
# Enterprise Gamification Use and Perception in B-Corp Companies

Annemarie Dirkzwager
6067387

Word Count: 8471

Supervised by Laura Piscicelli
Second supervisor: G. Capponi

Utrecht University
Global Sustainability Science
Bachelor Thesis

1st of July, 2020

# Contents

# Summary

The distressing fact that 85% of employees worldwide are psychologically unattached from their work, calls for measures to be taken (Gallup, 2017). Many benefits can yield from an engaged workforce, ranging from respect and dignity towards employees, to competitive advantage in retention and productivity (Mirvis, 2015). Gamification, the use of game design elements in non-gaming contexts, could be introduced in enterprises as an innovative technology-based intervention which could potentially decrease the numbers of disengaged workforces by using psychological factors found in games tapping on the individuals' motivators (Deterding et al., 2011). Therefore, this research aims at expanding the literature on the use and perception of gamification as a tool to promote employee engagement in socially responsible, B-corp certified companies (N=66). Quantitative analysis has been conducted to measure the relationships between the use of enterprise gamification, the perceived usability of enterprise gamification, and the B-impact worker's score. In addition, six companies were interviewed to complement the quantitative analysis. The results revealed that there are no statistically significant relationships between the characteristics of the company, the use and perception of gamification, and the workers B-impact score. Further, there was no statistically significant correlation between the use of gamification and the B-impact score for workers. However, a statistically significant ($p<0.05$) relationship between the use of gamification and the perceived usability score was found. Results are in line with the theory, resulting in managerial implications stating that potential positive impacts on employee's engagement can be achieved if the gamification design is well aligned with the corporation's objectives and aimed at the employee's well-being. Productivity will eventually increase due to work satisfaction, and enthusiastic employees. However, more research and pilots are recommended to correctly assess the ethical considerations, the specific potential positive impacts of gamified systems and its relationship with the characteristics of socially responsible corporations. To finalize, it can be concluded that gamification is a potential system which B-corp certified companies could consider implementing to engage employees, if attention is paid to its design and purpose.

# Chapter 1: Introduction

## 1.1 Background

In the last decades, increased attention has been given to organizations, governments, and institutions in relation to their collaboration towards a more sustainable world. Sustainable Development refers to the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Cassen, 1987, p. 41). This malleable definition has enabled businesses to openly interpret the term to fit their own objectives (Robert, Parris & Leiserowitz, 2005). Consequently, corporations have the potential to be involved in other than profit-related activities, such as those related to the people and the planet (Baumgartner, 2013; Garavan & McGuire, 2010). Corporate Social Responsibility (CSR) is an example of a business approach to sustainability, associated with organizations that are dealing with the integration of social and environmental aspects into their corporate strategies, processes, and culture (Baumgartner, 2013). B-Corp certified companies are an example of organizations which simultaneously combine social impacts, environmental dimensions, and profit-making for value creation (Stubbs, 2017), thus making them an ideal model of companies integrating social responsibility to the core of their business model.

A logical managerial activity in any corporation is to invest resources addressed to the interest of the corporation's stakeholders (O'Riordan & Fairbrass, 2013). CSR's design, implementation and success are naturally connected with the multiplicity of interests of the stakeholders which include, namely, shareholders, consumers, suppliers, employees, and local communities (Schwartz & Carroll, 2003). Thus, CSR has a stakeholder management that considers a multiplicity of interest groups.

Employees are essential stakeholders whom the company depends on for survival and are primarily involved with internal socially responsible practices. Measures to strengthen the employer-employee relationship involve the participation of human resources managerial activities promoting responsible practices, such as employee empowerment, better communication, non-discriminatory practices, training, promotion of health and safety work environments, and development of skills and knowledge (European Commission, 2001). As a result of the inclusion of employees in CSR practices, corporations can benefit from employee engagement, which in turn improves performance, increasing productivity and financial performance (Ulliyan, 2015).

An innovative tool that can be used by human resource departments to encourage and drive employee engagement is gamification. Gamification is defined by Whittaker (2015) as "applying

game-design thinking and elements to non-gaming contexts" (p. 9). With incentive-based rewards and interactive digital platforms, as enablers, enterprise gamification can be applied to engage employees in organizational processes to achieve improvements, efficiency, skill development and collaboration (Ruhi, 2015). A crucial aspect of gamification, as a managerial strategy, is the need for understanding the business' purpose and the players involved (Whittaker, 2015). Appropriate use of internalized gamification in B-Corp certified companies to engage employees can have the advantage of turning ordinary everyday tasks into more interesting, enjoyable, and easier to understand tasks (Trittin, Fieseler & Maltseva, 2019). However, gamification can backfire if its design is not appropriate. Ethical and professional consideration play an important role in transforming managers' perception of the use of gamification in enterprises (Shahri, Hosseini, Phalp, Taylor & Ali, 2014).

## 1.2 Problem Statement

Corporations must find a balance between generating profit and growing, while including social and environmental needs into their business model, always considering the technological shifts of current times (Crane & Glozer, 2016). One way to do so, is to focus on the interest of the internal stakeholders of a corporation: the employees. Research has demonstrated that 85% of global employees feel disengaged vis-a-vis their jobs (Badibanga, 2019). Psychological factors of gamification, when applied in business contexts, allow managers to tap into their employees' motivations to positively engage their workforce.

How exactly gamification related with stakeholders has been illustrated by various studies, that focus on the role of human resources (e.g. Simpson & Jenkins, 2015; Stanculescu et al., 2016; Raftopoulos, 2016); on supporting and enhancing employee engagement (e.g. Ulliyan, 2015; Lo, 2019; Robson et al., 2016); on developing sustainability knowledge and awareness (e.g. Schiele, 2018; Nordby, 2013); and on communicating CSR principles and objectives to society (e.g. Whittaker, 2015; Trittin et al., 2018; Maltseva et al., 2018). Nonetheless, companies still fail to understand the positive impacts of gamification techniques. The aim of this paper is to assess the relationships between the use of gamification within a company to promote employee engagement, and the level of internal social responsibility represented by the B-impact score on workers. Special attention will be placed on the role that managers' perception plays in the aforementioned. This thesis will address the following research questions:

RQ1: *How does the implementation of enterprise gamification to promote employee engagement, affect B-Corp certified companies?*

RQ2: *How is gamification perceived by B-Corp certified companies?*

The results of this thesis may contribute to a better understanding of the use of gamification to promote employee engagement. Besides, study will reveal if it can be concluded that gamification has potential to be used internally as a managerial tool to increase the positive impact on workers of B-Corp companies. This will enable managers to acknowledge the potentials of gamification within their corporation for future use. In addition, this research will enable other scholars to continue the development of knowledge in the field of innovative technological tools to engage employees and enhance corporate social responsibility.

The thesis is structured as follows, *Chapter 2: Theory* investigates the theories and concepts used throughout the research. A description of the methodology used is presented in *Chapter 3: Methodology*. By doing so, the validity and replicability of the research can be assessed. *Chapter 4: Results*, will provide the results obtained from the data analyzed. *Chapter 5: Discussion*, includes an interpretation of the results, its implications, and limitations. Finally, *Chapter 6: Conclusions,* reflects upon and answers both research questions.

# Chapter 2: Theory

## 2.1 Defining Corporate Social Responsibility

### 2.1.1 Introduction

There is an increasing consent that corporations have a responsibility and play an exceptional role in addressing pressing problems such as education, health care, and climate change (Mirvis, 2012). Corporation's conventional objectives, such as profit and efficiency, should be considered without disregarding progress in the social field, and stakeholders' interest (Mirvis, 2012). Carroll (1999), a well distinguished scholar in this field, concludes that the concept of CSR "has a bright future [in the context of business' responsibility towards society] because at its core, it addresses and captures the most important concerns of the public regarding business and society relationships" (p. 292).

### 2.1.2 CSR and Employee Engagement

One of the many theories which constitute CSR, and which is most relevant for the purpose of this research is *stakeholder management*. Stakeholder management is based on the idea that

stakeholders are groups of people with interests in corporate activities and that each stakeholder group is entitled to be taken into consideration for their own sake (Garriga & Melé, 2004). A major portion of stakeholders are employees, who, correspondingly, deserve major consideration (European Commission, 2001). When a corporation is socially responsible, the well-being and health of employees become important factors for the setting of working conditions and everyday activities (Bučiūnienė & Kazlauskaitė, 2012). Employee engagement is an important condition to promote CSR, and in turn increase organizational performance. Numerous positive reasons are found for companies to fully engage their employees, such as competitive advantage and an efficient human resource department (Mirvis, 2012). These result in a stronger performance in the social, environmental, and political arena which positively impact the corporation's reputation (Mirvis, 2012).

## 2.2 B-Corp Certificates

The B-Corp certification was established by a non-profit organization named B Lab in 2007 to distinguish the corporations which were beneficial to society (Lacmanovic & Milec, 2018). As Lacmanovic & Milec (2018) describe, B Lab established a certification system which "allows a company to verify and demonstrate its beneficial impacts on society and environment through a third-party assessment" (p. 338). The first step towards obtaining a certification is taking a B Impact Assessment (BIA) in which a company must have an impact score of 80 out of 200 possible points to be certified. There are five dimensions of sustainability assessed: governance, community, environment, customers, and workers (Cao, Gehman & Grimes, 2017). This research will focus on the workers' impact area, which measures the workers' overall situation in terms of job growth, compensation and benefits, employment practices, work environment and employee ownership (Figure 1) (Cao et al., 2017). However, not all terms measured by the workers' B-impact score can be attributable to gamification. Such is the case of job growth and employment practices. As for compensation and benefits, the score assesses wages, wage gaps, benefits, pension plans, and development and training programs or subsidies; for workers ownership it evaluates the options for transferring ownership to employees and stock offers; and for work environment it assesses worker satisfaction, employee data such as retention and turnover, and health and safety (Shields & Shelleman, 2017). From a managerial perspective, B-Corp certification can be used as a formal framework to help make decisions towards the involvement of environmental, societal and governmental performance in a systematic way (Lacmanovic & Milec, 2018). The credibility of the certificate is assured by the many processes in place including verification mechanisms, background checks, recertification requirements and the use of independent committees' oversight (Lacmanovic & Milec, 2018).

