customers, and self-evaluations. Second define development goals based on the skills assessment: Based on the skills assessment, define specified, measurable, attainable, relevant, and time-bound (SMART) development goals that match with the employee's career aspirations and the organization's objectives. Then Identify development activities: Determine which development activities, such as training programs, work shadowing, mentoring, or coaching, will assist the employee in achieving their goals. These activities should be adapted to the demands and learning style of the employee. After that Make a development strategy: Make a development plan including the employee's goals, development activities, and timetables for accomplishing them. The employee's management should examine and approve the plan. Once the plan has been developed, carry out the development activities and track the employee's progress. As needed, provide feedback and assistance. At last Evaluate the efficacy of the development plan and make any necessary changes. This might include updating goals, shifting development activities, or adjusting timetables.

Here are some examples of gamified performance management systems:

Work.com, a performance management tool from Salesforce, is a tool for managing and enhancing employee performance in enterprises. Work.com incorporates gamification features to boost employee motivation, promote teamwork, and monitor goal progress.

Employees can define goals and get input from supervisors and coworkers. Work.com offers real-time coaching and feedback to keep employees on track while allowing managers to track and analyze employee progress toward their goals. Work.com uses gamification features like leaderboards and badges to reward and recognize employees for their accomplishments. When an employee completes a task, hits a goal, or demonstrates acceptable behaviors, they can earn badges that can be displayed on their Work.com profile. It also offers resources for social learning and cooperation, enabling staff to impart information and skills to one another. Employees can communicate their best practices, offer criticism, and work together on projects in real time. Work.com provides insights and analytics on worker performance, enabling managers to spot patterns, monitor advancement,



Figure 3.24: Work.com

and make informed choices. Employer performance measurements like sales quotas, customer satisfaction ratings, and other KPIs can be tracked by managers using Work.com. Because Work.com and Salesforce are fully connected, managers can access all employee performance information from a one location. Using this interface, managers may also connect worker performance to financial results or client retention.

BetterWorks is a platform for performance management that assists businesses in setting and monitoring goals, giving feedback and coaching, and coordinating employee performance with business goals. The BetterWorks platform operates as follows:

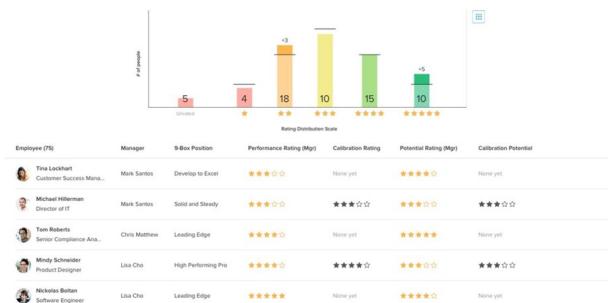


Figure 3.25: BetterWorks

Employees can define individual and group goals on BetterWorks that are in line with business objectives. Employees, their bosses, or the entire organization may set these objectives. BetterWorks offers a method for coordinating employee goals with corporate goals. By cascading goals from the organizational level to the level of each person, managers can make sure that everyone is working toward the same goals. Employees and managers can monitor goal-related progress in real-time using BetterWorks. This keeps workers inspired and committed to accomplishing their objectives, and it enables managers to offer feedback and coaching to keep workers on track. Managers can track staff performance metrics, such as goal fulfillment rates and progress towards objectives, using the analytics and reporting features in BetterWorks. This information can be utilized to spot patterns, pinpoint areas for development, and assess how performance management initiatives have affected organizational results. Managers can access personnel data from a single platform thanks to BetterWorks' integration with a variety of HR solutions. In order to make sure that performance management programs are in line with corporate goals, this link also enables BetterWorks to automatically update employee data, such as job titles and departments, for each employee.

Engagedly is a performance management platform that assists businesses in aligning employee performance with organizational goals, providing feedback and coaching, and recognizing and rewarding employee accomplishments.

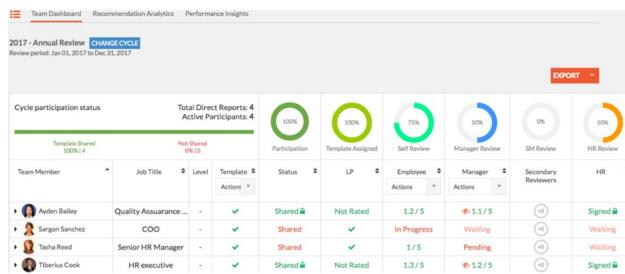


Figure 3.26: Engagedly

Employees can use Engagedly to define individual and team goals that match with organizational objectives. These objectives might be set by employees, their managers, or the corporation as a whole. Engagedly facilitates the alignment of employee goals with company objectives. Managers can cascade goals from the organizational level to individual employees to ensure that everyone is working toward the same goals. Engagedly provides a mechanism for providing employees with feedback and coaching. Managers can provide feedback on employees' progress toward targets, as well as coaching to assist employees in improving their performance. Employees can also provide and receive feedback from coworkers, fostering a culture of continual improvement. Engagedly offers options for recognizing and rewarding staff accomplishments. Managers can publicly recognize and reward individuals who have met their objectives or made important contributions to the organization. This contributes to employee motivation and the development of a positive workplace culture. Analytics and reporting tools in Engagedly enable managers to track staff performance metrics such as engagement, productivity, and turnover. This information can be utilized to detect trends and areas for improvement, as well as to assess the impact of performance management programs on organizational outcomes. Engagedly interfaces with a variety of HR platforms, allowing managers to access employee data from a centralized location. This connectivity also enables Engagedly to automatically update employee data, such as job titles and departments, to guarantee that performance management programs are always up to date.

3.6 Engagement

Online markets have become increasingly competitive as a result of the growth of various social media platforms and mobile applications, and many corporate organizations are struggling to engage users. A growing number of online applications and businesses are vying for a user base that is growing much more slowly, the competition for user attention heats up. Gamification has been embraced as a tactic for influencing and inspiring people to participate in education, training, marketing, networking, and health-related activities as a relatively new paradigm for engaging people. Nike, for example, has implemented game design features in such a manner that players are rewarded when they hit milestones in their physical fitness development. Users may engage in game-like dynamics to gain prizes (such as points and badges), track their performance, establish goals, participate in challenges, and compete with others in the community. Nike+ has a strong and engaged fan following of 28 million members because to their gamification strategy.

Despite universal acceptance of the positive effects of gamification, evaluations of its achievements have usually been conflicted and pessimistic. Our understanding of why some gamified Information Systems successfully engage users while others do not has been hampered, in particular, by the absence of a theoretical framework. People have psychological needs—autonomy, competence, and relatedness—while engaging in specific activities, according to CET⁴.

When individuals perceive their needs to be met, they are intrinsically driven and experience higher satisfaction, which leads to greater participation in the activity. CET assists us in understanding user engagement in the context of a gamified IS since gamification primarily strives to generate volitional and high-quality types of incentive. Using CET as an overarching theoretical framework, this study constructs and evaluates a model to investigate how game aspects impact users' psychological needs fulfilment, enhancing enjoyment and, as a result, user engagement.

Gamification adds game-specific elements(e.g., points) to existing work processes or media platforms, rather than replacing them with a game or simulation. Gamified ISs are not inherently game-like because gamification does not imply creating a fully developed game; rather, they are created to have certain dynamics similar to those seen in games. In this sense, studies contend that the inclusion of game features does not inherently increase user involvement; rather, it depends on how the game elements create game-like dynamics.

When players interact with game elements, their behavior is referred to as having "game dynamics." For instance,⁵PLBs motivate individuals to aim for greater rewards, and leaderboards may pique an individual's competitive nature. Users may develop distinctive identities and express emotions with the use of PLBs and virtual commodities like avatars and emoticons. There is no direct correlation between game components and game dynamics, notwithstanding the possibility that some game elements have a tendency to bring about certain game dynamics.

In other words, multiple game components may experience a single game dynamics, and multiple game elements may experience a single game dynamics. For instance, several dynamics may be induced by badges, such as the dynamics of competitiveness, reward, and self-expression. Badges seem to have this ability because they symbolize one's achievements and status, inspiring people to aim higher, compete with others, and display the actions necessary to achieve them, resulting in

⁴cognitive evaluation theory

⁵Points, Leaderboards, Badges

reputation (reward) and the development of a distinctive identity (self-expression).

The expected dynamics in a gamified IS must be generated by game aspects. If not, users won't sense a lively, game-like atmosphere, which would prevent them from feeling happy. In the gamification literature, the most frequently mentioned game dynamics are rewards, competitiveness, self-expression, and altruism. Researchers contend that even while gamified ISs have comparable game features, not all gamified ISs can successfully engage users because game dynamics are produced by users in various circumstances eliciting a diverse collection of game elements.

CET, developed by Deci, describes how external stimuli alter people's internal desires. CET is a sub-theory of self-determination theory (SDT), a well-researched macro-theory of human motivation that proposes that when people are intrinsically driven, they are more likely to engage in an activity.

Intrinsic motivation (for example, happiness) emerges from within an individual. CET makes a contribution by identifying the factors that contribute to people being intrinsically motivated (feeling that a certain task is enjoyable): autonomy, competence, and relatedness. When doing a task, autonomy refers to a sense of decision or willingness; competence relates to emotions of effectance; and relatedness is felt when a person feels linked to others.

CET also argues that in situations when individuals feel controlled or forced to accomplish something, any external motivation (e.g., monetary rewards) reduces intrinsic motivation. External factors, on the other hand, might promote intrinsic motivation in a scenario where the conditions complement individuals' psychological requirements. Playing a game provides an autonomy-supportive atmosphere; individuals do it voluntarily. Activities in games, such as completing tasks, defeating other players, and developing ways to attain goals with other players, assist people in satisfying their psychological requirements for autonomy, competence, and relatedness. As a reward for playing games, players collect points, advance to higher levels, and receive badges or trophies. These reward processes assist to strengthen rather than decrease intrinsic drive. In this regard, having game-like dynamics can be stimulating.

3.6.1 User engagement with a gamified IS

User involvement is defined as "a desirable, even necessary, human response to computer-mediated activities." Users are engaged with an information system when it captures and maintains their attention and interest. Strong interaction with ISs will result in beneficial outcomes such as improved system utilization, user acceptability, and user happiness. User engagement is viewed as vital because it fosters a good perception of human-computer interaction, promoting incentive to connect with an IS again in the future. This, in turn, leads to the IS's success.

Given the importance of user engagement in the success of a gamified IS, research advises that user involvement be characterized by a pleasant and rewarding state of mind, such as energy, devotion, and immersion. These three subdimensions, in turn, reflect the physical, emotional, and cognitive components of user interaction. In this study, vigor is defined as the willingness of a user to spend persistent effort when engaging in a certain activity developed in a gamified IS, even in the face of hurdles. Users' feeling of relevance, passion, inspiration, pride, and challenge are all examples of dedication. Absorption is the degree to which a person is entirely focused on and profoundly engrossed in a certain activity, causing time to pass rapidly.

3.6.2 Enjoyment and user engagement

In this case, enjoyment refers to the degree to which individuals have a pleasurable experience when engaging with an IS. According to CET, if individuals believe an activity involving a type of technology will be pleasurable, they will engage with the technology more extensively.

Given that the primary purpose of a gamified IS is to make user activities more fun, pleasure is a critical aspect in determining user involvement with a gamified IS. As a result, following hypothesis proposed by Ayoung Suh, Christian Wagner and Lili Liu.

[Hypothesis 1] Enjoyment positively influences engagement with a gamified IS.

Needs satisfaction and enjoyment

People need to feel competent, autonomous, and socially connected when doing something if they want to sustain their intrinsic motivation (i.e., enjoyment) toward that task, according to CET. According to Ryan et al., the three psychological demands are the antecedents of enjoyment.

That is, when an activity meets a person's psychological basic demands for competence, autonomy, and relatedness, the individual experiences more happiness. Using the concept of the CET, researchers have claimed that users of a gamified IS sense more enjoyment when continuing optimum challenges and opportunities for positive feedback are offered. When people believe their skills or talents are being optimally challenged and they are experiencing self-growth, they tend to experience higher competence, which increases their pleasure of the activities.

As a result, a user's expertise is a key predictor of enjoyment. According to CET, individuals enjoy themselves more when they engage in things that they find interesting or valuable.

Following this reasoning, we may conclude that if users of a gamified IS believe that their actions are being controlled, their psychological demand for autonomy is unlikely to be met, resulting in less enjoyment. As a result, one's perceived autonomy predicts happiness in a gamified IS. In addition to competence and autonomy, relatedness leads to an increase in happiness. According to CET, users of a gamified IS have more fun when they can connect with others and develop intimate ties with them.

Interactions between users generate sentiments of relatedness and reciprocal caring, which promotes satisfaction. As a result, users' perceived relatedness acts as a predictor of happiness inside a gamified IS. When we apply the general concept of CET to the context of utilizing a gamified IS, we may deduce that if individuals meet those psychological demands (i.e., competence, autonomy, and relatedness) when using a gamified IS, they would feel more pleasure.

Based on above discussion following hypothesis proposed.

[Hypothesis 2a] Competence positively influences enjoyment within a gamified IS.

[Hypothesis 2b] Autonomy positively influences enjoyment within a gamified IS.

[Hypothesis 2c] Relatedness positively influences enjoyment within a gamified IS.

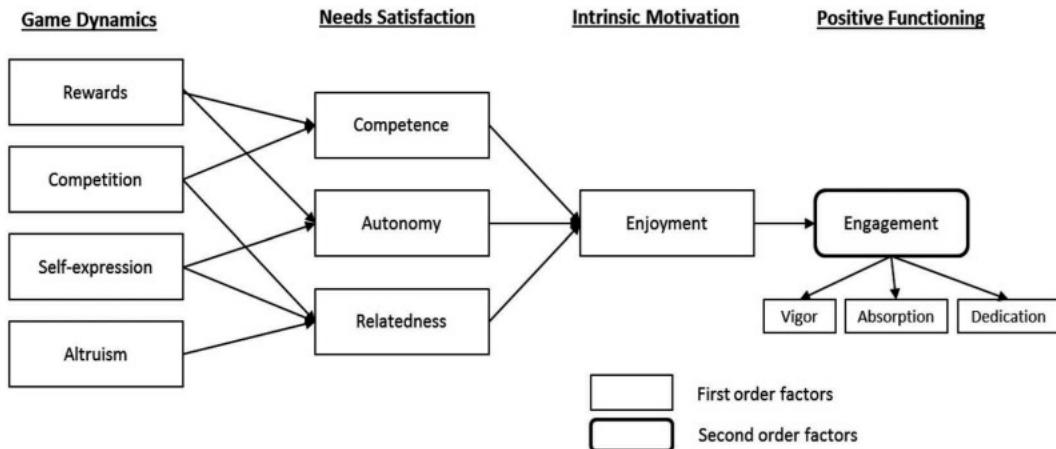


Figure 3.27: Engagement Research model

Game dynamics and needs satisfaction

In a gamified system, rewards are the PLBs⁶ that users receive as a reward for accomplishing pre-assigned activities. Users are encouraged to seek for more points, higher levels, and more badges or trophies in exchange for their efforts . Researchers contend that gamification rewards differ from standard corporate motivator structures (e.g., monetary awards) because game features themselves are rewarding . As a result, incentives do not always reduce users' intrinsic motivation inside a gamified IS. Receiving physical incentives in game-like circumstances, on the other hand, is essential to a user's experience of demands fulfilment. Reaching milestones and receiving incentives, for example, produces a recurring sense of achievement and enhances self-worth (competence). As a result, the more PLB awards a user receives, the more skilled he or she feels. Earning PLBs as informative feedback (rather than using them to influence behavior) has also been demonstrated to improve autonomy.

Due to the fact that users may exchange their earned points for other virtual items or gifts; instead, rewards represent the provision of choice. More generally, the PLBs characteristic of a gamified IS offers options for tasks and goals as well as freedom in movement and strategy. Rewards, status, and accomplishment are then constructed to offer feedback that reflects system user preferences. Users feel more autonomous when using PLBs in a gamified IS because they can decide what to do with them.

Through competitions, individuals can challenge one another to complete an activity with the best score possible. The leaderboard is essential for showcasing outcomes and recognizing victors. Regardless of the style of game, such as multiplayer-enabled, single-player, or other single-user experiences, the core aspect of gaming is to compete to accomplish a certain goal. Because contrasting one's performance with the performance of others gives people a certain level of satisfaction. According to psychological research, people are motivated to perform better when they are in a competitive setting.

⁶Points, Leaderboards, Badges

[Hypothesis 4a] Competition positively influences competence within a gamified IS.

[Hypothesis 4b] Competition positively influences relatedness within a gamified IS.

The distinctive identities that users may develop through virtual goods in gamified ISs represent self-expression. A person's avatar, for instance, may frequently act as a colorful focal point for expression. Additionally, individuals can set themselves apart from others by using their own signatures or symbols . Virtual items can be obtained as presents, earned through awards, or bought outright with real money.

Users of gamified IS may express themselves and create their own personalities using them. Users are inspired to develop their own senses of style and personalities via self-expression. People can have more liberty by having unique characters that set them apart from other users. People can communicate with the other participants more personally by using virtual products (like emoticons) to express their emotions and sentiments.

[Hypothesis 5a] Self-expression positively influences autonomy within a gamified IS.

[Hypothesis 5b] Self-expression positively influences related ness within a gamified IS.

Altruism in this research refers to the practice of giving gifts to other people. Giving gifts is a powerful incentive when individuals want to build relationships. Gifting is a powerful acquisition and retention tool in gamification. Non-users or infrequent users may receive presents from active users, be enticed to participate in the system, and then provide gifts to other people in exchange for their participation incentives. This pay-forward mechanism's dynamic has the potential to produce a significant acquisition loop. Users who are already using the application and receive a reward may be enticed to use it again since they must redeem the freebie.

These hypothesis offered by Ayoung Suh, Christian Wagner and Lili Liu. They used a survey approach to get empirical data from players of gamified ISs.

They investigated whether the relationships between the suggested variables were statistically significant through path analysis using structural equation modeling because the model links numerous aspects, including the users' evaluation of the game mechanics, needs satisfaction, intrinsic motivation, and engagement. they choose partial least squares (PLS) specifically because it is suitable for the preliminary phases of theory construction.

This study used and modified validated existing scales. Seven-point measures ranging from "strongly disagree" to "strongly agree" were used to score each issue. The three subscales of energy, devotion, and absorption were measured using the engagement scale created by Schaufeli et al. The amusement items came from Kim et al. We modified Jang et al. and Sheldon et al.'s competence, autonomy, and relatedness items to measure needs fulfillment.

Adaptations of Kankanhalli et al., Sen et al., and O'Brien's works were made for the awards. Items for expressing oneself, competing, and being charitable were taken from Ma and Agarwal, Lee and Yang, and Chen et al. Age, gender, and educational levels were taken into account in prior research that looked at how human behavior was affected by game design components.

They collected data from the users of the gamified knowledge-sharing website Naver Knowledge-iN (KiN), which was initially introduced in South Korea in 2002. KiN has millions of users, similar to general knowledge Q and A websites like Yahoo! Answers and Baidu Knows. The website is read by 4.5 million users each day and provides an average of 110,000 replies to 44,000 queries. PLBs are given to KiN users in accordance with their efforts or accomplishments. User rivalry is facilitated through leaderboards, and virtual goods and things are utilized to assist users in building their virtual identities (such as avatars) and expressing their feelings through emoticons. Additionally, KiN users may give virtual presents to other people and contribute points and other digital currency.

Item	Category	Frequency	Ratio
Gender	Male	88	53.7%
	Female	76	46.3%
	Total	164	100.0%
Age	20–29	32	19.5%
	30–39	61	37.2%
	40–49	54	32.9%
	≥50	17	10.4%
	Total	164	100.0%
Education	High school	17	10.4%
	Two-year college	15	9.2%
	Four-year college	116	70.7%
	Postgraduate	5	3.0%
	Above	11	6.7%
	Total	164	100.0%

Figure 3.28: Demographic characteristics of the respondents

Two stages of analysis were used for the data analysis. First, the measurement model's validity and reliability were evaluated. The structural model was assessed in the second step to validate the study hypotheses.

Measurement model

Estimates of internal consistency as well as the convergent and discriminant validity of the instrument items were used to test the measurement model. Composite scale reliability and Cronbach's alpha were used to investigate construct dependability. All reliability metrics were at or above 0.7, which is much better than the advised limit of 0.7 and indicates appropriate build dependability. Confirmatory factor analysis utilizing the PLS technique (Smart PLS) was used to analyze the loadings and t-statistics of the indicators on their associated components in order to evaluate convergent validity.

It was thought that the convergent validity of those indicators was supported if all the item loadings were larger than the advised 0.7 and attained statistical significance (i.e., more than twice their standard errors). The factor loadings, cross loadings, and indication reliability (Cronbach's alpha) are all listed.

by looking at the average variance extracted (AVE) value to determine the discriminant validity. The AVE from a construct needs to be higher than the variance shared by that construct and the other constructs in the model for adequate discriminant validity. The square root of the AVE for each construct should be greater than the correlation of that construct with all other constructs. The findings show that each concept's AVE is greater than its correlation with every other construct

in the model, demonstrating the discriminant validity of the components.

Structural model

An estimation of the path coefficients, which show the strength of the relationships between the dependent and independent variables, and the R² value, which shows how much variation the independent variables explained, were included in the test of the structural model. The path coefficients (loadings and significance) and R² together show how well the data support the proposed model. By producing t-statistics and significance levels via bootstrapping, the significance of the path coefficient was determined.

The results reveal that enjoyment positively influences engagement ($\beta = 0.63, p < 0.001$), and competence, autonomy, and relatedness positively influence enjoyment ($\beta = 0.18, p < 0.05; \beta = 0.35, p < 0.05; \beta = 0.50, p < 0.001$). As to the relationships between game dynamics and needs satisfaction, the results indicate that rewards positively influence competence ($\beta = 0.29, p < 0.01$) and autonomy ($\beta = 0.22, p < 0.001$); competition positively influences competence ($\beta = 0.36, p < 0.001$) and relatedness ($\beta = 0.38, p < 0.001$); self-expression positively influences autonomy ($\beta = 0.24, p < 0.05$); and altruism positively influences relatedness ($\beta = 0.35, p < 0.001$). Hence, all of the hypotheses were supported except for H5b.

	ITEMS	REW	SEP	COT	ALT	COM	AUT	REL	ENJ	ENG	<i>a</i>
REW	REW1	0.85	0.33	0.48	0.41	0.40	0.30	0.41	0.46	0.44	0.86
	REW2	0.91	0.38	0.53	0.53	0.48	0.28	0.53	0.52	0.56	
	REW3	0.90	0.49	0.67	0.56	0.50	0.30	0.52	0.56	0.59	
SEP	SEP1	0.30	0.86	0.40	0.42	0.36	0.21	0.28	0.32	0.49	0.92
	SEP2	0.37	0.91	0.41	0.45	0.36	0.31	0.39	0.37	0.47	
	SEP3	0.44	0.93	0.46	0.45	0.38	0.35	0.41	0.39	0.52	
	SEP4	0.49	0.88	0.48	0.44	0.36	0.33	0.41	0.38	0.45	
COT	COT1	0.60	0.43	0.88	0.49	0.53	0.24	0.48	0.39	0.64	0.84
	COT2	0.49	0.40	0.90	0.48	0.48	0.25	0.49	0.39	0.62	
	COT3	0.57	0.46	0.84	0.38	0.42	0.33	0.58	0.50	0.60	
ALT	ALT1	0.53	0.51	0.51	0.90	0.35	0.25	0.53	0.49	0.64	0.90
	ALT2	0.54	0.41	0.47	0.94	0.34	0.33	0.57	0.53	0.62	
	ALT3	0.47	0.42	0.44	0.89	0.36	0.32	0.47	0.43	0.59	
COM	COM1	0.38	0.29	0.36	0.24	0.83	0.33	0.27	0.37	0.43	0.81
	COM2	0.49	0.32	0.51	0.29	0.86	0.40	0.37	0.41	0.47	
	COM3	0.46	0.41	0.51	0.43	0.86	0.48	0.52	0.47	0.54	
AUT	AUT1	0.32	0.31	0.32	0.28	0.39	0.84	0.41	0.44	0.38	0.77
	AUT2	0.27	0.32	0.26	0.28	0.43	0.87	0.40	0.41	0.32	
	AUT3	0.22	0.19	0.16	0.25	0.37	0.76	0.27	0.27	0.28	
REL	REL1	0.40	0.30	0.43	0.48	0.42	0.33	0.81	0.55	0.55	0.82
	REL2	0.54	0.43	0.57	0.57	0.46	0.41	0.90	0.58	0.63	
	REL3	0.48	0.35	0.52	0.44	0.33	0.41	0.86	0.55	0.49	
ENJ	ENJ1	0.45	0.31	0.35	0.47	0.38	0.39	0.55	0.89	0.54	0.86
	ENJ2	0.59	0.42	0.49	0.51	0.46	0.44	0.62	0.88	0.59	
	ENJ3	0.49	0.35	0.45	0.43	0.46	0.40	0.56	0.88	0.54	
ENG	VIG	0.51	0.51	0.63	0.60	0.51	0.36	0.67	0.60	0.91	0.86
	DED	0.58	0.44	0.65	0.59	0.56	0.44	0.55	0.61	0.87	
	ABS	0.50	0.48	0.61	0.61	0.42	0.24	0.48	0.45	0.86	

Note: *a* = Cronbach's alpha; REW = Rewards; SEP = Self-expression; COT = Competition; ALT = Altruism; COM = Competence; AUT = Autonomy; REL = Relatedness; ENJ = Enjoyment; ENG = Engagement; VIG = Vigor; DED = Dedication; ABS = Absorption.

Figure 3.29: Loading, cross loading, and indicator reliability

3.6.3 Results

This study's major goal was to investigate how gamification raises user engagement with an IS. Results of the investigation supported the validity of the model as a whole by confirming all but

	CR	AVE	REW	SEP	COT	ALT	COM	AUT	REL	ENJ	ENG
REW	0.92	0.78	0.89								
SEP	0.94	0.81	0.45	0.90							
COT	0.90	0.76	0.64	0.49	0.87						
ALT	0.94	0.83	0.56	0.49	0.52	0.91					
COM	0.89	0.72	0.52	0.41	0.55	0.38	0.85				
AUT	0.86	0.68	0.33	0.34	0.31	0.33	0.48	0.83			
REL	0.89	0.74	0.55	0.42	0.59	0.58	0.47	0.45	0.86		
ENJ	0.91	0.78	0.58	0.41	0.49	0.54	0.49	0.47	0.66	0.88	
ENG	0.91	0.78	0.60	0.54	0.65	0.68	0.57	0.40	0.65	0.63	0.88

Notes: (1) Square root of AVE for each latent construct is given in diagonals. (2) AVE = Average variance extracted; CR: Composite reliability.

Figure 3.30: Discriminant validity and correlation of constructs

one of the hypotheses (5b).

The study shows that when game dynamics adequately meet users' psychological demands, gamification increases user engagement. Notably, the findings show that various game dynamics contribute in various ways to raising user demands fulfillment. It has been discovered that incentives boost competence and autonomy, while self-expression, rivalry, and altruism also boost relatedness and competence. Results show that the combination of the aforementioned game dynamics satisfies people's basic psychological demands, which is essential to raising pleasure, a critical factor in user engagement with a gamified IS. On the basis of these findings, they purpose that gamification should not be seen in isolation from other dynamics, such as self-expression, competition, and benevolence, and that it is not just about rewards.

Additionally, It has been discovered that the three psychological needs of relatedness, competence, and autonomy were the primary predictors of enjoyment. These findings support the CET theory that people are intrinsically motivated when their psychological needs are met. As a result, This research reveals that enhancing user need satisfaction can help fulfill the goal of gamification, which is to add hedonic⁷ value (enjoyment) to already-existing activities. Findings show that just attempting to improve the hedonic value of an IS by incorporating gaming aspects without taking into account how to address users' fundamental psychological requirements may fail to properly engage users. Based on the data, they contend that the effectiveness of gamification depends on developing game dynamics to satisfy users' fundamental psychological demands. Research also hypothesize that disregarding even a single one of the three psychological demands may considerably lower user satisfaction and, as a result, lower levels of engagement. Although the importance or magnitude of each psychological need varies depending on context, it emphasize that the game dynamics identified in this study are significant antecedents of needs satisfaction, which stimulates enjoyment and causes people to engage more deeply in performing target activities within a gamified IS.