There are many advantages from being certified by the B Lab. Many companies seek the certification to stand out, to continuously improve and redefine their business models, to gain competitive advantage, to target a growing consumer sector concerned with the impacts of businesses, and/or to be part of the worldwide distinguished B certified community (Lacmanovic & Milec, 2018).

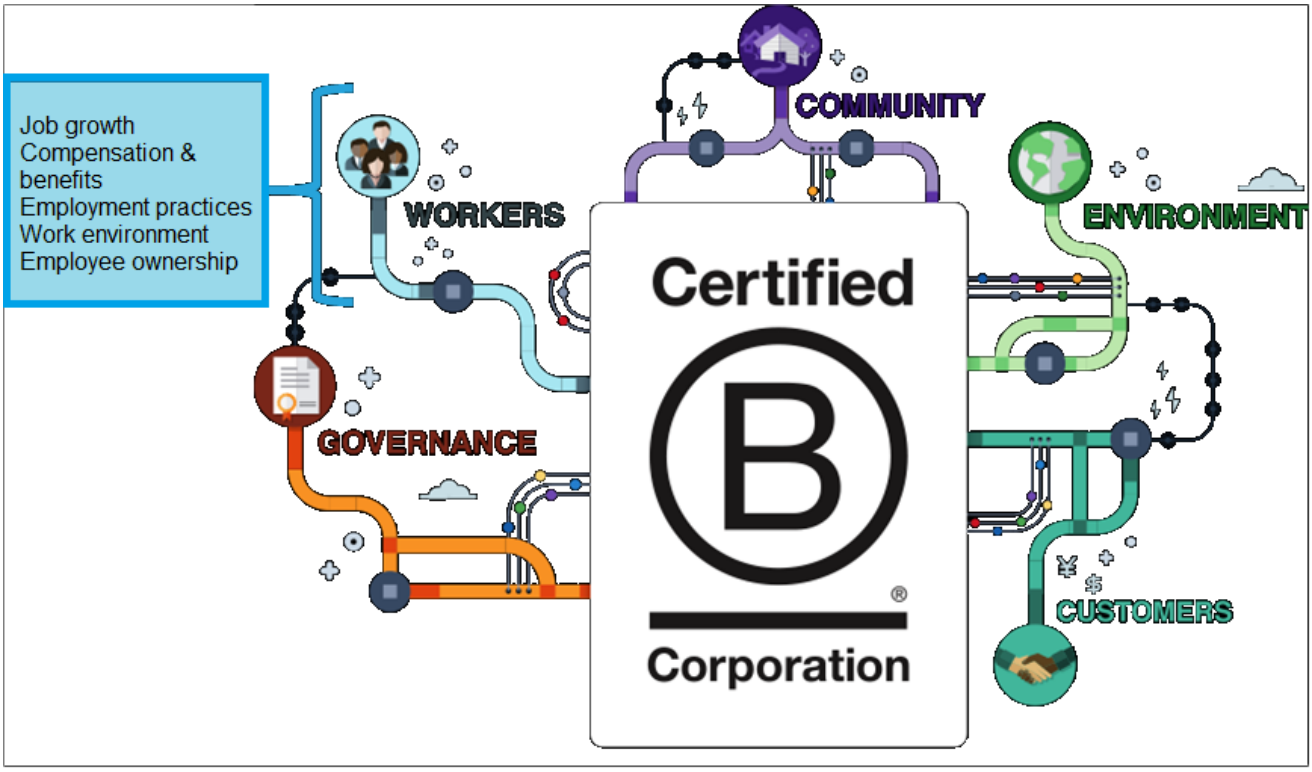



Figure 1: The BIA area focusing on “Workers”. Reprinted from *Building a Better Business*. Retrieved March 9, 2020 from https://bcorporation.net/. Copyright from 2020 B Lab.

## 2.3 Understanding Gamification

### 2.3.1 Introduction

Gamification is the use of traditional gaming concepts, tools, and designs to create stakeholder value in non-game contexts (Schiele, 2018; Raftopoulos, 2016). Gamification has been introduced in many different sectors including health, education, marketing, and human resource as potential sources for revenue (Schiele, 2018). Furthermore, this strategy relies on the knowledge of psychology in understanding motivation as driven by reinforcements and emotions (Raftopoulos, 2016; Whittaker, 2015; Robson et al., 2015). Different elements, such as leaderboards, points, social connection, rewards, badges and levels, are extremely important for the design of a gamified system since it targets the human aspirations for socializing, competing, mastering, learning and achieving (Korn & Schmidt, 2015). *Elements* refers to the functioning components of the game, such as the rules, goals,

and types of interaction (Zichermann & Cunningham, 2011; Robson et al., 2015). Gamification taps upon the major elements of psychology, such as flow and the main components of self-determination, which are autonomy, relatedness, and competence (Badibanga, 2019; Maltseva, Fieseler & Trittin-Ulbrich, 2019). A player reaches a state of flow when one is fully motivated and engaged with an activity resulting in wellbeing and productivity (Badibanga, 2019). The feeling of mastery that stems from overcoming challenges is induced by rewarding the players (Whittaker, 2015). Players also perceive ownership, which boosts engagement and quality assurance through the sense of autonomy (Whittaker, 2015). Relatedness can be exemplified using social elements for competition, providing a community platform, and sharing experiences (Whittaker, 2015). Progress and accomplishment, alongside skill development, nurture a sense of competence (Whittaker, 2015). Inadequate game design can lead to demotivation, cheating, and only short-term engagement (Schiele, 2018). Therefore, it is important to better understand the key enablers and barriers of such a system, e.g. project management or teamwork, and budget constraints, or design limitation (Raftopoulos, 2016).

### 2.3.2 Enterprise Gamification as a Means for Employee Engagement

A persistent challenge that all organizations encounter is to motivate and engage employees (Robson et al., 2015). Introducing games into the enterprise has been given a lot of attention from a managerial perspective, since it has the potential to reduce disengagement via intrinsic motivator drivers that cause players to engage with a system, and eventually have a positive effect on organizational outcomes (Whittaker, 2015; Herzig, Ameling & Schill, 2012). Consequently, mundane activities become more fun, productive, and fulfilling for the player, enhancing their work experience (Simpson & Jenkins, 2015). Thus, gamification is essentially beneficial for user engagement and experience, which, in turn, is advantageous to improve performance and user satisfaction, increasing the organizations' competitive advantage (Korn & Schmidt, 2015).

A critical point when planning the implementation of enterprise gamification is to determine the business objectives (Rauch, 2013). Additionally, it all depends on the connection between the employee playing and the experience perceived. Thus, it is of importance to understand *who* is playing, in terms of personal and work-related characteristics, to identify the problem, the rewards, and reinforcements which will motivate the business-related behavioral outcome of desire (Robson et al., 2016).

However, gamification can have counterproductive consequences if it is negatively perceived by its players. Its implementation can promote issues, such as misuse, a reduction in motivation, a reinforcement of the wrong mindset, or increase unhealthy competition (Korn & Schmidt, 2015).

Hidden obligations and expectations for certain attitudes can arise when gamification is introduced in a controlled and measured context of the workplace, removing the diversion and spontaneity of the game (Raftopoulos, 2016).

Gamification can be morally questionable when seen as the use of persuasive technologies via rewards and punishments, to shape players' behavior (Raftopoulos, 2016). At the same time, business environments demand innovative adjustments in the internal organization of every company. As a measure to overcome the challenges of transitions, gamification can be used to gain employee engagement as a prerequisite for motivation, retainment, team development, community building, learning, and trusting (Stanculescu, Bozzon, Sips & Houben, 2016).

The four measurements of perception used in this study were usefulness, ease of use, attitude, and behavioral intention. Perceived ease of use and usefulness are key determinants for a successful adoption of any system (Hsu & Lu, 2004). Perceived ease of use refers to the individuals' belief that the system is effortless, while perceived usefulness is defined as the extent to which the individual believes that the system would fulfill its purpose (Hsu & Lu, 2004). According to Hamari & Koivisto (2013), attitude is a strong determinant of behavioral intention, and refers to the overall evaluation of the system's usage in terms of positive or negative experiences, satisfaction, and trust in the system. Lastly, behavioral intention refers to the extension to which the individual would use the system in the future (Hsu & Lu, 2004).

Oracle Sales Performance Management serves as a great example of enterprise gamification because of their use of incentives, like compensations, leaderboards, and scoreboards (Figure 2), goals and objectives, and coaching as feedback. Their system has been created to provide tools for sales representatives, eventually helping companies to become more flexible, improve sales effectiveness, and achieve targeted revenue goals (Oracle, 2018).


Figure 2: Scorecards used to recognize top performers as part of the Oracle Incentive Compensation. Reprinted from *Building a Better Business*. Retrieved June 22, 2020 from https://www.oracle.com. Copyright from 2018 Oracle and/or its affiliates.

Considering the literature above, figure 3 helps to understand the relationships that are focused in this research. To be able to assess the relationship between the use of enterprise gamification and internal CSR, B-Corp certified companies will be used as ideal models of CSR. The demographics of the companies will help determine the relationship between use of gamification internally, its perception of use, and the B-impact score for workers. The relationship between the use of gamification and the perception of the method will be investigated in more detail. Moreover, the use of gamification will be used to assess its relationship with the internal CSR level, specifically the worker's B impact score section.