⁷Hedonic value refers to the pleasure, enjoyment, or fun that a person experiences when using or consuming a product or service, as opposed to its functional or practical benefits (utilitarian value)

3.7 Retention, Recognition and Motivation

These concepts are crucial to the management of human resources. Retaining top personnel in today's fiercely competitive corporate climate is crucial for organizational success. However, retaining employees is a key issue that many firms deal with. A study by the Society for Human Resource Management found that it typically costs six to nine months' worth of wages to replace one employee. Therefore, it is crucial that businesses put into practice efficient ways to lower turnover. Gamification is one such approach that can lower turnover by giving employees a sense of accomplishment and purpose. Gamification is the application of game mechanics and design to engage and inspire individuals to reach their objectives. Gamification may increase employee ownership and commitment by establishing clear goals and objectives, rewarding success, and recognizing effort. As employees are more inclined to stay with a company that recognizes their contributions and offers opportunity for progress, greater retention rates may result from this sense of ownership and loyalty. Another important element in retaining and motivating employees is recognition. Employee engagement and productivity are more likely to occur when they feel valued and appreciated. By giving staff members timely feedback and acknowledgment for their achievements, gamification may help perpetuate this sense of importance. Employees are more likely to strive for excellence and be driven to keep improving their performance if acknowledgment is incorporated into the game. This acknowledgement may come in many different ways, such as badges, leaderboards, or public acclaim, and it can help create a productive work atmosphere that encourages employee achievement. Finally, employee engagement and productivity depend on motivation. A potent motivator, a sense of excitement and challenge may be created through gamification. Employees are inspired to work harder and accomplish their goals when a system of incentives and rewards is in place. Additionally, gamification may offer a sense of accomplishment and growth, which can be incredibly motivating for workers. Gamification may increase employee self-esteem and confidence by giving them a sense of achievement and success, which in turn promotes better levels of motivation and engagement.

3.7.1 Retention

Retention Management will always endure to drive attentions in all emerging corporates. To recruit, hire, retain and develop skilled personnel, the business needs adopt new retention techniques. Corporates have been playing a vital role in international economic growth. Gamification is being implemented systematically in rising corporations. Initially the dynamics and procedures of this concept were prominent in the field of tech savvy environment and later on practiced by other corporates as well. Few businesses used similar concepts created in their games to real-world situations. Employees reacted favorably to the idea of receiving awards for their achievements.

Gamification appears to be a road to a stress-free workplace, allowing employees to perform at their best in order to meet objectives and key success drivers. Gamification is a tactic that helps people remain satisfied with their jobs, which can enhance retention rates. Gamification for business employs game principles to persuade employees to give their all. It encourages employees to compete with their objectives and team members.

On the other hand, Retention is the best strategies adopted which in turn reduce the cost spend for hiring a new employee. Companies develop gamification strategies and methods to retain the

best talented asset.

A newly hired candidate may stay connected with the organization for a maximum of two years. Candidates frequently change employers in search of better career opportunities, which results in significant financial loss for the company. As a result, it is imperative to reduce attrition by implementing such a cutting-edge technique. Gamification techniques can overcome monotony, boredom, fatigue, absenteeism etc.

Any firm has to consider employee retention. Maintaining employee satisfaction and motivation is important, but so is lowering the expense of recruiting and training new hires. Low turnover rates are crucial for businesses because they may have a positive impact on staff morale, productivity, and overall success. Long-term employees are more likely to get a thorough grasp of the company's culture and principles, which can improve performance and productivity while also building deeper bonds with coworkers and management.

In any firm, employee retention and attrition are two sides of the same coin. The capacity of a corporation to maintain its workers' engagement, satisfaction, and motivation to continue working for the company over a protracted period is referred to as retention. The pace at which employees depart a company, either freely or involuntarily, is referred to as attrition. Any corporation must understand the link between staff retention and attrition since it has a big influence on how successful the business is overall.

On the other side, attrition can have detrimental effects on a company. It may result in the loss of expertise that can be expensive and difficult to replace. High attrition rates can also have a detrimental effect on the entire culture of the company by lowering staff morale, which will affect production. Furthermore, a high turnover rate might be a red flag to potential hires who might be unwilling to work for a business that seems to have trouble keeping its staff.

There are several factors that affect both attrition and staff retention, and the link between the two is complicated. By addressing the underlying reasons of employee unhappiness and raising employee engagement, a successful employee retention program can assist to lower turnover rates. Initiatives like career development programs, performance-based awards, and employee recognition schemes might fall under this category.

- **Salary and benefits:** Once determining whether to stay with a firm or leave it, employees often base their decision on salary. A corporation is more likely to keep its employees if it provides competitive compensation and perks. Employee retention and satisfaction can also be influenced by a full benefits package that includes paid time off, retirement programs, and health insurance.
- **Work-Life Balance:** Sustaining a healthy balance between work and personal obligations is crucial for employee retention. A corporation that allows for remote work, flexible work hours, and personal time off will retain more of its employees.
- **Job Security:** Employees also are concerned about their jobs, especially in uncertain economic times. Companies that provide long-term contracts or tenure track employment, which give job stability, typically have greater retention rates.

- **Corporate Culture:** Employee retention is greatly influenced by the company culture. Employee contentment, motivation, and loyalty may all be influenced by an encouraging and pleasant workplace culture. On the other hand, a hostile workplace may result in more employee churn.
- **Opportunities for Career Development:** Workers are more inclined to remain with a firm that offers them chances for professional advancement. Companies with more options for advancement, mentorship, and training tend to have greater retention rates.
- **Leadership:** A leader's abilities might affect a team's ability to retain employees. Good leaders give clear instructions, excite and encourage their teams, and show them support and appreciation. On the other hand, ineffective leadership can cause staff unhappiness and greater turnover rates.
- **Workload and Stress:** A heavy workload and high levels of stress can cause employee unhappiness and burnout, which can result in greater turnover rates. Companies that offer assistance, tools, and solutions for work-life balance can lower stress levels and boost retention rates.

Employee retention is crucial to the success of any business. Companies need to be aware of these elements and put procedures in place that encourage employee retention and happiness. Companies may lower attrition rates, boost productivity, and keep a competitive advantage in the market by investing in the well-being of their workers.

But in a different point of view. Attrition has two aspects. When a poor employee is replaced by a more productive one, attrition benefits the company. It can also occur when a senior employee retires and makes room for a promotion or the hiring of new hires.

In businesses where business levels are unpredictable, moderate levels of staff attrition can also help to cut staff costs since in these circumstances, it is simple to put off filling freshly created vacancies for a few weeks.

If all employees stay with the same company for a very long period, the majority of them will be paid at the top of the scale, which will increase the cost of labor.

The Company gains from the departure of certain individuals whose continued employment would have had a detrimental influence on the Company's productivity and profitability.

New hires may keep an organization from getting complacent by bringing fresh perspectives, methods, skills, and attitudes.

The workplace culture and team spirit can also be negatively and demoralizingly impacted by a small number of individuals. This has long-term negative effects on the health of the organization. Terminating workers who the company does not wish to work with again is also a desirable form of attrition.

on the other side it has its own setbacks. The talent cost is the price you pay for the knowledge, contacts, and abilities the departing employee takes with them as they walk out the door. Costs associated with hiring include those associated the expense of the management, who must know what work has to be done and how to cover it until a replacement is found. The price of the many pre-employment tests given to candidates to evaluate their talents, values, attitudes, and behaviors. with ads, agencies, employee referrals, and online posting.

The expense of training It includes the cost of orientation in terms of the new employee's compensation as well as the cost of the orientation facilitator. It also includes the training. calculate the cost of various training materials required, such as Company product manuals and computer or other technological equipment utilized in training delivery Motivational cost, it refers to the expense incurred as a result of inspiring other employees to remain in the organization by raising their income and time. Lost productivity costs, The new employee is not entirely productive while learning the new job, the Company regulations and procedures, and so on. A gamification system can aid in employee retention in numerous ways.

Employee gratitude and recognition can be given through gamification for their efforts and successes. Employee retention is higher when they feel appreciated and recognized by the company. Employees who meet their objectives and perform well might get prizes, badges, and other kinds of recognition through a gamification system. This may boost staff motivation and engagement, which in turn may result in greater retention rates.

Job satisfaction by adding a fun and engaging element to work, gamification may make workers feel more satisfied with their jobs. When workers are happy in their jobs, they are more likely to stick in the company. A gamification system may infuse job duties with fun and excitement, which can lessen boredom and monotony. In the end, this may result in greater work satisfaction and retention rates.

Gamification may aid in the development of employees' skills and competences. Employee retention is higher when they believe they are progressing professionally inside the company. A gamification system can provide staff members chances to learn and advance while also tracking their success. This may boost staff motivation and engagement, which may result in greater retention rates.

Gamification may encourage cooperation and teamwork among workers. Employee retention is higher when they feel like they are a member of a team and are working toward a common objective. A gamification system can provide workers the chance to collaborate, compete with one another, and showcase their successes. This may promote a feeling of belonging and community, which may increase retention rates.

By making work more adaptable and controllable, gamification may aid in the promotion of work-life balance. Employee retention rates are higher when they feel in control of their work schedules and can successfully juggle work and personal obligations. A gamification system can provide staff members the freedom to choose their own objectives, deadlines, and working hours. Increased retention rates may result from a reduction in stress and burnout as a result of this.

Recognizing and recognizing the efforts, talents, and accomplishments of people inside a company is referred to as recognition. It entails expressing gratitude for the effort, devotion, and commitment that staff members offer to their employment. Numerous other types of acknowledgement are possible, including vocal compliments, written compliments, monetary prizes, promotions, and other public kinds of acclaim. Employee motivation, morale-boosting, and a sense of worth and appreciation are the goals of recognition. Employee engagement and commitment rise along with productivity, job satisfaction, and retention rates when they feel appreciated for their work.

Employee appreciation in corporations might be dramatically impacted by gamification. The capacity to offer rapid feedback and acknowledgment for employee success is one of the major features of gamification. Employees only get feedback and praise from typical performance assessment methods once or twice a year, at the yearly review. But thanks to gamification, staff members may get

year-round praise and feedback for their accomplishments.

Additionally, gamification systems may be created to identify and honor particular abilities or conduct that is essential to the success of a business. For instance, a business can create a gamification system that recognizes staff members who constantly collaborate with coworkers and contribute to the success of the team in order to promote cooperation and collaboration. Gamification in this way aids in promoting and reinforcing certain behaviors and values that are crucial for the company. Gamification may also aid in increasing the transparency and visibility of rewards. Employee appreciation is frequently kept private in traditional performance assessment methods, and as a result, employees might not be aware of the accomplishments of their coworkers. Gamification, on the other hand, makes acknowledgment often apparent to all employees inside the company and public. This fosters healthy competition among workers and motivates them to pursue greatness.

3.7.2 Recognition

Work performance recognition is concerned with how employees carry out their jobs rather than the individuals themselves or the outcomes they create. It also addresses their behaviors, abilities, and professional credentials. Work performance recognition focuses on workers' work processes, particularly the creativity, innovation, and constant development they bring to their work techniques. The major markers for this sort of acknowledgment present themselves in the context of the work process when people (or teams) feel appreciated for their experience, abilities, resourcefulness, and professional credentials in the manner they do their jobs and solve challenges. Subjects frequently leave with a higher sense of self-esteem and personal competence. The following are some actions for showing appreciation for work performance (Brun and Dugas 2002).

Encourage your coworkers to offer feedback on a candidate's qualifications. Have managers take into account the skills of each team member and offer each employee tasks that are appropriate for their experience. When evaluating teams and employees, take the work process into consideration. Award best professional practices and create initiatives to recognize innovation. Personalized letters of appreciation from customers for the level of service offered by staff are advantageous.

The level of participation, commitment, and contribution made by an employee or team throughout the work process is acknowledged through the practice of "job dedication recognition." Despite their greatest efforts and expertise, employees could occasionally fall short of the desired results. Although these are frequently the least obvious components of the actual labor, it would be appropriate to acknowledge the quality and intensity of the energy put into the activity. An opportunity to emphasize the contribution of less productive employees and unseen staff members, such as those in technical or administrative support, is presented by the recognition of job commitment. These employees support the company's efficient ongoing operations via their everyday dedication. Finally, it involves appreciating the risks that individuals incur in the course of performing their jobs and the drive they exhibit in occasionally less-than-ideal circumstances.

Since acknowledgment is an act of truth and there is no place for flattery, it should be given in proportion to the work the employee puts in or is capable of producing.

Here we can consider some example of well recognition, Manager expressing gratitude to worker for contribution to project (valuing participation). manager who values employee suggestions even when they cannot be implemented.N. Dugas and J.-P. Brun722.organizing a meeting applause to recognize the work and effort put forward in a collaborative endeavour.Sending a message to an

employee to express gratitude for his or her bravery and endurance under trying circumstances. Leading a round of applause in a meeting to highlight the time and effort invested in a team project.. Supervisor sending a message to thank an employee for his/her courage and perseverance in difficult working conditions. If recognition of work performance and job dedication plays a critical role in work psychodynamics, they are by no means the sole contributing factors. In other words, an organization does not necessarily have to avail itself of this approach to recognize the work performance and job dedication of its employees.

The concept of reciprocity and the bidirectional character of all human connections must be taken into consideration when analyzing the act of recognition from an interactional standpoint. This viewpoint draws attention to the fact that the expression of recognition presupposes the development of a bipolar connection between two or more persons at work and that, as a result, it can be made by either party. Although recognition between the parties may be mutual, one-way, or nonexistent, it nevertheless constitutes a type of communication between the parties. At the core of industrial relations, acknowledgment (or lack thereof) is shown through a variety of interactions, whether understated or overtly obvious.

Employee recognition may be turned from an exhausting task into a fun and rewarding experience via the use of gamification. Gamified recognition programs may increase the interaction, socialization, and enjoyment of recognition by introducing game features like points, badges, leaderboards, and challenges. Employees, for instance, can gain points or badges for accomplishing particular tasks or exhibiting desired behaviors, and these accomplishments can be shared with coworkers on social media or shown on a scoreboard.

Gamified recognition also has the potential to improve teamwork and employee engagement. Gamified recognition systems can promote a culture of continuous development and peer-to-peer recognition by instilling a sense of rivalry or collaboration. Employees can gain points or awards for things like working together on projects or giving feedback to their coworkers.

3.7.3 Motivation

Intrinsic and extrinsic motivation

According to Hamari and Koivisto (2015), gamification is the use of technology to replicate game features with the ability to inspire 'players'. When a person feels energised or moved to do a job or behave in a specific manner, this is referred to as motivation (Ryan and Deci, 2000). The strength, amount, and orientation of motivation can all change. Motivation theories including early need theories (Herzberg, Mausner, and Snyderman, 1959; Maslow, 1943; McClelland, 1961), more contemporary theories such as Expectancy theory (Vroom, 1964), FourDrives theory (Lawrence and Nohria, 2002), Equity theory (Adams, 1963), and many other theories and models (e.g. Goal Setting theory, Locke and Latham, 2002; Self-Determination theory, Ryan and Deci, 2000) will be familiar to scholars in the area. In various ways, these ideas have conflicting and overlapping dimensions that may or may not be relevant.