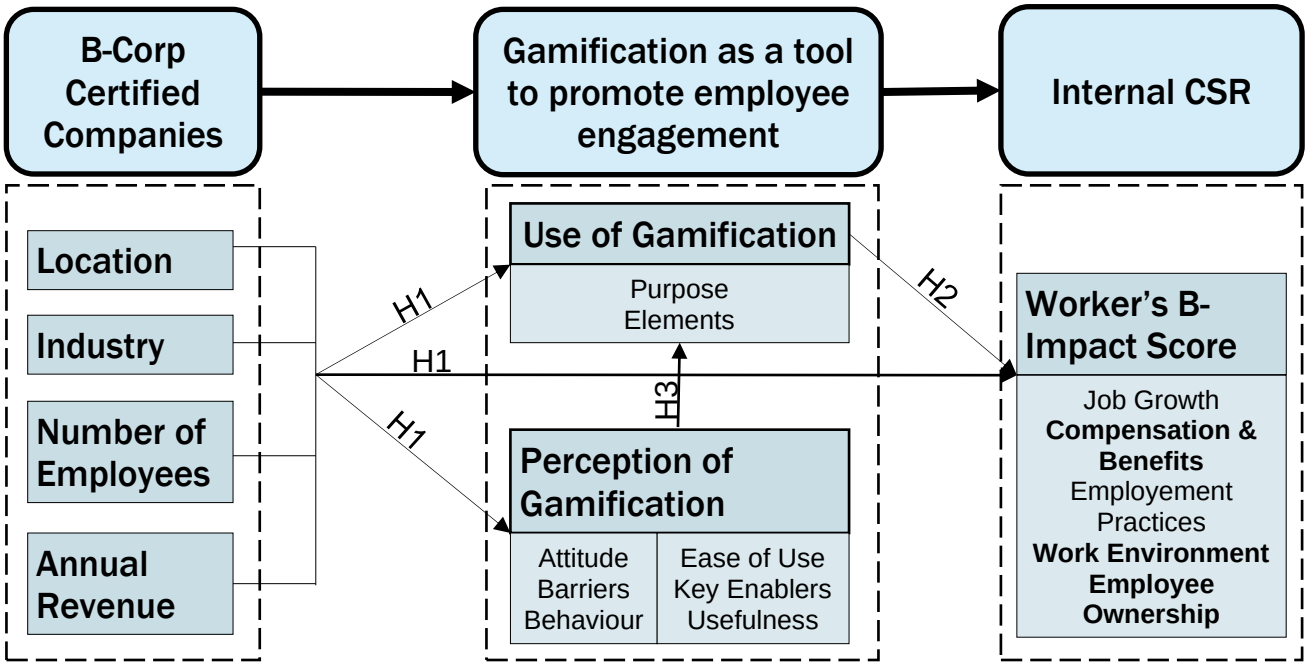



Figure 3: Conceptual framework.

It would be interesting to understand if the corporation's characteristics have any relation with the use of gamification, perception of gamification and the workers B-impact score. Thus, the first hypothesis states:

1. *The corporation's characteristics have an impact on the use and perception of gamification, as well as on the worker's impact score.*

From the theory above, two more hypotheses can be formulated that will help answer the research questions:

2. *There is a positive relationship between the use of enterprise gamification and the "workers" impact score of B-Corp certified companies.*
3. *There is a positive relationship between the managerial usability perception of gamification and the use of gamification.*

# Chapter 3: Methodology

A convergent parallel mixed-method model (Clark & Creswell, 2008) was employed to effectively measure the relationship between the use of gamification to promote employee engagement, the workers impact score, and how gamification is perceived. This study employed quantitative and qualitative methods to collect data concurrently. More specifically it emphasized the quantitative aspect, analyzed the two components independently, and interpreted the results together in the discussion chapter. Usually, convergent mixed methods weigh the methods equally, but this study places greater emphasis on the quantitative methods due to the larger role it contains in answering both research questions (Clark & Creswell, 2008). The quantitative data, collected in the form of a questionnaire, and its subsequent analysis provide a detailed understanding of the relationships between the use and perception of internal gamification to promote employee engagement in B-Corp certified companies, and its B impact score on workers. The purpose of the convergent design is to obtain different but complementary data on the perception of enterprise gamification in B-Corp certified companies via semi-structured interviews.

## 3.1 Data Collection

### 3.1.1 Quantitative Data Collection

This study collected primary data by means of a questionnaire developed from the studies of Raftopoulos (2016), Koivisto & Hamari (2014), Hsu & Lu (2004), and Hamari & Koivisto (2013). However, the scales were modified to suit the scope of the internal use of gamification and its perception. The survey was made using the program Qualtrics. The target population is formed by managers from B-Corp certified companies, which presented a workers' impact score in the official B-Corp directory and an email address or contact form in their company's website. The names, websites of the companies and the worker's impact score were collected from a personal query from the database called Data World, acquired thanks to B Lab. From the respective websites, the emails were gathered and used to distribute the questionnaire. Since a known disadvantage of online surveys is the risk of a low response rate, a reminder was sent after a week to increase the response rate.

Respondents were asked to provide opinions on different variables to be later analyzed using the Statistical Packages for Social Science (SPSS). A number of 1048 questionnaires were distributed with a 6.3% response rate. This present study includes a sample size of 66 participants across different types of industries, company sizes and countries.

### Questionnaire Design

A questionnaire was used to measure the use of enterprise gamification to promote employee engagement and the perception of gamification usability within the companies (appendix 1). The questionnaire was originally written in English, and later translated into Spanish, as an attempt to increase the respondent's rate. The survey consisted of:

- A letter for participants which included a short description of the research scope, aim and purpose, and a section disclosing their participation implications as consent.
- Close-ended questions to understand the company's characteristics.
- Closed-ended questions with an open option as "other" related to the internal use of gamification to promote employee engagement.
- Lastly, questions to measure the use and perception of gamification, which consisted of closed-ended questions with an open option named "other", and a Likert scale type of question.

First, to understand the company's demographics, questions were asked related to size, industry and location. Second, to properly assess the use of gamification in relation to the workers, questions were asked about the elements used, and in which areas these are implemented. Lastly, to assess the perceived usability of gamification an eleven-item Likert scale was used. Ordinal scales were used as measurement for this variable. The scale used, ranged from (1) strongly disagree to (5) strongly agree.

## 3.1.2 Qualitative Data Collection

Semi-structured interviews were conducted to clarify observations and gather details of attitudes and perceptions towards the use of enterprise gamification. They were of an online personalized nature conducted via Skype, Zoom and Google Meet, in English and Spanish. Participants were chosen depending on their positive response to participating in an interview after completing the survey, known as convenience sampling, being a useful method when resources, time and workforce are limited (Etikan, Musa & Alkassim, 2016). In this way, the participants are based on a random factor of their willingness to participate. The interviews were held with six participants which previously participated on the questionnaire (table 1). The main purpose of the interviews was to ask questions about the participants' perception; ethical considerations, benefits, important aspects, drawbacks of gamification, and questions related to the use of enterprise gamification in their companies (e.g.: whether gamification is used or not, if they would recommend such a tool to other B-corp companies, its purpose).

| | Company Name | Interviewee | Role in the Company | Location | Gamification Use |
|---|---|---|---|---|---|
| **1** | Xocial | Lauren Duffield | Partnership | Canada | Yes |
| **2** | Pulpería Quilapán | Gregoire Fabre | Manager | Argentina | Non-computerized gamification |
| **3** | Clean Technology Partners | Coralie Ponsinet | Office Manager | Australia | No |
| **4** | MetroPallets | Ariel Muzi | Owner | Argentina | Yes |
| **5** | Code for Australia | Matt Sawkill | Managing Director | Australia | No |
| **6** | Eat Well Global | Erin Boyd Kappelhof | Managing Partner | Netherlands | No |

Table 1: Study Participants' Characteristics

## 3.2 Data Analysis

### 3.2.1 Quantitative Data Analysis

The data collected from the questionnaires was imported into SPSS, after being organized, for various analyses. To be able to answer the research questions, three null hypotheses ($H_0$) were assessed and tested to find out whether they could be rejected. If the case is that the $H_0$ is rejected, it implies that there is a relationship between the observed data. From the alternative hypothesis, three $H_0$ were formulated:

1. *The corporation's characteristics do not have a significant impact on the use and perception of gamification.*
2. *There is a no relationship between the use of enterprise gamification and the impact score of B-Corp certified companies.*
3. *There is a no relationship between the beneficial perceived impact of gamification to promote employee engagement and the level of use of gamification.*

To get a total score for every case individually on their perceived usability of gamification, the points obtained for each item were subtracted with 1 point, thus the point system ranged from (0) strongly disagree to (4) strongly agree. Then, the points were added up, and the total was multiplied by 2.272 to have a score between 0 and 100. In addition, two more questions related to barriers and key enablers of gamification were added for a more detailed insight on the perceived usability of the tool to promote employee engagement.

Descriptive statistics have been used to understand the *Purpose* and the *Elements* used by a company to engage with employees, and to understand the *Main Barriers* and *Key Enablers* of gamification. To check for correlation within the demographics of the company (independent variables: *Company Size, Years, Location* and *Industry*) and the three main dependent variables (*GamificationUse, B_Worker_Score* and *Usability_Total),* regression tests were used. Since the *GamificationUse* is a dichotomous variable, a logistic regression was used in which the variables *location* and *industry* were categorized. Further, to check for the correlation between *GamificationUse* and, *B_Worker_Score* and between *Usability_Total* and *GamificationUse,* a Spearman's r test was used. This was complemented with a Mann-Whitney U test to check for differences between characteristics and the use of gamification. These tests were chosen since at least one variable is ordinal, and non-parametric tests are needed due to the results of the normality test (table 3).

## Validity of the Questionnaire

From the table 2 below, it can be observed that all items can be declared valid based on the significant value obtained by the sig. (2-tailed)=0.000<0.05. The critical values for Pearson's r states that for df=(N-2=66-2=)64 at a significance level of 0.05 for a two tailed test the Pearson correlation values should be larger than r=0.2423. Based on the Pearson Correlation, all items can be declared valid, since all values are larger than 0.2423. In addition, all items can be declared valid as well for a significance level of 0.01, since all Pearson correlations are larger than r=0.3150. Thus, it can be concluded that the questionnaire measured what was intended to be measured.

| | | Usability 1 | Usability 2 | Usability 3 | Usability 4 | Usability 5 | Usability 6 | Usability 7 | Usability 8 | Usability 9 | Usability 10 | Usability 11 | Usability Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Usability1 | Pearson Correlation | 1 | ,837** | ,765** | ,494** | ,378** | ,407** | ,624** | ,643** | ,519** | ,614** | ,665** | ,817** |
| | Sig. (2-tailed) | | ,000 | ,000 | ,000 | ,002 | ,001 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Usability2 | Pearson Correlation | ,837** | 1 | ,743** | ,478** | ,572** | ,454** | ,690** | ,659** | ,659** | ,701** | ,696** | ,881** |
| | Sig. (2-tailed) | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Usability3 | Pearson Correlation | ,765** | ,743** | 1 | ,634** | ,428** | ,514** | ,725** | ,500** | ,480** | ,695** | ,602** | ,830** |
| | Sig. (2-tailed) | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Usability4 | Pearson Correlation | ,494** | ,478** | ,634** | 1 | ,486** | ,702** | ,547** | ,376** | ,213 | ,463** | ,359** | ,660** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,002 | ,086 | ,000 | ,003 | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Usability5 | Pearson Correlation | ,378** | ,572** | ,428** | ,486** | 1 | ,572** | ,472** | ,404** | ,478** | ,519** | ,494** | ,674** |
| | Sig. (2-tailed) | ,002 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,001 | ,000 | ,000 | ,000 | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Usability6 | Pearson Correlation | ,407** | ,454** | ,514** | ,702** | ,572** | 1 | ,505** | ,416** | ,271* | ,499** | ,496** | ,676** |
| | Sig. (2-tailed) | ,001 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,001 | ,028 | ,000 | ,000 | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Usability7 | Pearson Correlation | ,624** | ,690** | ,725** | ,547** | ,472** | ,505** | 1 | ,635** | ,469** | ,658** | ,630** | ,818** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 | ,000 | ,000 | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Usability8 | Pearson Correlation | ,643** | ,659** | ,500** | ,376** | ,404** | ,416** | ,635** | 1 | ,657** | ,656** | ,638** | ,780** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,002 | ,001 | ,001 | ,000 | | ,000 | ,000 | ,000 | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Usability9 | Pearson Correlation | ,519** | ,659** | ,480** | ,213 | ,478** | ,271* | ,469** | ,657** | 1 | ,601** | ,617** | ,706** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,086 | ,000 | ,028 | ,000 | ,000 | | ,000 | ,000 | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Usability10 | Pearson Correlation | ,614** | ,701** | ,695** | ,463** | ,519** | ,499** | ,658** | ,656** | ,601** | 1 | ,716** | ,843** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Usability11 | Pearson Correlation | ,665** | ,696** | ,602** | ,359** | ,494** | ,496** | ,630** | ,638** | ,617** | ,716** | 1 | ,823** |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,003 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | | ,000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Usability_Total | Pearson Correlation | ,817** | ,881** | ,830** | ,660** | ,674** | ,676** | ,818** | ,780** | ,706** | ,843** | ,823** | 1 |
| | Sig. (2-tailed) | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | ,000 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table 2: Pearson test of Likert scale and total usability perception score.

## Reliability of the Questionnaire

Reliability analysis allows researchers to study the properties of measurement scales and the items that compose the scales (International Business Machine Corporation [IBM], n.d.). Cronbach's alpha-value is 0.934, which indicates a high level of internal consistency for the scale with this sample (table 3). The item-total statistics table (appendix 2) presents the Cronbach's Alpha if Item Deleted column, which shows the value that Cronbach's alpha would be if that item were to be deleted from the scale (IBM, n.d.). It was observed that the removal of any question would result in a lower Cronbach's alpha. Therefore, no item will be removed. It can be concluded that the research method generates consistent results.

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| ,934 | ,933 | 11 |

Table 3: Reliability test: Cronbach's alpha.

## Normality of the questionnaire

To test for normality, this research conducted the Kolmogorov-Smirnov Test. It can be observed from table 4 that the data is not normally distributed since Asymp.Sig.(2-tailed)=0.000. For a normally distributed data, the p-value should be larger than 0.05. Non-parametric tests will be used in this research since our assumption of a normal distributed sample has not been met.

| | | GamificationUse | Total_Usability | B_Worker_Score |
|---|---|---|---|---|
| N | | 66 | 66 | 66 |
| Normal Parameters[a,b] | Mean | ,26 | 60,55 | 26,9848 |
| | Std. Deviation | ,441 | 17,090 | 23,65997 |
| Most Extreme Differences | Absolute | ,463 | ,156 | ,344 |
| | Positive | ,463 | ,097 | ,344 |
| | Negative | -,279 | -,156 | -,286 |
| Test Statistic | | ,463 | ,156 | ,344 |
| Asymp. Sig. (2-tailed) | | ,000[c] | ,000[c] | ,000[c] |

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Table 4: One-Sample Kolmogorov-Smirnov test of three main variables.

### 3.2.2 Qualitative Data Analysis

The interviews were online and recorded using an audio recorder. Participants were asked for their consent for recordings and their preference on anonymity before starting. The recordings were translated, transcribed, and read thoroughly to understand the different perceptions. The files were uploaded to NVivo 10 for open-axial selective coding (Moghaddam, 2006).

This research combined inductive and deductive approaches for coding processes (Rowley, 2012). An inductive approach derives codes from the data avoiding early interpretation, whilst deductive approaches develop codes from the theory beforehand (Rowley, 2012). Deductive coding was used to be able to organize the data from the interviews into categories (appendix 6). Later, inductive coding was used to develop open codes within the initial categories. Open codes are the first step of breaking the data into codes (Moghaddam, 2006). Codes were developed based on the frequency within interviews, and repetition between the interviews, of different terms. This was useful to get insight into the perception of gamification, its use, and the characteristics of the companies.

## 3.3 Ethical Considerations

The questionnaires were anonymous, and the anonymity of the interviews was agreed upon d between the participant and the researcher, to avoid invasion of privacy. In addition, participants were given complete and transparent information about the research objectives to avoid deception. Respondents had the opportunity to assess the implications of participating and held the final decision on whether to participate or not. By informing and having the decision-making power, lack of consent was avoided. Data collected was stored in a protected file, with a required password, to prevent

unauthorized access to it and invasion of privacy. No physical or mental harm was caused to the participants.

# Chapter 4: Results

This chapter contains the results from the mixed-method analyses described in Chapter 3. The main purpose of the quantitative study was to investigate the relationships between different variables and the use and perception of gamification, in relation to the worker's B-impact score. An overview of the results of the quantitative analysis can be seen in figure 4. The qualitative analysis focused mainly on gathering complementary material on the perception of companies towards the use of enterprise gamification. The chapter is divided into two main sections. First, it introduces the demographics of the participants involved in the study, and it later shows the results based on the three hypotheses.