However, distinguishing between intrinsic and extrinsic motivation is a fundamental and significant distinction in every environment. Intrinsic motivation arises when a task is intrinsically engaging or pleasurable, whereas extrinsic motivation develops when executing the work is a means to an

end (Ryan and Deci, 2000). Extrinsic motivators, by definition, are effective only till the desired objective is attained. For example, if a person is driven to work hard at a specific activity by the prospect of a promotion, after the promotion is obtained, the incentive to work hard is lost. An intrinsic motivator, on the other hand, such as underlying enthusiasm in a task, will continue to inspire a person to work hard.

In terms of gamification, this opens up two paths for motivating players: they may be rewarded an extrinsic prize or advantage, or they can satisfy an intrinsic want or need such as the desire to succeed as a consequence of game components. Intrinsic Motivators tend to be a function of job design and the worker's values or interests, whereas extrinsic motivators have nothing to do with job design.

In working environments, intrinsic motivators are more stable over time and require less management intervention, whereas extrinsic motivators require closer management scrutiny as affective motivational content escalates over time (Stock, Oliveira, and von Hippel, 2015). While the prospect of a wage raise may be a motivator, the actuality of a pay increase is seldom, as the worker changes their expectations and rapidly sees their new compensation as the standard.

This contrast between extrinsic and intrinsic motivation essentially characterizes the divide between work and play. Work is typically perceived as being externally regulated and motivated by extrinsic incentives such as those described, 328 C. Perryer et al. / The International Journal of Management Education 14 (2016) 327e335 whereas intrinsic motivation triggers playful actions and the consumption of entertainment such as games (Hartmann and Klimmt, 2012).

There is well-documented evidence that extrinsic and intrinsic motivation are not additive (e.g., deCharms, 1968; Ma, Jin, Meng, and Shen, 2014), as the promise of extrinsic reward can dampen pre-existing intrinsic motivation via what Osterloh and Frey (2000) refer to as the 'crowding-out effect'. As a result, organizations seeking to elicit intrinsically driven behaviors from workers (e.g., creativity, knowledge sharing) or just attempting to boost productivity through reasons other than salary or bonus allocation require alternate tactics.

Elements of gamification intersect with the theories previously stated. Consider the Four-Drives hypothesis of motivation (Lawrence and Nohria, 2002), which contends that all people have four primary drives: the need to gain, protect oneself, form bonds with others, and comprehend (Lawrence, 2011). The want to acquire drives individuals to acquire concrete commodities like food and shelter, intangibles like travel and entertainment, and socially valuable things like prestige.

The need to protect has its roots in the instinctive fight-or-flight reaction, but it also stems from the need for stability in one's finances and employment, reluctance to change, and a feeling of vulnerability during times of adversity. The need to connect drives people to establish and maintain familial and kinship links, fosters a sense of pride in one's job and of belonging, and is satisfied by participation in networks, groups, and organisations. The urge to grasp and make sense of the world around us, the desire to have an impact, and the need to advance personally and intellectually are all part of the drive to comprehend. This theory incorporates a number of components that may be found in other theories, such as security, development, affiliation, and accomplishment, to mention a few.

The motivation behind gameplay

Despite lacking a clear practical function, games contain strong intrinsically compelling qualities that motivational theorists are still trying to comprehend (Sellers, 2012). Self-Determination Theory (SDT) and its sub theory, cognitive evaluation theory (CET, Deci and Ryan, 1985), have emerged as having the most explanatory power while remaining compatible with a number of more recent complementary theories. These theories include Yee's (2006) motivations for online play and Sherry, Lucas, Greenberg, and Lachlan's (2006) Six video game uses and gratifications.

According to CET, there are three prerequisites that are both necessary and insufficient for the existence of intrinsic motivation: autonomy, which is the experience of acting voluntarily in accordance with one's goals and needs; competence, which is the belief that one has control over their environment; and relatedness, which is the presence of the functional, supportive relationships required for goal attainment. Recent Mood Management theory literature on games motivation is supported by both SDT and CET. In particular, the preconditions indicated by CET are necessary for the Mood Management hypothesis, which claims that people modify their exposure to external stimuli (in this example, games) to maximize enjoyment and minimize aversion (Zillmann, 1988).

According to the Mood Management hypothesis, people are hedonistically driven to seek out calming types of entertainment when they are physically and affectively overstimulated, and they pursue thrilling forms of entertainment when they are bored or under-stimulated (Zillmann, 1988). Designers include mechanisms into games that, when combined, cause players to react in a variety of ways, evoking the desired physiological and emotive responses. In the short term, players are motivated by their own self-selected goals, satisfying the needs and drives described by Players' Experience of Need Satisfaction (PENS, Przybylski, Rigby, and Ryan, 2010). At the most immediate level, players respond favorably to bright colors, flashes, moving images, and rhythms.

PENS offers new insights by proposing that people constantly seek need satisfaction and that, as a result, they do not only consume entertainment in order to restore hedonic deficits but also in the endless pursuit of need satisfaction. Unlike mood management theory, which suggests that exposure to games and entertainment is understood in terms of how it helps regulate arousal/satisfy hedonic needs (for example, how it restores a deficit like boredom), PENS. The Players' Experience of Need Satisfaction (PENS), which is determined by the CET and includes the aforementioned three motivational factors, determines game selection and ongoing play (Deterding, 2015).

Integrating Gamification and Motivation Theory

People most often find gamification features that have social aspects to be more entertaining and engaging than 'single-player' components. When players are able to compare themselves to contextually relevant individuals, these social features are likely to be perceived as even more motivating (Ruhi, 2015), since this helps them satisfy their desire for relatedness and produce more accurate self-evaluations.

Gamification that emphasizes collaboration might be more successful than one which emphasizes competition. Some people may find gamification that aims to encourage one-on-one competition to

be uninteresting and even demotivating, which might lead to decreased performance and engagement (Farzan et al., 2008; Song et al., 2013). Localized, team-based tournaments that pit players against a shared foe are likely to be more successful where competition is stressed since working as a team fosters healthy competitiveness and social interaction among the team members. Additionally, people often do not want to be seen as a weak link at work, therefore this pushes staff members to compete and contribute.

Gamification, which enables various requirements to be satisfied by a single game, has advantages. Teams are currently widely used in most organizations. Teams add a social component to work, in addition to the practical benefits of covering absences and the synergies that may be obtained from people bringing different experience and skill sets to a project. Using team-based competition helps players meet their want to develop bonds with their colleagues, which improves an organization's culture, while also satisfying their desire to defend. This is related to the prior argument. Additionally, this appeals to players with various accomplishment orientations.

Through the performance-management and resource-allocation process levers, managers may also satisfy workers' need to defend, assuring fairness and transparency in the workplace (Dickey, 2006; Garris, Ahlers, and Driskell, 2002; Perryer, Scott-Ladd and Leighton, 2012). Games expose all organizational 'players' to the same rules and processes, with identical results for similar inputs. It is possible to broaden the kind and range of results that are available to employees by utilizing gamification techniques. For instance, it is usual practice to adjust a manager's or department's budget in response to performance. A reward mechanism can be utilized by include features like points, awards, and badges to appeal to employees' desire for acquisition. levels or badges on leaderboards. Through the distribution of credits or points rather than through a budget allocation, this may be done instantly using information technology, or possibly weekly. A gaming aspect that is now available to business is the awarding, spending, and trading of points or credits obtained via job completion and the quality of task accomplishment, although to the best of the authors' knowledge, it is seldom, if ever, used. These aspects are essential because they let employees understand their position in relation to others at work. They also assist in goal planning by laying out specific objectives with checkpoints (such as the target of moving on to the "next level") and offering feedback on performance.

Gamified systems must to be consistent with the organization's current activities and goals. They must to contain components that push participants' knowledge, talents, and skills while avoiding having a learning curve that is too steep because it can demotivate them. Adding gamified tasks to employees' responsibilities, while at the same time expecting them to invest significant time in learning a game is unlikely to enhance intrinsic motivation (Hanus and Fox, 2015; Mekler, Brühlmann, Tuch, and Opwis , 2015), but likely to evoke cynicism and resentment, particularly if the participants don't see the value of the game and are in that sense 'non-consenting' (Mollick and Rothbard, 2014).

Extrinsic rewards like points and badges should be acknowledged as symbols of rewards rather than serving as standalone rewards as they already exist as tasks and objectives with intrinsic worth. There is less likelihood that employees would try to game the system, participate in behaviors that maximize points for little or selective contributions, or prioritize quantity over quality in their work

when points and badges act as suggestive reminders of past goal attainment.

The Six-sigma levels or belts are an illustration of how this currently happens in some companies (Perryer, Scott-Ladd and Leighton, 2012). Real or virtual badges help to recognise a participant's level of competence and to let other participants know about it. Similar to this, leaderboards serve as platforms for rewards and recognition as employees want to improve their standing among their colleagues.

Choose gamification methods that will help your organization reach its long-term objectives and the long-term, self-selected objectives of your workers. More than simply immediate affective and physiological fulfillment is possible with gamification techniques and results that go beyond a particular job. According to Oprescu, Jones, and Katsikitis (2014) and Vorderer, Bryant, Pieper, and Weber (2012), self-selected, personally meaningful goals give players a longer-lasting and subjectively determined source of meaning. Long-term objectives can be met in several ways, giving participants a variety of ways to accomplish their own, yet organizationally desired, goals. This promotes intrinsic motivation, assists in achieving strategic goals without constraining individual liberty, and has implications for the entire work design.

Motionless, in-browser content is typically less successful than holistic, immersive environments with feedback. Gamified systems should have built-in methods for regular feedback and verification. The Job Characteristics Model put forth by Hackman and Oldham (1980) emphasizes the value of feedback as a way to increase the meaning of work for employees, and "Real-time" feedback, built into a job through immediate visual and aural cues, can act as a strong perceptual hook for players.

Chapter 4

Data Analytic

4.0.1 Methodology

Research design:

The research question for this study is, How can gamification help with the organization? To answer this question, a quantitative research technique will be used to identify the factors that contribute to IBM employee attrition.

Data collection:

The data for this study will be collected from IBM HR records and employee polls. HR records will include employee demographics, job positions, salary, promotions, and performance ratings. Employee satisfaction, work-life balance, and employee engagement will be surveyed.

Sample:

A sample of 1471 IBM employees from various departments and employment positions will be selected using a stratified random selection technique. The sample will be stratified by department, employment level, and job function to ensure representativeness.

Data Analysis

Descriptive and inferential statistics will be used in the study to analyze the data. Descriptive statistics will be used to summarize the demographics of the sample, the attrition rate, and the causes of attrition. Inferential statistics, such as Random Forrest cross validation analysis, will be used to identify the major attrition predictors and their effect sizes. Python and Microsoft Power BI will be used to perform the data analysis.

This study will use a quantitative research technique to examine the factors that contribute to IBM employee attrition. The data will be collected from HR records and employee polls, and the sample will be selected using a stratified random selection technique. Descriptive and inferential statistics will be used to analyze the data, and Python and Microsoft Power BI will be used to perform the data analysis.

4.0.2 Attrition in organization

The heart of the company is its workforce. Performance of an organization is greatly influenced by the caliber of its workforce. An organization must overcome the following obstacles as a result of staff attrition:

1. Expensive in terms of both money and time to train new employees.
2. Loss of experienced employees
3. Impact in productivity
4. Impact profit

Setting up the business question is the first stage. The following questions must be answered clearly since only with a clearly defined problem will the proposed solution make sense. Question for business that might consider first:

1. What factors are contributing more to employee attrition?
2. What type of measures should the company take in order to retain their employees?
3. What business value does the model bring?
4. Will the model save lots of money?
5. Which business unit faces the attrition problem?

4.0.3 Exploratory Data Analysis

By using data visualization, discover patterns in the data. Using graphs, analysis, and charts, reveal the data's hidden mysteries.

1. Univariate analysis
 - Continuous variables: Boxplots and histograms. This enables us to comprehend the central tendency and spread.
 - Categorical variable : Bar chart showing frequency in each category
2. Bivariate analysis
 - Continuous: Scatter plots to know how continuous variables interact with each other
 - Categorical and categorical: Stacked column graphic illustrating the distribution of frequencies between two categories.
 - categorical variables
 - Categorical and Continuous : Boxplots, Swam plots or even bar charts
3. Detect outliers
4. Feature engineering

4.0.4 Data Set overview

Data columns (total 35 columns):

#	Column	Non-Null Count	Dtype
0	Age	1470 non-null	int64
1	Attrition	1470 non-null	object
2	BusinessTravel	1470 non-null	object
3	DailyRate	1470 non-null	int64
4	Department	1470 non-null	object
5	DistanceFromHome	1470 non-null	int64
6	Education	1470 non-null	int64
7	EducationField	1470 non-null	object
8	EmployeeCount	1470 non-null	int64
9	EmployeeNumber	1470 non-null	int64
10	EnvironmentSatisfaction	1470 non-null	int64
11	Gender	1470 non-null	object
12	HourlyRate	1470 non-null	int64
13	JobInvolvement	1470 non-null	int64
14	JobLevel	1470 non-null	int64
15	JobRole	1470 non-null	object
16	JobSatisfaction	1470 non-null	int64
17	MaritalStatus	1470 non-null	object
18	MonthlyIncome	1470 non-null	int64
19	MonthlyRate	1470 non-null	int64
20	NumCompaniesWorked	1470 non-null	int64
21	Over18	1470 non-null	object
22	OverTime	1470 non-null	object
23	PercentSalaryHike	1470 non-null	int64
24	PerformanceRating	1470 non-null	int64
25	RelationshipSatisfaction	1470 non-null	int64
26	StandardHours	1470 non-null	int64
27	StockOptionLevel	1470 non-null	int64
28	TotalWorkingYears	1470 non-null	int64
29	TrainingTimesLastYear	1470 non-null	int64
30	WorkLifeBalance	1470 non-null	int64
31	YearsAtCompany	1470 non-null	int64
32	YearsInCurrentRole	1470 non-null	int64
33	YearsSinceLastPromotion	1470 non-null	int64
34	YearsWithCurrManager	1470 non-null	int64

4.0.5 The numerical Features

The Values of numerical columns:

Attrition : [1 0]

=====

DistanceFromHome : [1 8 2 3 24 23 27 16 15 26 19 21 5 11 9 7 6 10 4 25 12 18 29 22
14 20 28 17 13]

=====

Education : [2 1 4 3 5]

=====

EnvironmentSatisfaction : [2 3 4 1]

=====

JobInvolvement : [3 2 4 1]

=====

JobLevel : [2 1 3 4 5]

=====

JobSatisfaction : [4 2 3 1]

=====

NumCompaniesWorked : [8 1 6 9 0 4 5 2 7 3]

=====

PercentSalaryHike : [11 23 15 12 13 20 22 21 17 14 16 18 19 24 25]

=====

PerformanceRating : [3 4]

=====

RelationshipSatisfaction : [1 4 2 3]

=====

StockOptionLevel : [0 1 3 2]

=====

TrainingTimesLastYear : [0 3 2 5 1 4 6]

=====

WorkLifeBalance : [1 3 2 4]

=====

YearsInCurrentRole : [4 7 0 2 5 9 8 3 6 13 1 15 14 16 11 10 12 18 17]

=====

YearsSinceLastPromotion : [0 1 3 2 7 4 8 6 5 15 9 13 12 10 11 14]

=====

YearsWithCurrManager : [5 7 0 2 6 8 3 11 17 1 4 12 9 10 15 13 16 14]

=====

First we will examine the general information.