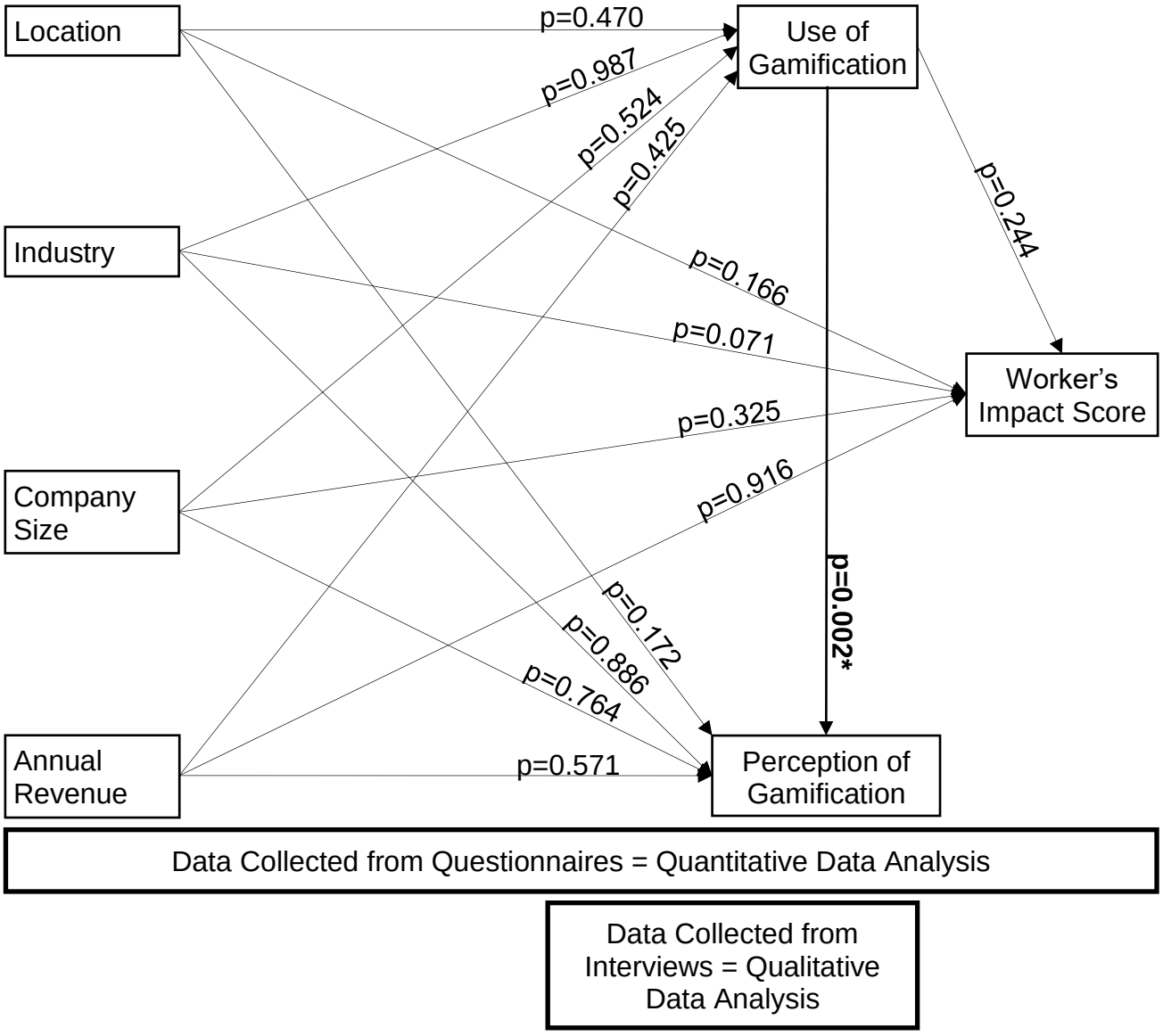



Figure 4: the research model.

## 4.1 Descriptive Analysis of Sample Characteristics

This section presents the distributions of the sample according to the characteristic's variables. There are 66 companies who have voluntarily accepted to fill in the questionnaire, mostly located in North America (35%) and Europe (32%), followed by South America (18%) (figure 5.3). These are mainly involved in the business services and consulting industry (28.8%), manufacturing (9%), banking/finance/accounting/insurance industries (9%), and other services (25.8%) (figure 5.1). From figure 5.2 it can be observed that most of the companies (21%) have around 20-39 employees, followed by 6-9 employees (20%), and 10-19 employees (20%), indicating a rather small workforce

in general. Lastly, figure 5.4 shows that 29% of the participating companies had an annual revenue of $100,000-$5M US dollars in 2019, 21% of the companies had $1M-$5M annual revenue, and 20% of them had between $500,000-$1M US dollars.

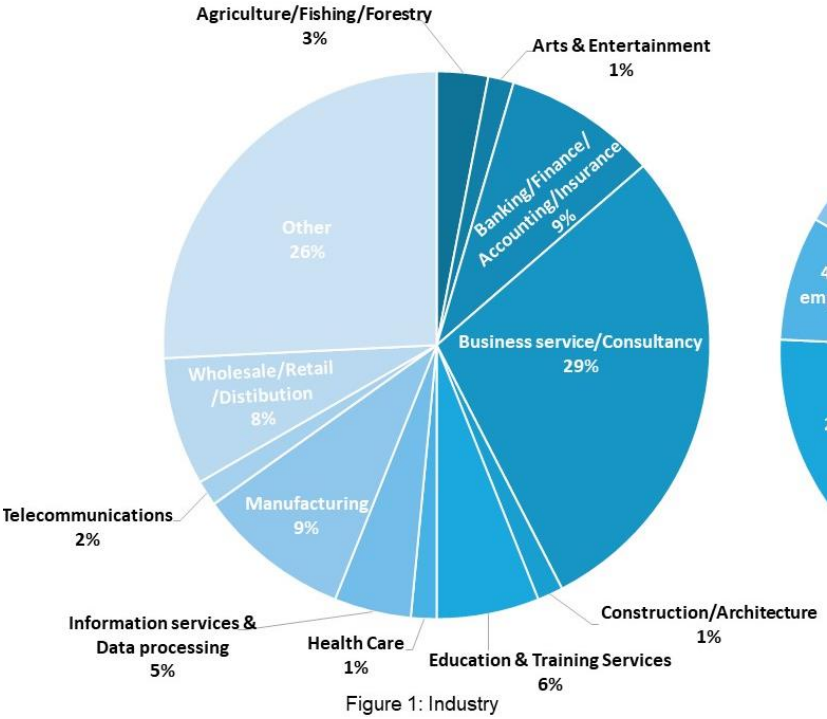



Figure 1: Industry

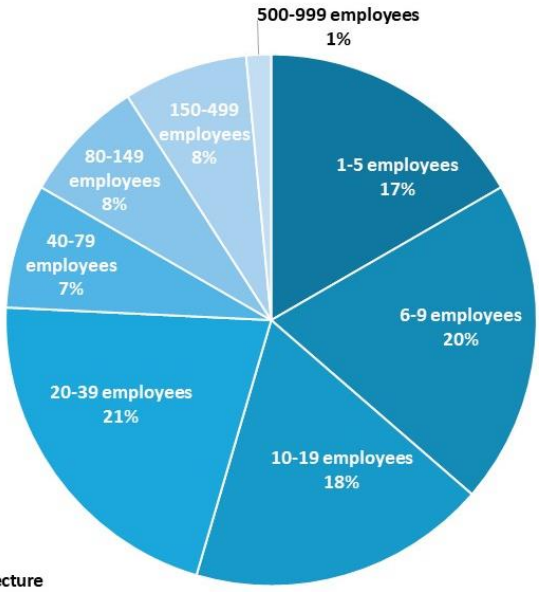



Figure 2: Company size

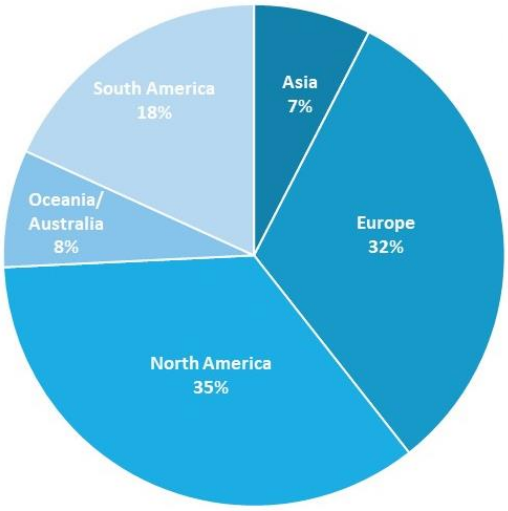



Figure 3: Location

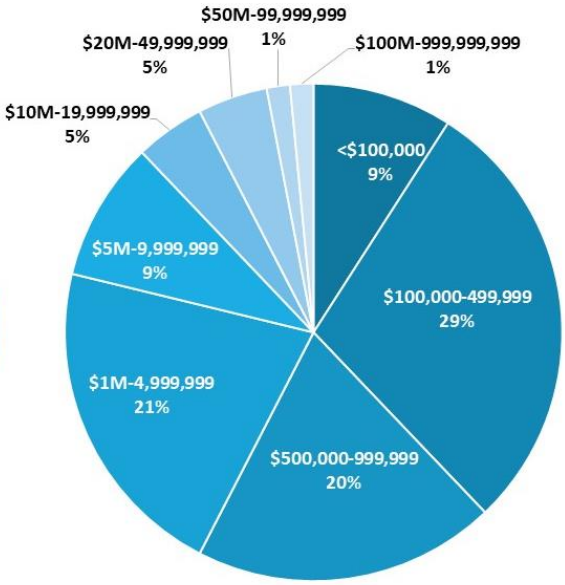



Figure 4: Annual revenue of 2019

Figure 5: company's (1) industry, (2) company size, (3) location and (4) annual revenue from 2019.

From the total respondents, only 26% companies use enterprise gamification, and almost half these companies (47.1%), use gamification since a year ago or less (figure 6). From the companies which use gamification, 41% are involved in the business service and consultancy industry, 29% are involved with other services, 12% are involved in manufacturing, education and training services, and in banking, finance, accounting and insurance (figure 6.1). More than the half (53%), of these companies are based in North America, followed by 29% located in Europe, 12% of them are in Asia, and 6% are in South America (figure 6.3). Figure 6.2 shows that almost half the companies (41%) have between 10-19 full time employees, followed by 18% with 6-9 employees, and 17% with 40-79 employees. Lastly, from figure 6.4 it can be observed that 35% of the companies had an annual revenue in 2019 between $500,001-$1M US dollars, 29% had an annual revenue between $1M and $5M, and 12% had an annual revenue of less than $100,000 US dollars.

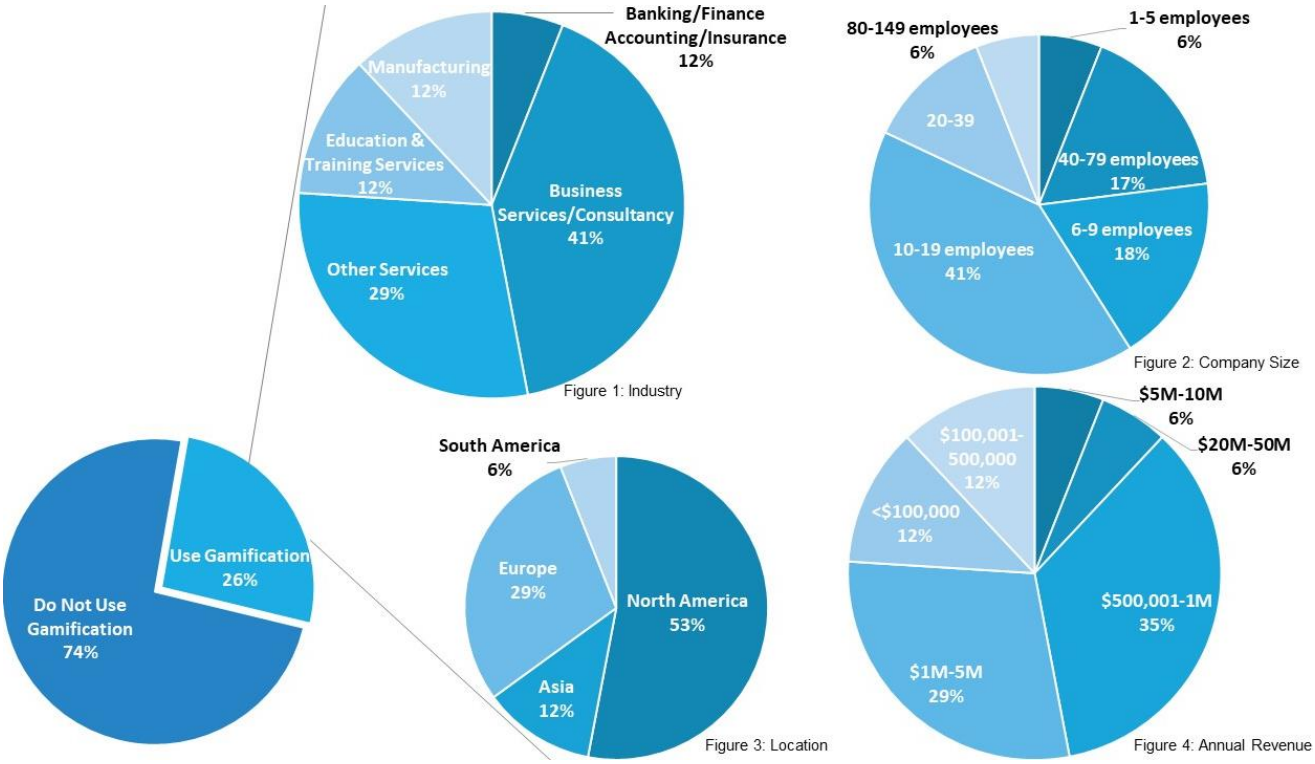



Figure 6: companies using enterprise gamification characteristics divided in (1) industry, (2) company size, (3) location and (4) annual revenue.

Participants who use gamification in their enterprise were asked to point out the main elements and purposes of gamification. Figure 7 shows that the most used elements by these are status, success and recognition (65%), rewards (53%), leaderboards (41%) and social experiences (41%). Furthermore, the three main purposes for the use of enterprise gamified systems were staff morale and motivation (76%), corporate culture building (76%) and community building (76%) (figure 8).

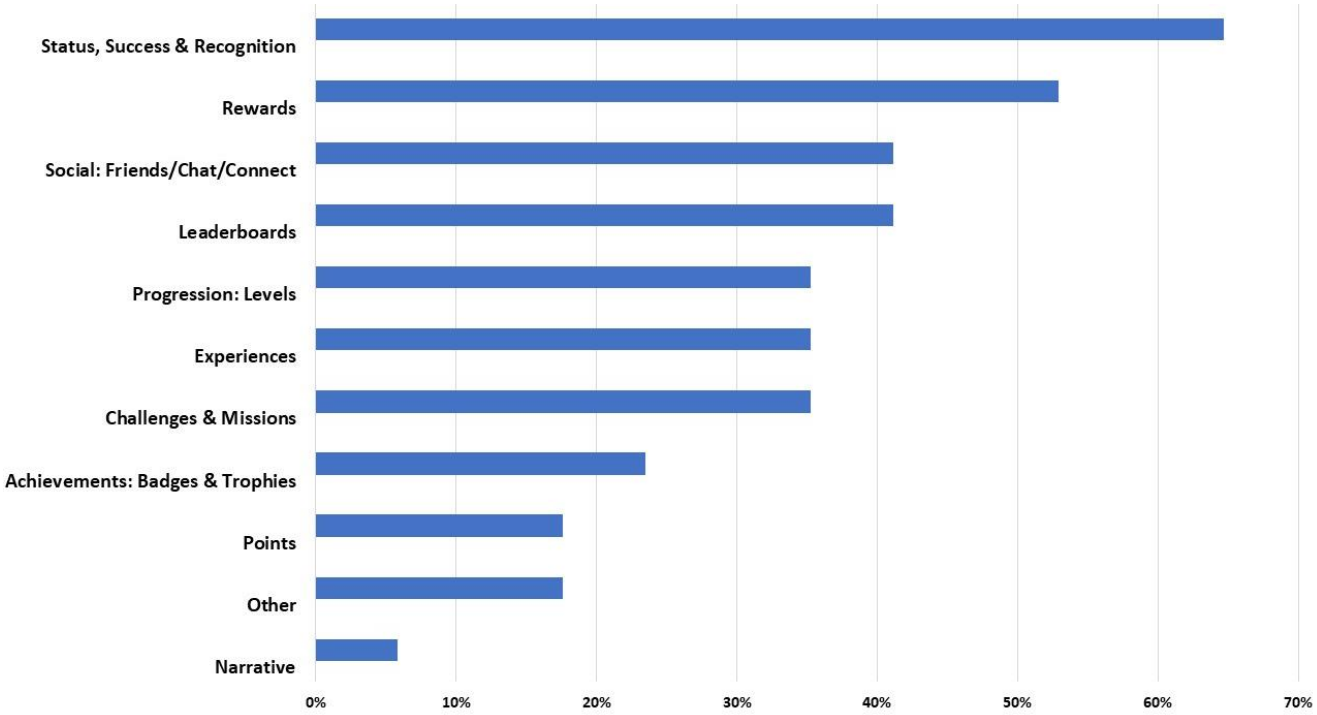



Figure 7: Main elements used by B-corporations in enterprise gamification.

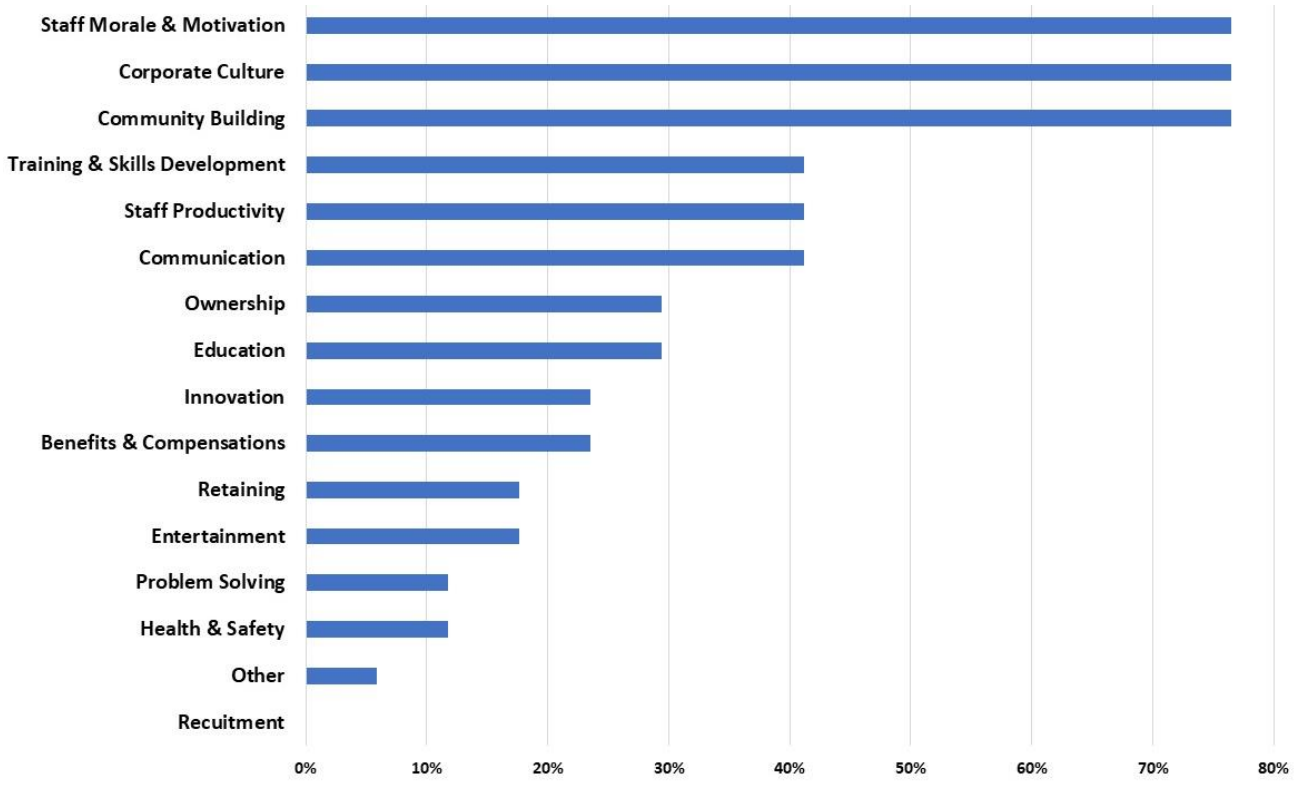



Figure 8: Main purposes for the use of gamification in B-corporations.