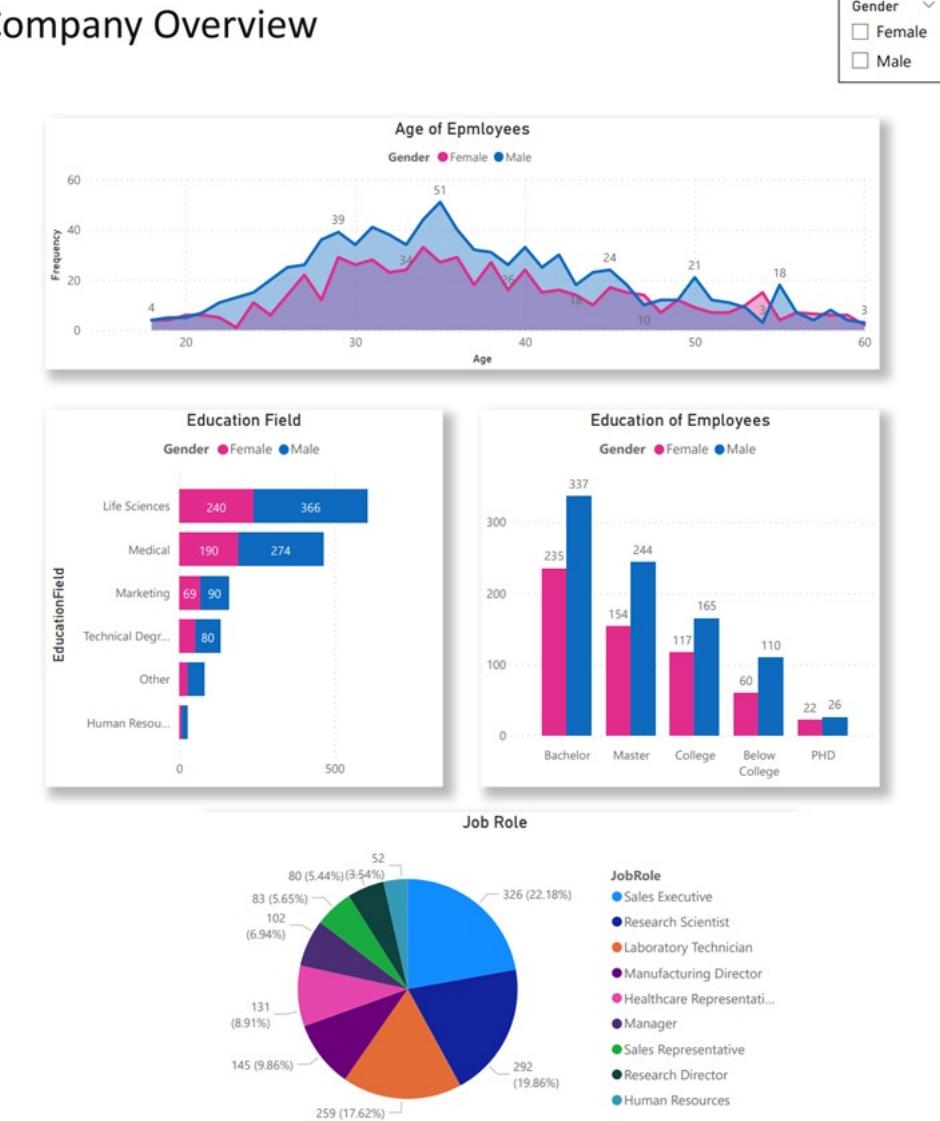


Figure 4.1: Company Overviews

- The age distribution is from 18 to 60. Men at age 35 and women at 34 have the mode in this spread.
- Men make up 60% of the workforce, and when we take this 20% excess into account, we can claim that the distribution of educational backgrounds is rather even.
- Bachelor's degree holders make up 38% of the company's educated workforce, while PhD holders make up 3%. The amount of master's degrees at 27% is nearly equal to the total of undergraduate degrees at 29%.
- More over half of the company's job functions consist of positions like sales executive, research scientist, and laboratory technician, while human resource has the lowest percentage at 3%.

Secondary we dive deep into labors information.

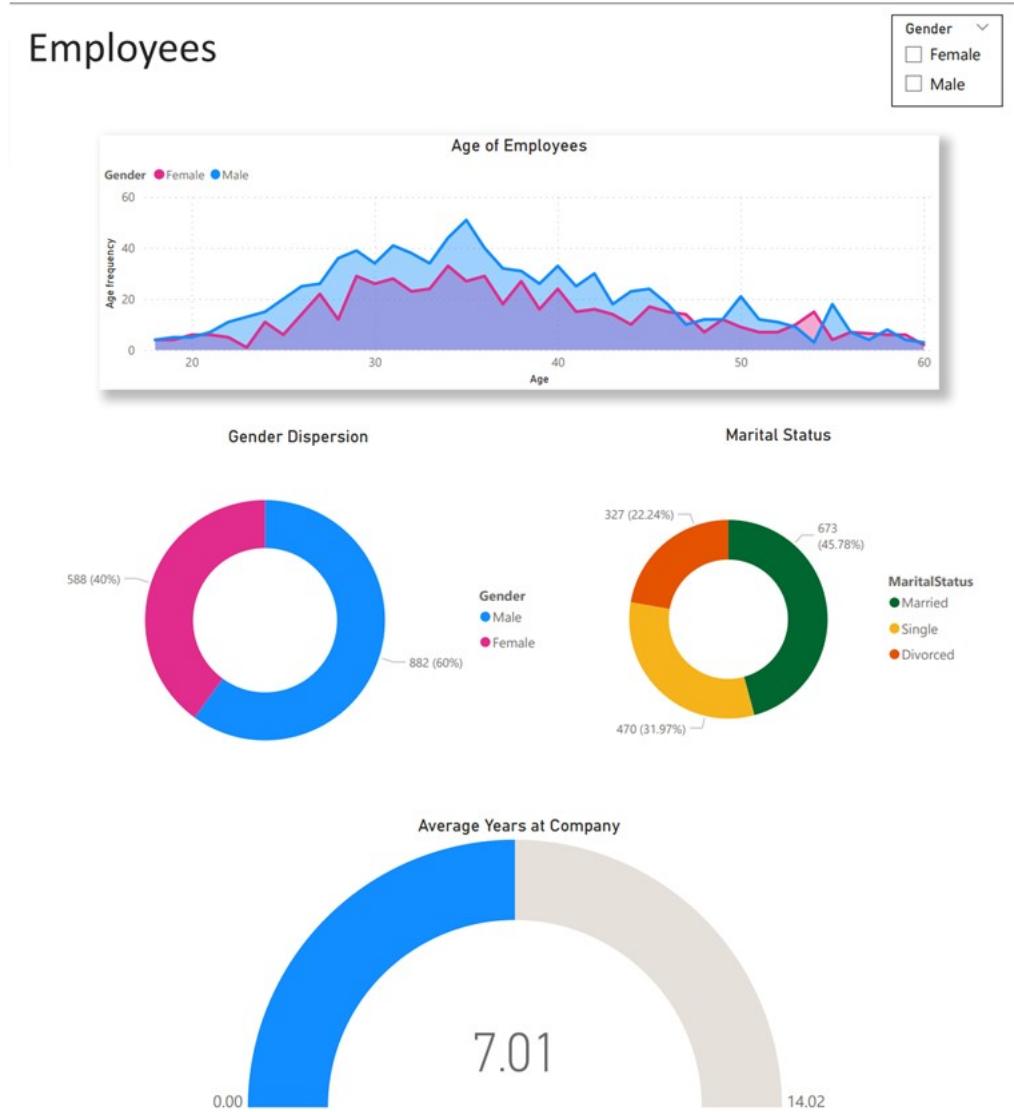


Figure 4.2: Employees

- The majority of the company's employees are between the ages of 29 and 35.
- Men make up 60% of the workforce, while women make up 40%
- 47% of the workforce is single, 45% is married, and approximately 22% is divorced.
- The company's average employee tenure is 7 years.

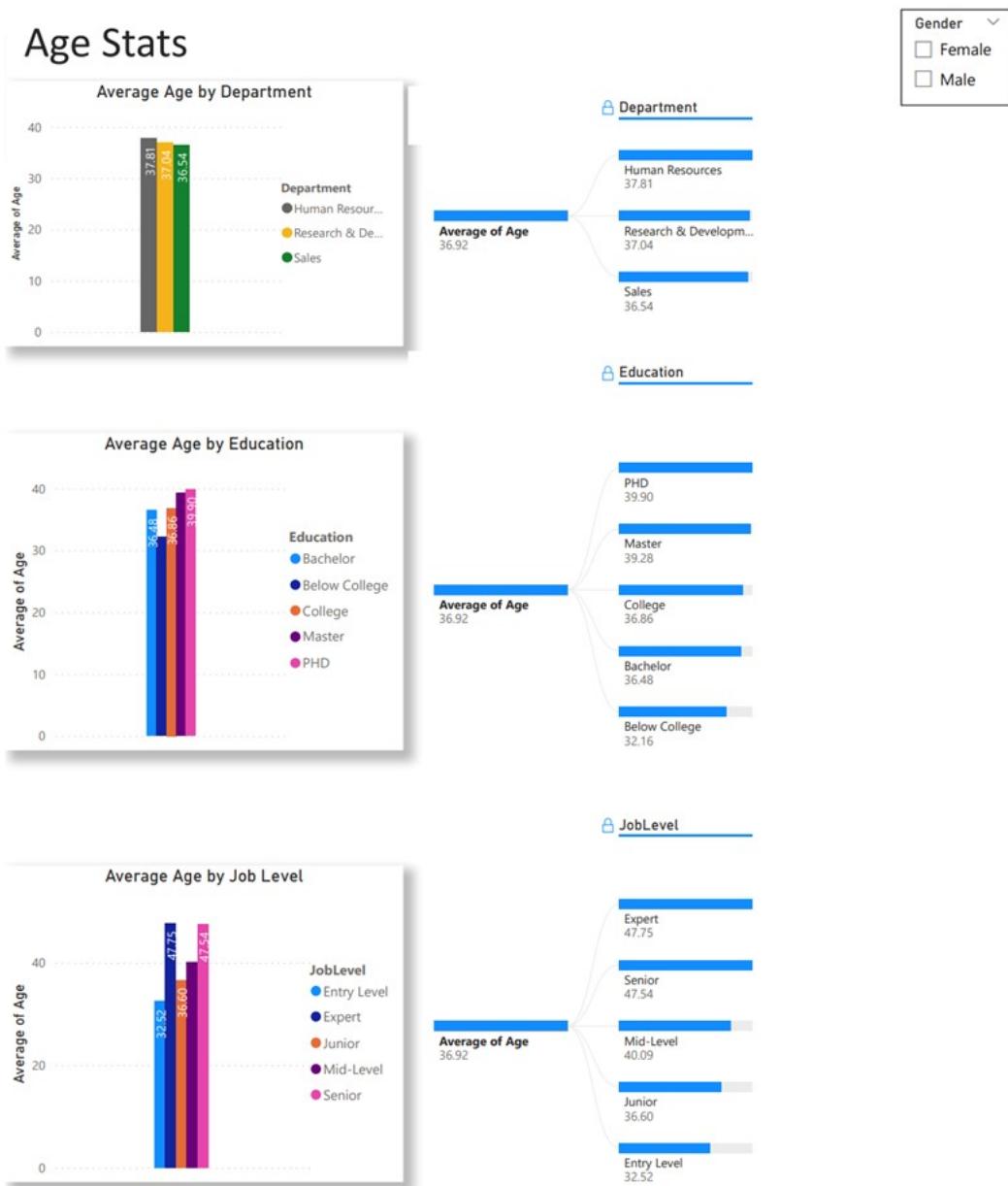


Figure 4.3: Age Stats

- The company's average labor force size is 36.
- The company's average age for human resources is the highest.
- With the highest rate, the average age of employees with PhDs is 39, and the lowest rate is below college, where the average age is 32.
- The experts in the company are the oldest, with an average age of 47, and the youngest, with a 32-year-old entry level.

Satisfaction



Figure 4.4: Satisfaction Factors

- Employees with bachelor's degrees report feeling the most satisfied, while PhD holders report feeling the least satisfied.
- 31% of workers say they are satisfied with their relationships.
- Environment satisfaction and job satisfaction is favorable among 60% of employees.

Sustainable indicators

Gender	<input type="checkbox"/> Female
<input type="checkbox"/> Male	

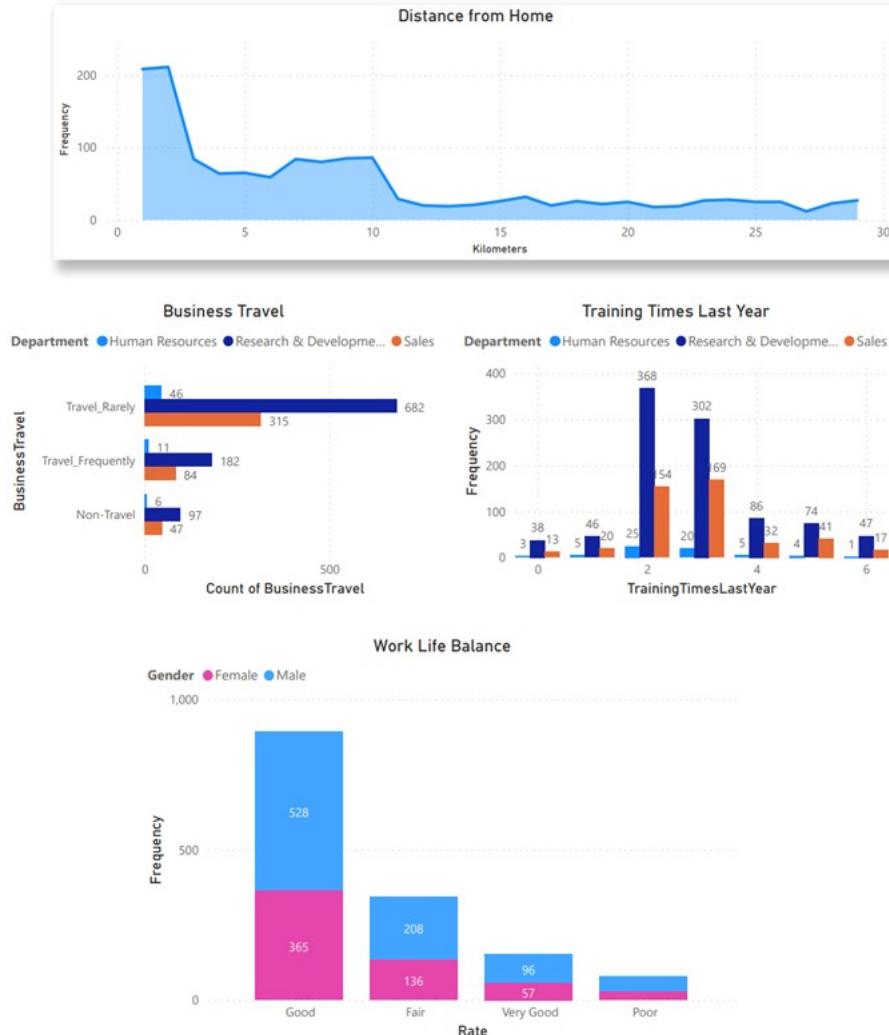


Figure 4.5: Environmental Factors

- The most frequent distance from home is less than 3 miles.
- The most training hours and business trips are spent in the research and development department.
- Considering the 20% overplus population of men in organization, women have better work life balance.

Income

Gender
 Female
 Male

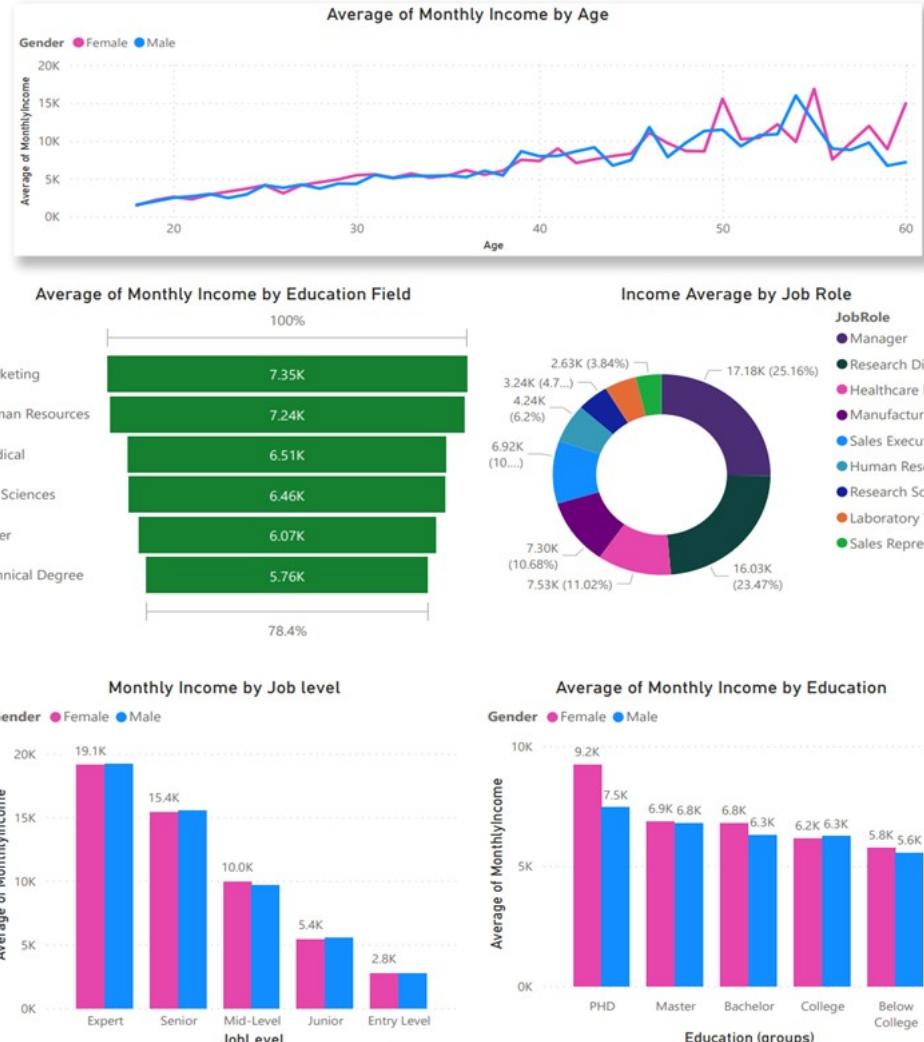


Figure 4.6: Income Factors

- In terms of age, occupation, and education, women earn slightly more on average than males.
- Employees with Marketing Education field earn the most average income and Employees in the human resources and medical education fields came in second and third in terms of average wage, respectively.
- The highest paid job roles are managers, who make an average of \$17,000 per year, and research directors, who make \$16,000 per year. Laboratory technicians and sales representatives earn the least on average, at \$3,000 and \$2,600.

Working Years

Gender ✓
 Female
 Male

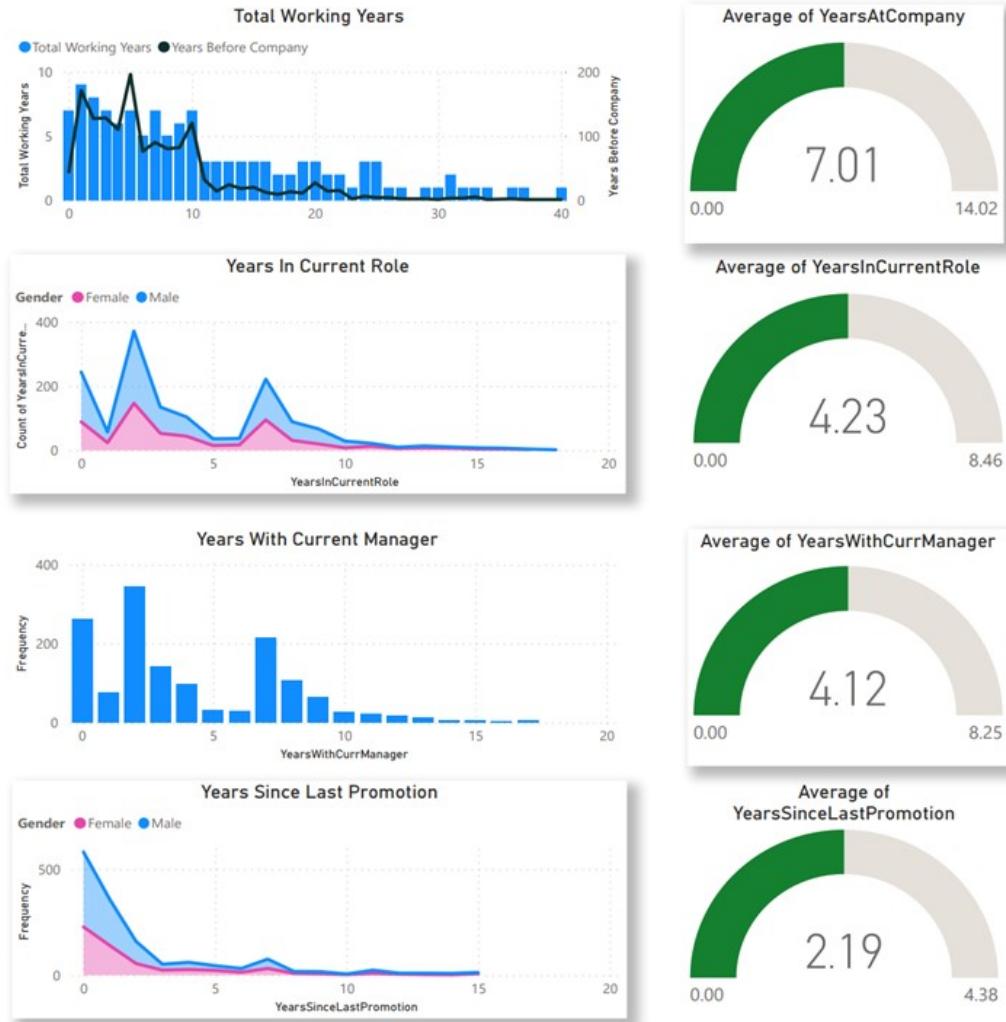


Figure 4.7: Working Years

- The average of working years at the company is 7 years.
- The average of years in current role is 4 years.
- The average of years with current manager is 4 years.
- The average of last promotion is 2 years.

KPI

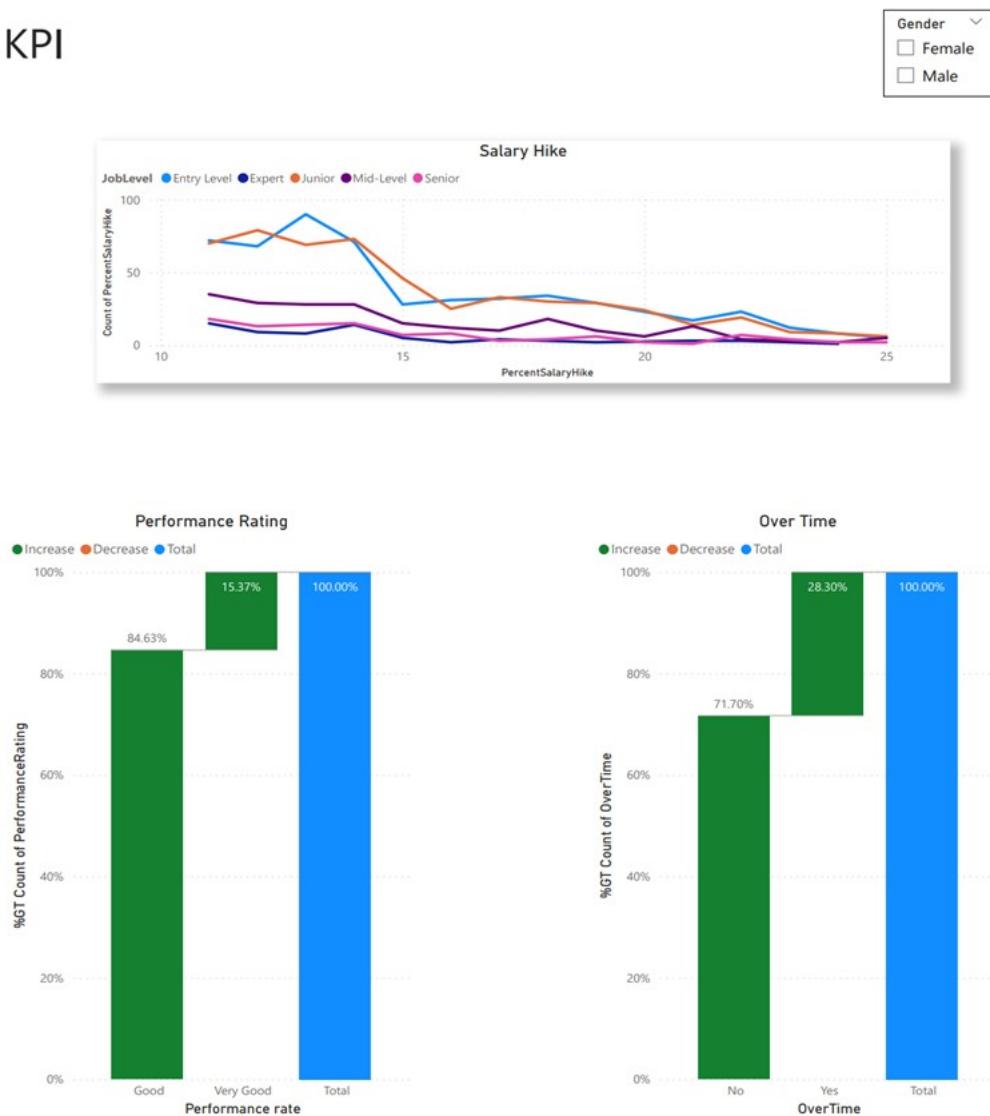


Figure 4.8: Key Performance Indicators

- Entry Level have the most salary hike on contrast experts have the least.
- Approximately 84% of employees have good performance ratings, and 15% have very good ratings. The observation of fair and poor is absent.
- Only 28% of employees work over time.

**Figure 4.9:** Attrition rate against categorical variables

- Employees with a bachelor's degree had the highest percentage of attrition, while those with a PhD had the lowest rate.
- Men have the higher rate of attrition than women.
- Employees with Fair job satisfaction level have the least rate of attrition.
- The research and development department has the greatest attrition rate.
- Employees with Good level of job involvement have the greatest attrition rate.
- Employees with entry job level have the most attrition rate.