All participants were asked about the perceived key barriers and enablers of enterprise gamification, as seen in figure 9 and 10, respectively. Budget constraints (35%), adoption of the system (33%) and game design (20%) were the key barriers identified by all the participants (N=66), and 23% of the respondents answered, “I don’t know”. However, for the participants who use gamification (N=17), the key barriers were adoption of the system (35%), project management (24%), data integrity issues (18%), on time delivery (18%) and team resource development (18%). The identified enablers for a successful implementation of enterprise gamification were mainly teamwork (45%), design aspect (38%) and measurement (35%) for all participants (N=66). In contrast with answers of the participants using gamification (N=17), the main enablers identified were teamwork (41%), design aspect (35%), measurement (35%) and technology (35%).

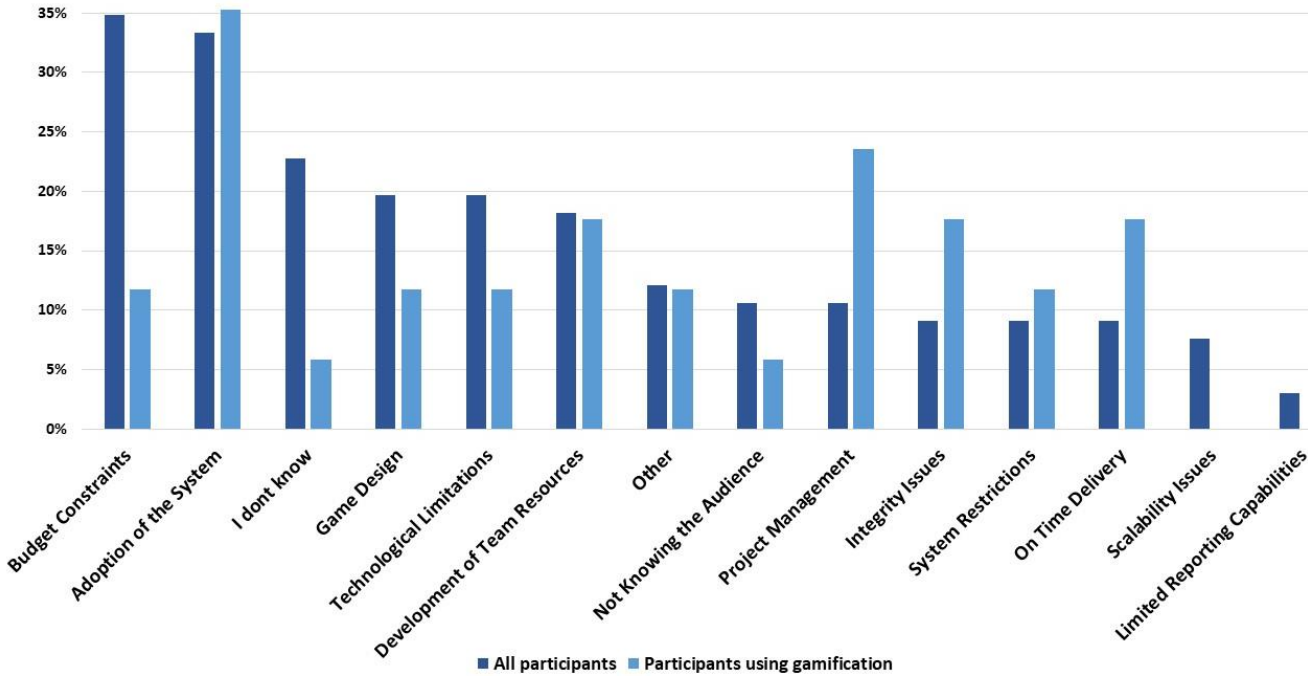



Figure 9: Identified barriers by the B-corporations for the implementation of enterprise gamification.

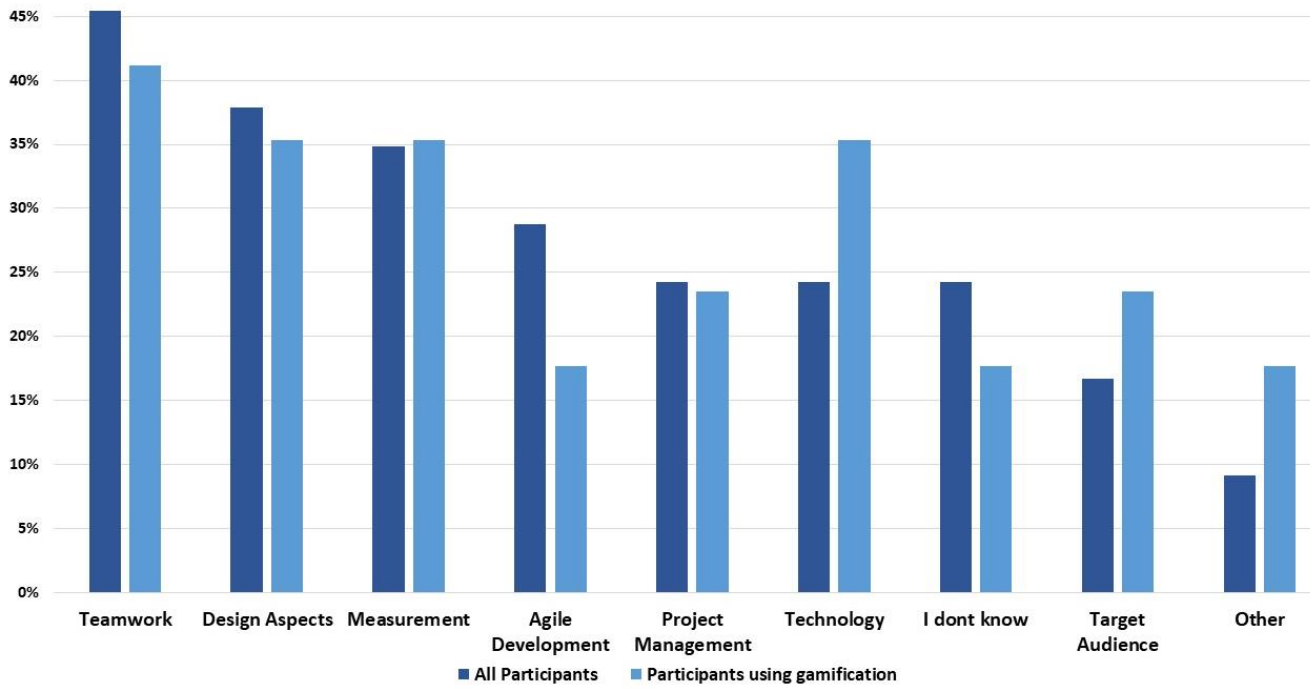



Figure 10: Identified enablers by B-corporations for a successful implementation of enterprise gamification.

Four different aspects were considered when assessing the perceived usability of gamification (figure 11). The main observation is that for *perceived usefulness* (31.7), *perceived ease of use* (31.7) and *behavioral intention* (27.5) the option “neither” scored the highest average from the other options. The following opinion that scored high among the respondents is “agree”, respectively 21.0, 22.3 and 20.5. *Attitude* scored highest in “agree” (26.7), followed by “neither” (25.7). It can also be observed that *Behavioral Intention* scored the highest (9.0) in “strongly agree”. Appendix 3 shows the different scores for the individual items.

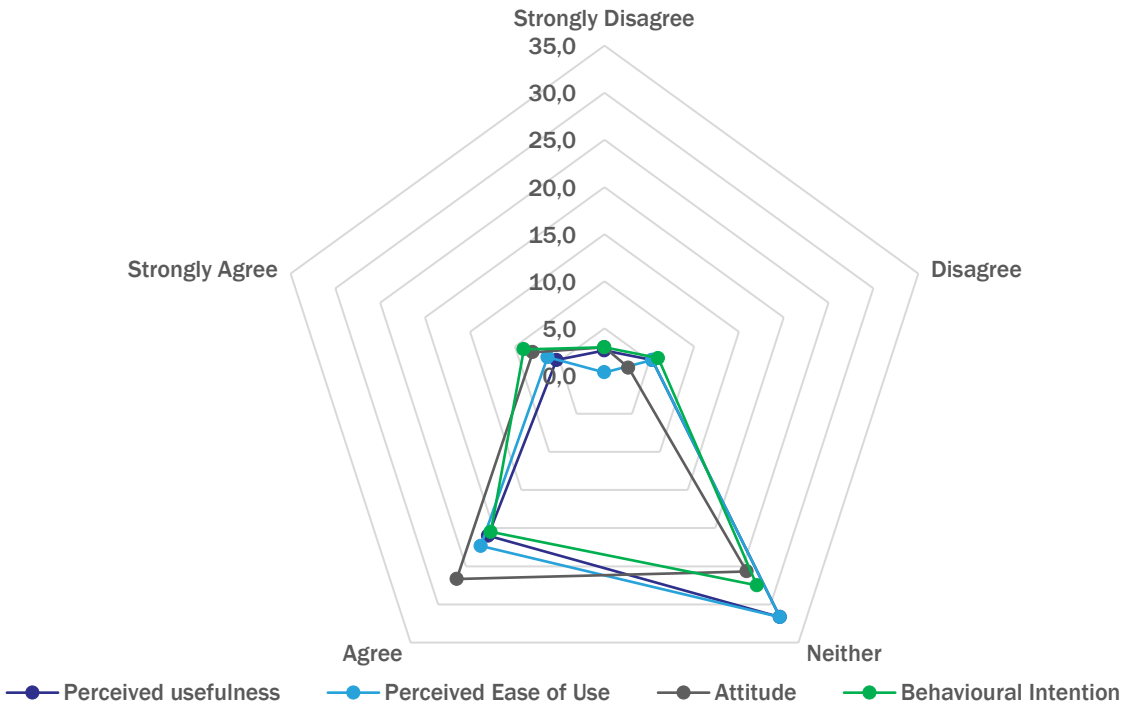



Figure 11: B-corps' Overall Perceived Usability of Gamification

## 4.2 Hypothesis Testing

For this section it is important to restate the null hypothesis ($H_0$) subject to assessment. The three $H_0$ can be seen below:

1. *The corporation's characteristics do not have a significant impact on the use and perception of gamification, as well as on the worker's impact score.*
2. *There is a no relationship between the use of enterprise gamification and the impact score of B-Corp certified companies.*
3. *There is a no relationship between the beneficial perceived impact of gamification to promote employee engagement and the level of use of gamification.*

### 4.2.1. Hypothesis 1: The corporation's characteristics have an impact on the use and perception of gamification, as well as on the worker's impact score.