Attrition

Gender ▾
 Female
 Male

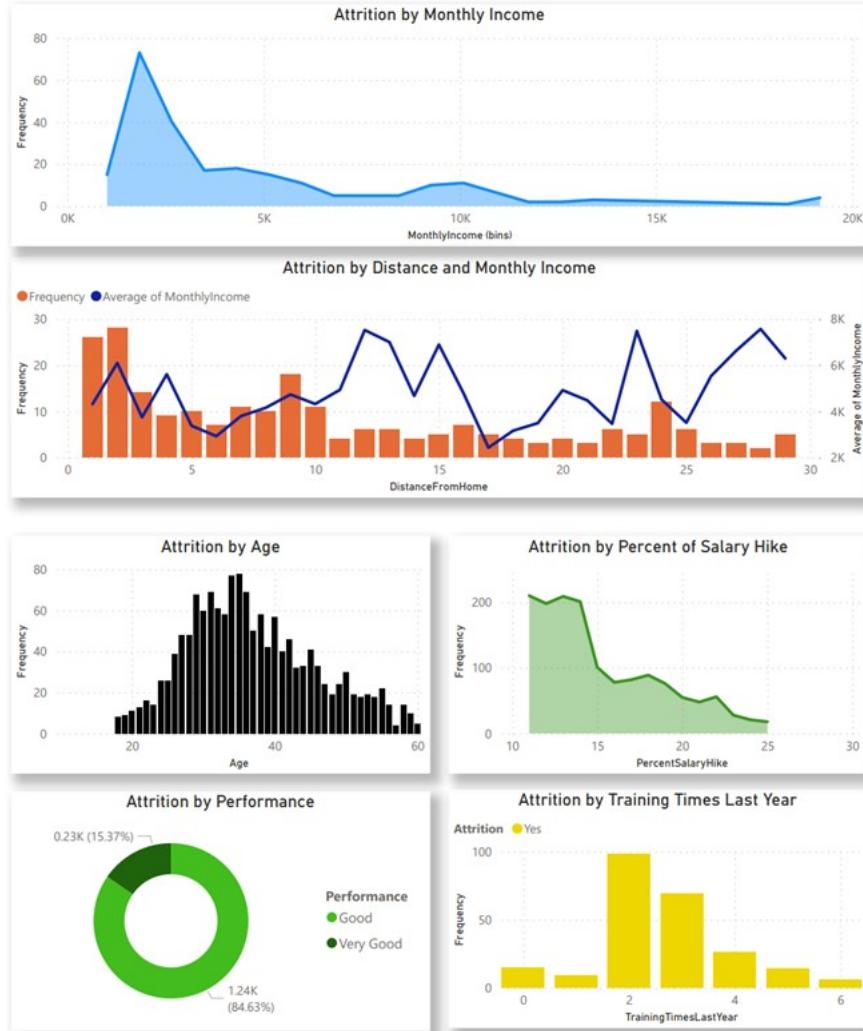


Figure 4.10: Attrition against numerical variables

- Employees with less than 3K have the most attrition rate.
- Considering the growth of monthly income of employees with furthest distance, the rate of attrition surprisingly declines.
- Employees at ages 34 and 35 have the most rate of attrition.
- As the precent of salary hike growth, the rate of attrition dwindle.
- The least attrition occurs among employees who receive the greatest or the least training.

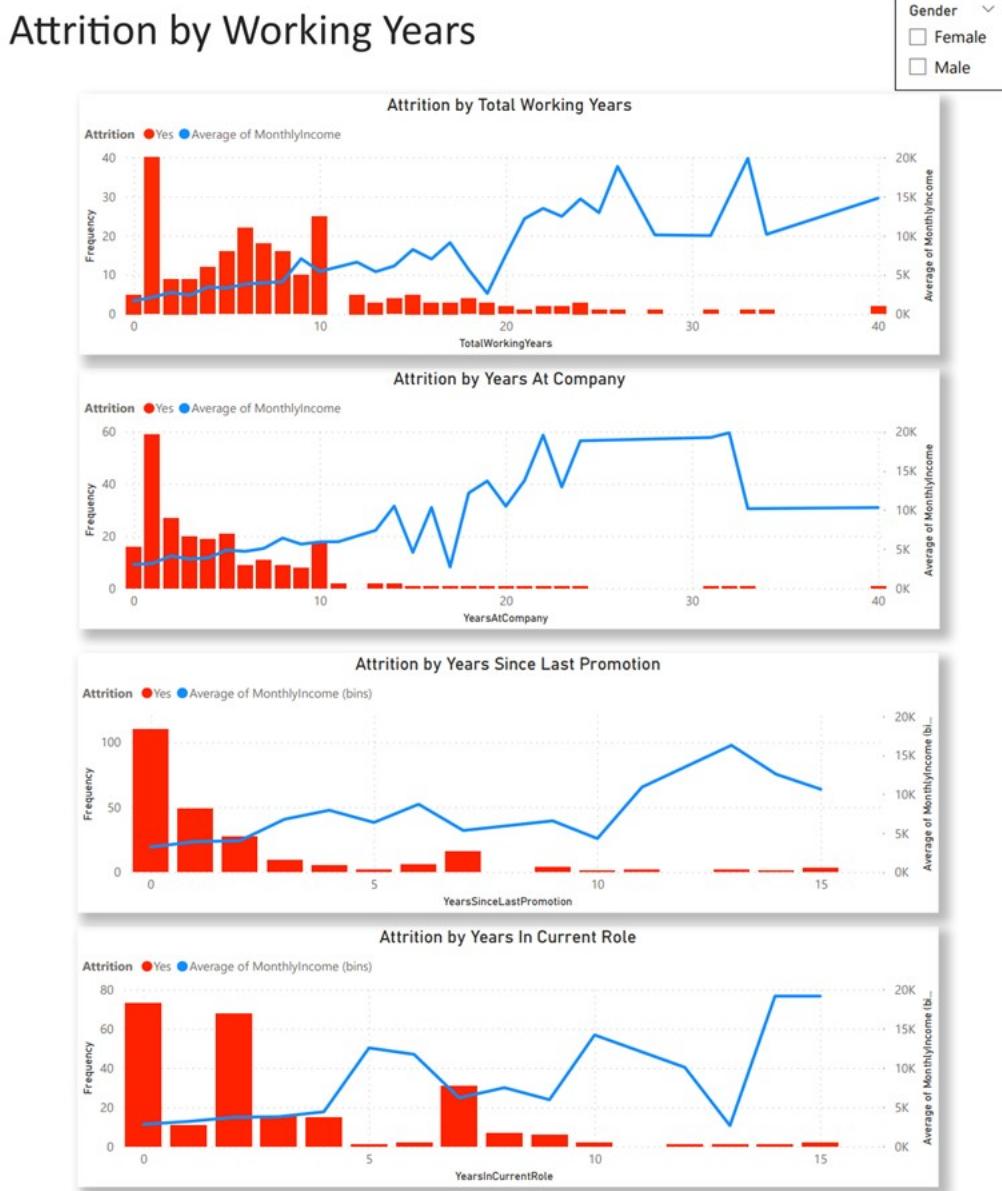


Figure 4.11: Attrition by working years and monthly income

- The early years of working for lower monthly incomes have the highest rate of attrition.
- The early years of working in the company for lower monthly incomes have the highest rate of attrition.
- Attrition in the first couple years after promotion has the highest rate.
- The attrition rate in terms of years in current position will reduce over time as income grows.

Heatmap

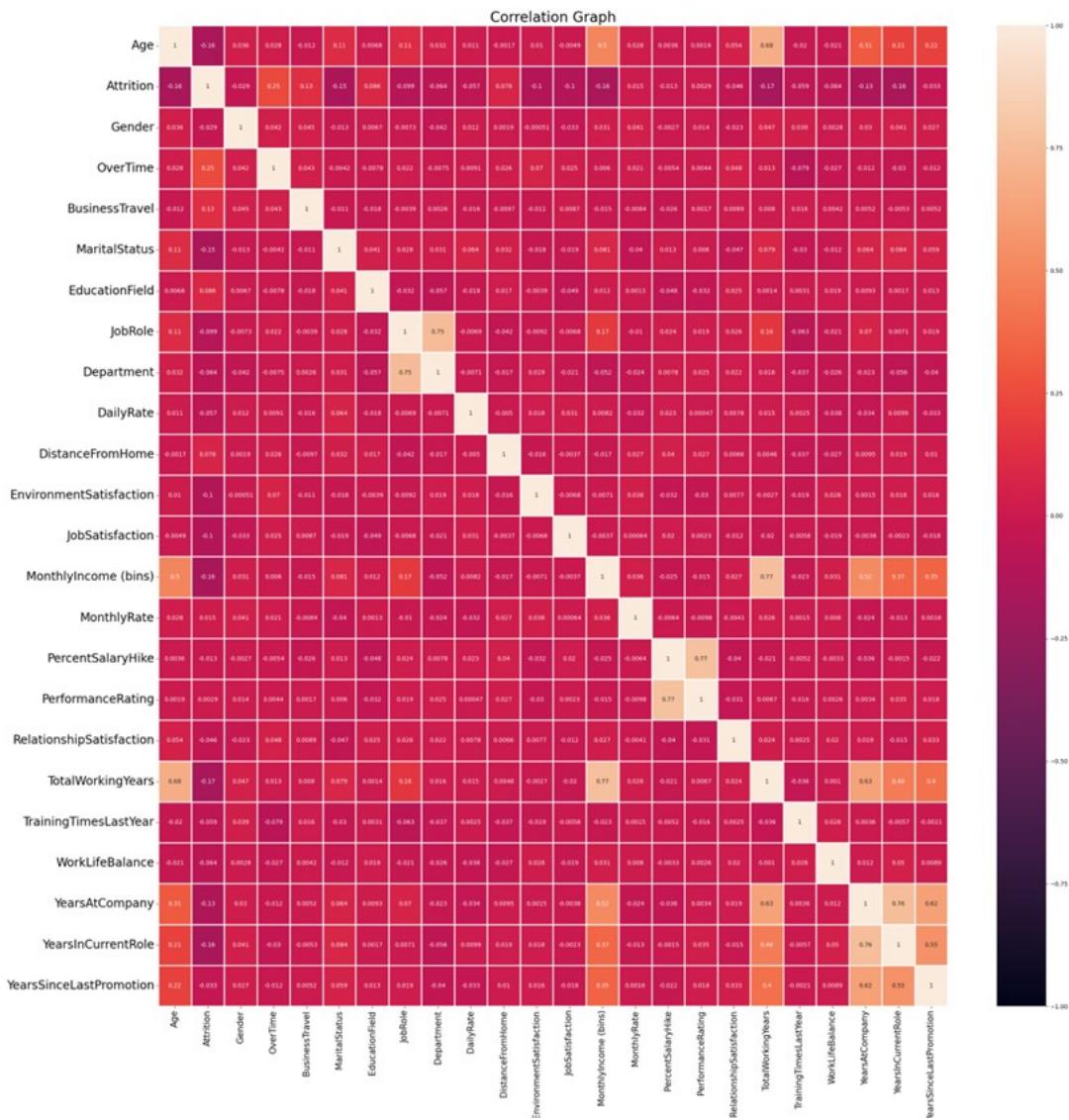


Figure 4.12: Correlation Analysis

- Monthly income is highly correlated with Job level.
- Job level is highly correlated with total working hours.
- Monthly income is highly correlated with total working hours.
- Age is also positively correlated with the Total working hours.

Feature Importance

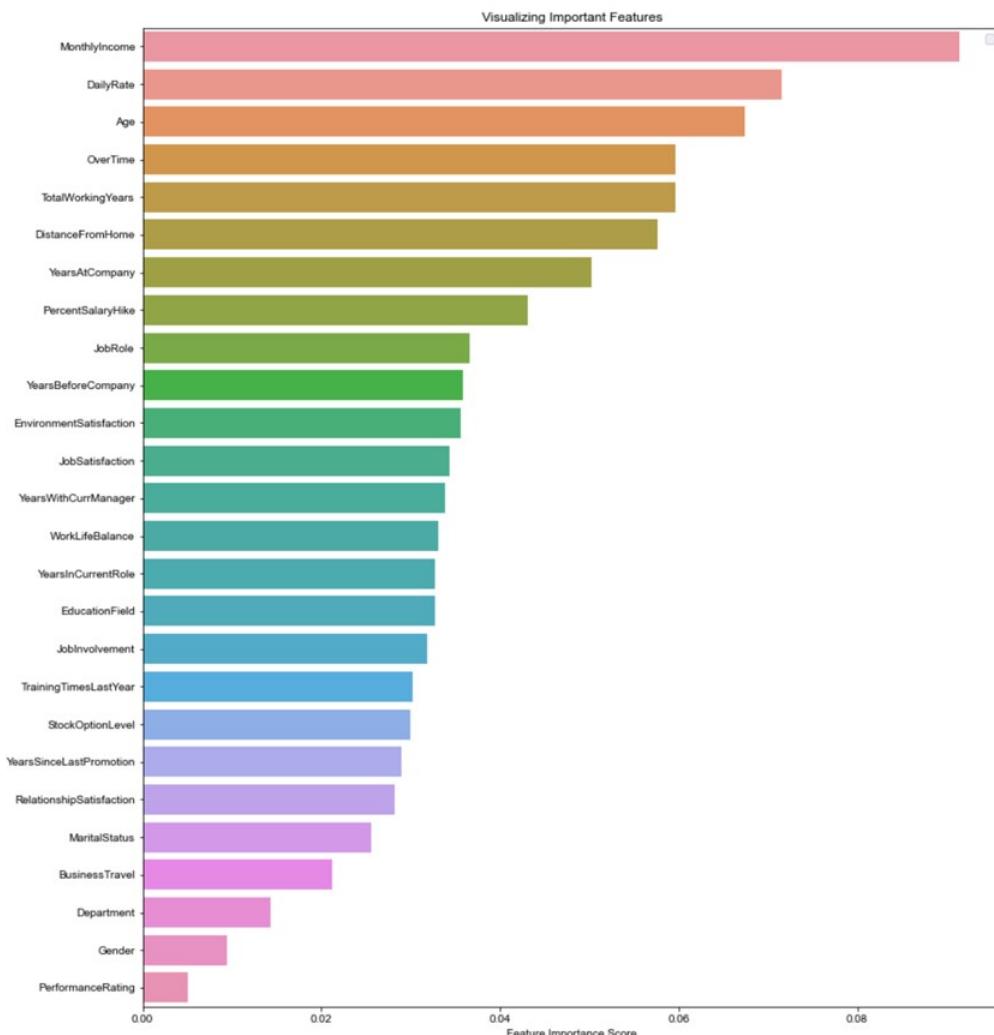


Figure 4.13: Feature Importance by Random Forrest Cross validation

- The top five important features that affect the attrition are Monthly Income, Daily rate, age, Over time, Total working years.
- The least five important features are Marital status, Business travel, Department, Gender and Performance rating.

4.0.6 Results

We can infer a number of judgments about the business and its personnel based on the facts presented. Employees range in age from 18 to 60, with the median age for women being 34 and for men being 35. 60% of workers are men, and the educational backgrounds of the workforce are distributed fairly evenly, with 27% of the educated workforce having a master's degree and 38% having a bachelor's degree. Positions like those of a sales executive, research scientist, or lab worker make up more than half of the job activities.

Women make up 40% of the workforce and, given that there are 20% more men than women in the company, they tend to have better work-life balance than men. The majority of the workforce is between the ages of 29 and 35. There are 36 people in the labor force on average, and the average employee tenure is 7 years. The most satisfied workers are those with bachelor's degrees, whereas the least satisfied workers are those with PhDs. 60% of employees are satisfied with their jobs and their work environment.

The attrition rate is highest in the research and development department, and it is highest among workers in entry-level positions. Monthly income, daily rate, age, cumulative working years, and time over time are the top five factors that have a significant impact on attrition. Age and total working hours have a positive correlation, and monthly income is substantially connected with both job level and total working hours.

Employees in the human resources and medical education professions make the second- and third-highest average salaries, respectively, followed by those in the marketing education field. Managers and research directors earn the most money, while salespeople and lab technicians make the least money overall.

Overall, the data indicates that employees with bachelor's degrees report being the most satisfied, and that the organization has a fairly equitable range of educational backgrounds. The attrition rate is highest in the research and development department, and it is highest among personnel in entry-level positions. The most significant factors that influence attrition are monthly income, daily rate, age, over time, and the total number of working years.

4.0.7 Discussion

The human resource department can use gamification to lower attrition rates by creating gamified systems that emphasize enhancing job happiness, work-life balance, and employee engagement, according to the statistics supplied. Here are a few possible gamification techniques:

1. Create a system of rewards and recognition for staff members who act positively and contribute to the success of the business. This could involve virtual currency that can be exchanged for rewards or bonuses, badges, points, or even points.
2. Design gamified training modules for employees that help with the development of new skills and performance enhancement. These modules could contain role-playing games, interactive simulations, or puzzles that motivate staff members to hone their abilities.
3. Wellness programs: Create gamified activities that encourage stress management and a healthy

lifestyle. These could include wellness-focused challenges for workers' physical fitness, mindfulness training, or healthy eating competitions.

4. Mentorship programs: Create mentorship programs that are gamified and link seasoned workers with new hires or people looking to advance their careers. These initiatives could consist of quests, challenges, or team-based competitions that promote cooperation and knowledge sharing.
5. Employee engagement: Create gamified systems that boost productivity and promote a sense of belonging within the workplace. This can involve bringing coworkers together through social challenges, team-building games, or even virtual reality activities.

Understanding the particular requirements and preferences of the workforce inside the firm is, in general, the key to building effective gamification methods. Age, gender, education level, and job function are just a few of the variables that may be taken into account by the human resource department to design gamified systems that are suited to the individual needs of its workers and aid in lowering attrition.

Chapter 5

Conclusion

Gamification has become a promising strategy for enhancing HR practices by making them more interesting, entertaining, and efficient. Organizations can develop more immersive and interactive experiences that boost motivation, learning retention, and productivity by incorporating game design ideas into their HR procedures. The key ideas and consequences of gamification in HR will be outlined in this conclusion, along with some of the potential and difficulties it brings. Gamification in HR has a number of potential advantages for both businesses and workers. Gamification can improve hiring, training, development, and performance management procedures for organizations, which will increase worker engagement, output, and retention. Additionally, gamification may offer insightful data on employee behavior, preferences, and performance, empowering HR managers to make fact-based decisions and modify their strategy as necessary. Moreover, by tackling bias, ensuring equitable chances, and recognizing varied talents and skills, gamification can assist firms in fostering a more inclusive and diverse workplace. By giving workers a sense of accomplishment, acknowledgment, and autonomy, gamification can boost their motivation, engagement, and satisfaction. By developing immersive, interactive learning environments that mimic real-world scenarios and offer real-time feedback, gamification can also help with learning and skill development. Additionally, by allowing staff members to interact and compete with one another, share information and resources, and take part in social causes, gamification can promote a sense of community and teamwork. The following are some advantages that gamification can bring to HR practices:

- Improved engagement: Gamification can make HR tasks more interesting and rewarding, which can boost participation and inspiration among staff members. Organizations may motivate employees to do HR duties and pick up new skills by introducing gaming features like points, badges, and leaderboards.
- Gamification can promote learning by offering immediate feedback, progress tracking, and adaptive challenges. This improves learning retention. Organizations may design more memorable learning experiences that enhance knowledge retention and transfer by including game dynamics like simulations, scenarios, and storytelling.
- Increased productivity: By establishing clear goals, offering feedback, and encouraging cooperation, gamification may increase productivity. Organizations may inspire people to perform at their best and cooperate more effectively by utilizing games to align individual and corporate goals.

- Better performance management: By providing unbiased and transparent measures of employee performance, gamification can support performance management. Organizations can discover strengths and shortcomings and provide individualized feedback and coaching by using games to measure abilities and behaviors.

Gamification in HR has some potential benefits, but it also has some drawbacks that need to be overcome if it is to be successful and long-lasting. Designing efficient and relevant game mechanics that fit with the objectives, culture, and values of the firm as well as the interests and preferences of the workforce is one of the primary problems of gamification in HR. Avoiding the gamification trap of focusing just on extrinsic rewards and ignoring intrinsic motivation and learning outcomes is another problem. Gamification can also raise moral and legal issues with regard to justice, privacy, and data security, particularly when it incorporates sensitive information or biases. The organization's ability to incorporate gamification into its current HR systems, processes, and policies as well as assure its continual improvement and evaluation is another factor in determining the effectiveness of gamification in HR. HR managers must be highly skilled in communication, leadership, and change management in addition to having a thorough understanding of gamification's ideas, measurements, and evaluation techniques.

The use of gamification in HR is anticipated to keep expanding and changing in the future as a result of technological advancements, adjustments in work habits, and the rising need for individualized, flexible, and enjoyable work experiences. The following are some potential directions for gamification in HR:

- Augmented and virtual reality: By offering more accurate, engaging, and custom simulations of work environments, activities, and challenges, immersive technologies like augmented and virtual reality may improve the gamification experience.
- Personalization and adaptability: Using artificial intelligence and machine learning, gamification systems may adapt to each employee's specific preferences, talents, and learning needs, resulting in personalized and adaptive learning and development experiences.
- Collaboration and socialization: Gamification may also be used to stimulate staff collaboration and sociability. Team-based challenges or social elements that allow employees to connect and interact with one another may be included in future gamification tactics. This might aid in increasing employee engagement and cultivating a feeling of community and collaboration inside the firm.
- Integration with Learning Management Systems: Gamification's integration with learning management systems (LMS) is also expected to grow in the future. LMS platforms may provide as a consolidated destination for gamified learning content, employee progress monitoring, and feedback. This connection can make it easier for enterprises to deploy and manage gamification.

Gamification in human resources is anticipated to evolve and become more popular in the future. Some prospective trends and advancements that might affect the future of gamification in human resources include personalization, mobile and virtual reality, collaboration and socializing, and integration with learning management systems. Organizations may establish more effective

and engaging gamification methods to boost employee motivation, engagement, and performance by harnessing these trends and advances.

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Appendix A

Appendix

A.1 HeatMap Correlation

A.1.1 Data Processing

In the code snippet provided, we first create a copy of the original dataset and then transform certain columns using lambda functions. Specifically, we map the 'Attrition' column to a binary numerical variable, where 0 represents 'No' and 1 represents 'Yes'. Similarly, we transform the 'Gender' and 'OverTime' columns into binary variables, where 0 represents 'Male' and 'No', respectively. I also mapped several categorical variables to numerical values. The `BusinessTravel` column is mapped to 0, 1, and 2 representing `Non-Travel`, `Travel_Rarely`, and `Travel_Frequently`, respectively. The `MaritalStatus` column is mapped to 0, 1, and 2 representing `Single`, `Divorced`, and `Married`, respectively. The `EducationField` column is mapped to 0, 1, 2, 3, 4, and 5 representing `Other`, `Life Sciences`, `Medical`, `Marketing`, `Technical Degree`, and `Human Resources`, respectively. The `JobRole` column is mapped to 0–8 representing `Sales Executive`, `Sales Representative`, `Laboratory Techni` `Manufacturing Director`, `Healthcare Representative`, `Manager`, `Scientist`, `Research Director`, and `Human Resources`, respectively. Finally, the `Department` column is mapped to 0, 1, and 2 representing `Sales`, `Research & Development`, and `Human Resources`, respectively.

A.1.2 Visualization

After preprocessing the data, we use the `seaborn` library to create a heatmap of the correlation matrix. The heatmap shows the correlation coefficients between all pairs of variables in our preprocessed dataset. Correlation coefficients range from -1 to 1, where values close to -1 indicate a strong negative correlation, values close to 1 indicate a strong positive correlation, and values close to 0 indicate no correlation between two variables. In the code snippet provided, we set the minimum and maximum values of the color map to -1 and 1, respectively, and add the correlation coefficients as annotations to the heatmap. We also set the figure size to 30x30, the font size of the x and y axis labels, and the title font size.

Overall, the visualization helps us identify the relationships between different variables in our preprocessed dataset and can guide us in selecting the most relevant features for our analysis.

A.1.3 Code

```

import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

df_2 = dataset.copy()
df_2[ 'Attrition' ] = df_2[ 'Attrition' ].apply(lambda x: 0 if x=='No' else 1)
df_2[ 'Gender' ] = df_2[ 'Gender' ].apply(lambda x: 0 if x=='Male' else 1)
df_2[ 'OverTime' ] = df_2[ 'OverTime' ].apply(lambda x: 0 if x=='No' else 1)

BusinessTravel_map = { 'Non-Travel':0 , 'Travel_Rarely':1 , 'Travel_Frequently':2 }
df_2[ 'BusinessTravel' ] = df_2[ 'BusinessTravel' ].map(BusinessTravel_map)

MaritalStatus_map = { 'Single':0 , 'Divorced':1 , 'Married':2 }
df_2[ 'MaritalStatus' ] = df_2[ 'MaritalStatus' ].map(MaritalStatus_map)

EducationField_map = { 'Other':0 , 'Life_Sciences':1 , 'Medical':2 , 'Marketing':3 ,
'Human_Resources':5 }
df_2[ 'EducationField' ] = df_2[ 'EducationField' ].map(EducationField_map)

JobRole_map = { 'Sales_Executive':0 , 'Sales_Representative':1 , 'Laboratory_Technician':
'Healthcare_Representative':4 , 'Manager':5 , 'Research_Scientist':6 , 'Research_Direct
df_2[ 'JobRole' ] = df_2[ 'JobRole' ].map(JobRole_map)

Department_map = { 'Sales':0 , 'Research_&_Development':1 , 'Human_Resources':2 }
df_2[ 'Department' ] = df_2[ 'Department' ].map(Department_map)
df_2.info()

plt.figure(figsize=(30,30))
correlation = sns.heatmap(df_2.corr(), vmin=-1, vmax=1, annot=True, linewidths=1)
correlation.set_title('Correlation_Graph', fontdict={'fontsize': 24})

plt.tick_params(axis='x', labelsize=15)
plt.tick_params(axis='y', labelsize=20)

plt.show()

```

Appendix B

Appendix

B.1 Random Forest Classifier Model

The code indicated further is a Python implementation of a random forest classifier using scikit-learn library. It uses a dataset, which is copied to another variable df_2 and some data preprocessing techniques are applied on it. Then, a random forest classifier is trained on the preprocessed data and predictions are made on a test set. Finally, the feature importance of each feature is visualized in a bar plot.

B.1.1 Importing required libraries

The first step is to import the necessary libraries. numpy and pandas are used for data manipulation, matplotlib and seaborn for data visualization, and sklearn for building and evaluating the model.

B.1.2 Data Preprocessing

The df_2 variable is created as a copy of the original dataset dataset and the target variable Attrition is encoded as binary values (0 for 'No' and 1 for 'Yes'). The categorical variables Gender, OverTime, BusinessTravel, MaritalStatus, EducationField, JobRole, and Department are converted into numeric values using mapping technique. The feature matrix X is created by removing the target variable Attrition and the target variable is stored in y. Then, the dataset is split into training and testing sets using the train_test_split function.

B.1.3 Model Building

The random forest classifier is defined with 1000 trees and a maximum depth of 100 using RandomForestClassifier class. Then, the model is trained on the training set using fit method. The predictions are made on the test set using predict method and stored in y_pred. A result variable is created to store the actual and predicted values for comparison.

B.1.4 Feature Importance Visualization

The feature importance of each feature is calculated using feature_importances_ method and stored in feature_imp variable. A bar plot is created using sns.barplot method to visualize the feature

importance scores. The x-axis represents the feature importance scores and y-axis represents the features. The sns.set method is used to set the figure size and the plt.xlabel, plt.ylabel, and plt.title methods are used to set the axis labels and title. The plt.gcf().patch.set_facecolor method is used to set the background color of the plot.

B.1.5 Output

The feature importance plot helps in identifying the most important features in predicting the target variable, which can be used for feature selection or feature engineering.

B.1.6 Code

```

import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.ensemble import RandomForestClassifier
from sklearn import metrics
import seaborn as sns

df_2 = dataset.copy()
df_2[ 'Attrition' ] = df_2[ 'Attrition' ].apply(lambda x: 0 if x=='No' else 1)
df_2[ 'Gender' ] = df_2[ 'Gender' ].apply(lambda x: 0 if x=='Male' else 1)
df_2[ 'OverTime' ] = df_2[ 'OverTime' ].apply(lambda x: 0 if x=='No' else 1)

BusinessTravel_map = { 'Non-Travel':0, 'Travel_Rarely':1, 'Travel_Frequently':2 }
df_2[ 'BusinessTravel' ] = df_2[ 'BusinessTravel' ].map(BusinessTravel_map)

MaritalStatus_map = { 'Single':0, 'Divorced':1, 'Married':2 }
df_2[ 'MaritalStatus' ] = df_2[ 'MaritalStatus' ].map(MaritalStatus_map)

EducationField_map = { 'Other':0, 'Life_Sciences':1, 'Medical':2, 'Marketing':3, 'Human_Resources':5 }
df_2[ 'EducationField' ] = df_2[ 'EducationField' ].map(EducationField_map)

JobRole_map = { 'Sales_Executive':0, 'Sales_Representative':1, 'Laboratory_Technician':2, 'Healthcare_Representative':4, 'Manager':5, 'Research_Scientist':6, 'Research_Director':7 }
df_2[ 'JobRole' ] = df_2[ 'JobRole' ].map(JobRole_map)

Department_map = { 'Sales':0, 'Research_&_Development':1, 'Human_Resources':2 }
df_2[ 'Department' ] = df_2[ 'Department' ].map(Department_map)

X = df_2.drop( 'Attrition' , axis = 1)
y = df_2[ 'Attrition' ]
from sklearn.model_selection import train_test_split

```

```
X_train, X_test, y_train, y_test = train_test_split(X,y, test_size=0.3)

clf=RandomForestClassifier(n_estimators=1000, max_depth=100)
clf . fit (X_train ,y_train )
y_pred=clf . predict (X_test )

result = pd.DataFrame( { 'Actual' : y_test , 'Predicted' : y_pred })

feature_imp = pd . Series ( clf . feature_importances_ , index=X.columns ) . sort_values(asc=False)

sns . barplot (x=feature_imp , y=feature_imp . index)
sns . set (rc={"figure . figsize " : (20,15)})
plt . xlabel ('Feature_Importance_Score')
plt . ylabel ('Features')
plt . title ("Visualizing_Important_Features")

rgb = (240/255, 243/255, 247/255)
plt . gcf () . patch . set _facecolor (rgb)

plt . legend ()
plt . show ()
plt . legend ()
plt . show ()
```