A multiple regression was run to predict *B-impact score on workers* from *annual revenue, location, industry,* and *company size* (table 5a). These variables are not statistically significant in the prediction of *B-impact score on workers*, $F(4,61)=1.350$, $p<0.262$, $R^2=0.081$. None of the four variables added statistical significance to the prediction, $p<0.05$. Further analysis examined whether there were significant statistical differences in the sample's responses about the *B-Impact score* according to the

individual characteristics of the B-corp certified company, at a p<0.05 level of significance (table 5b). According to *annual revenue* (p=0.916), *industry* (p=0.071), *location* (p=0.166) and *company size* (p=0.325), no statistically significant differences were observed.

The data met the assumptions of independent errors (Durbin-Watson value=1.981), of collinearity indicating that multicollinearity was not a concern, (*Size Employee*, Tolerance=0.488, VIF=2.051; *Location*, Tolerance=0.999, VIF=1.001; *Industry*, Tolerance=0.969, VIF=1.032; *Annual revenue*, Tolerance=0.499, VIF=2.005). An analysis of standard residuals was carried out and showed that the data did not contain outliers (Std. Residual Min=-2.141, Std. Residual Max=-2.075). The data contained from the histogram of standardized residuals and normal P-P plot of standardized residuals indicated an approximation to normally distributed errors (appendix 4).

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 163,716 | 4 | 40,929 | 1,350 | ,262[b] |
| Residual | 1849,571 | 61 | 30,321 | | |
| Total | 2013,286 | 65 | | | |

a. Dependent Variable: B-Impact Score on Workers
b. Predictors: (Constant), Annual Revenue, Location, Industry and Company size.

Table 5a: Multiple Regression analysis results from SPSS. B-Impact score on workers as the dependent variable, against the characteristics of the companies.

B - Impact Score on Workers

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Company Size | Between Groups | 252,104 | 7 | 36,015 | 1,186 | ,325 |
| | Within Groups | 1761,182 | 58 | 30,365 | | |
| | Total | 2013,286 | 65 | | | |
| Annual Revenue | Between Groups | 106,830 | 8 | 13,354 | ,399 | ,916 |
| | Within Groups | 1906,456 | 57 | 33,447 | | |
| | Total | 2013,286 | 65 | | | |
| Industry | Between Groups | 547,187 | 11 | 49,744 | 1,832 | ,071 |
| | Within Groups | 1466,099 | 54 | 27,150 | | |
| | Total | 2013,286 | 65 | | | |
| Location | Between Groups | 200,079 | 4 | 50,020 | 1,683 | ,166 |
| | Within Groups | 1813,207 | 61 | 29,725 | | |
| | Total | 2013,286 | 65 | | | |

Table 5b: One-way ANOVA table from Multiple Regression for each characteristic performed for B-Impact score on workers.

A multiple regression was run to predict the *overall perceived usability score* of gamification systems in enterprises from *annual revenue*, *location*, *industry*, and *company size* (table 6a). These variables are not statistically significant in the predicted *overall usability score*, $F(4,61)=0.651$, $p<0.638$, $R^2=0.041$. Neither of the four independent variables added statistical significance to the prediction, $p<0.05$. Moreover, the research examined whether there were significant statistical differences in the sample's responses about the perception of gamification according to the individual characteristics of the company, at a $p<0.05$ level of significance (table 6b). According to *annual revenue* ($p=0.571$), *industry* ($p=0.886$), *location* ($p=0.172$) and *company size* ($p=0.764$), no statistically significant differences were observed.

In addition, the data was checked on independent errors, and it can be concluded that the data met the assumption of independent errors (Durbin-Watson=1.759). Collinearity was tested, and indicated that multicollinearity was not a concern (*Company Size*, Tolerance=0.488, VIF=2.051; *Location*, Tolerance=0.999, VIF=1.001; *Industry*, Tolerance=0.969, VIF=1.032; *Annual revenue*, Tolerance=0.499, VIF=2.005). An analysis of standard residuals was carried out and it showed that the data contained no outliers (std. residual min=-2.777, std. residual max=1.688). The histogram and normal P-P of standardized residuals indicated that the data contained approximately normally distributed errors. Lastly, the scatterplot of standardized residuals showed that the data met the assumption of homogeneity of variance and linearity (Appendix 5).

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 777,565 | 4 | 194,391 | ,651 | ,628[b] |
| Residual | 18206,799 | 61 | 298,472 | | |
| Total | 18984,364 | 65 | | | |

a. Dependent Variable: Overall usability score
b. Predictors: (Constant), Annual Revenue, Location, Industry and Company size

Table 6a: Multiple Regression analysis results from SPSS. Overall score of the usability perception as the dependent variable, against the characteristics of the companies.

Overall usability score

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Annual Revenue | Between Groups | 2003,954 | 8 | 250,494 | ,841 | ,571 |
| | Within Groups | 16980,410 | 57 | 297,902 | | |
| | Total | 18984,364 | 65 | | | |
| Industry | Between Groups | 1798,948 | 11 | 163,541 | ,514 | ,886 |
| | Within Groups | 17185,416 | 54 | 318,248 | | |
| | Total | 18984,364 | 65 | | | |
| Location | Between Groups | 1861,022 | 4 | 465,255 | 1,657 | ,172 |
| | Within Groups | 17123,342 | 61 | 280,711 | | |
| | Total | 18984,364 | 65 | | | |
| Company Size | Between Groups | 1256,212 | 7 | 179,459 | ,587 | ,764 |
| | Within Groups | 17728,152 | 58 | 305,658 | | |
| | Total | 18984,364 | 65 | | | |

Table 6b: One-way ANOVA table from Multiple Regression for each characteristic performed on the overall usability score.

A logistic regression (table 7a) was performed to ascertain the effects of *industry, location, company size* and *annual revenue* on the likelihood that companies *use gamification* systems to promote employee engagement. Before running the test, the variables *industry* and *location* were categorized. In table 8, it can be observed that the p-value for the omnibus tests of model coefficients is more than 0.05, indicating that the research does not have a significant model. Thus, *industry* (p= 0.987), *location* (p=0.470), *company size* (p=0.524) and *annual revenue* (p=0.425), are not associated with the likelihood of using enterprise gamified systems (table 7b). It can be concluded that the null hypothesis is accepted. Thus, there is no significant impact from the characteristics of the company on the use of gamification.

| | Chi-square | df | Sig. |
|---|---|---|---|
| Step | 20,715 | 17 | ,239 |
| Block | 20,715 | 17 | ,239 |
| Model | 20,715 | 17 | ,239 |

Table 7a: Logistic Regression analysis: omnibus test of model coefficients table from SPSS.

| | B | S.E. | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|
| Company Size | ,201 | ,315 | ,406 | 1 | ,524 | 1,223 |
| Annual Revenue | -,250 | ,313 | ,637 | 1 | ,425 | ,779 |
| Industry | | | 3,231 | 11 | ,987 | |
| Location | | | 3,554 | 4 | ,470 | |

a. Variable(s) entered on step 1: Company Size, Annual Revenue, Industry and Location.

Table 7b: Variables in the Equation table from the Logistic Regression analysis in SPSS.

Thus, from the results above, the null hypothesis can be accepted. Meaning that the corporation's characteristics do not have a significant impact on the use and perception of gamification, as well as on the worker's B-impact score.

### 4.2.2. Hypothesis 2: There is a positive relationship between the use of gamification to drive employee engagement and the workers B-impact score.

A Spearman's rank-order correlation was run to determine the relationship between 66 companies' B-impact score on workers and the use of gamification. From table 8a it can be observed that there is a weak, positive correlation between the two variables, which is not statistically significant ($r_s(64)=0.145$, $p=0.247$). In table 8b one can observe the Mann-Whitney U test results between the *use of gamification* and the *worker's B-impact score*. Companies using gamified systems as a tool to promote employee engagement had a higher B-Impact worker's score mean (38.18) than companies not using gamified systems (31.88). However, the difference is not significant at $p<0.05$ ($U=337.000$, $p=0.244$).

In terms of the null hypothesis, it can be accepted, meaning that the alternative hypothesis is rejected. There is no statistically significant relationship between the use of enterprise gamification and the impact B-score for workers. However, even though it is not statistically accepted, companies which do have gamified systems in place, rank higher in the B-impact assessment for workers by 6.3 points than companies which do not use enterprise gamification.

| | | | GamificationUse | B_Worker_Score |
|---|---|---|---|---|
| Spearman's rho | GamificationUse | Correlation Coefficient | 1,000 | ,145 |
| | | Sig. (2-tailed) | . | ,247 |
| | | N | 66 | 66 |
| | B_Impact_Score | Correlation Coefficient | ,145 | 1,000 |
| | | Sig. (2-tailed) | ,247 | . |
| | | N | 66 | 66 |

Table 8a: Spearman's rho nonparametric test from SPSS assessing the correlation between the B-impact score on workers and the use of enterprise gamification.

**Ranks**

| | GamificationUse | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| B_Worker_Score | No | 49 | 31,88 | 1562,00 |
| | Yes | 17 | 38,18 | 649,00 |
| | Total | 66 | | |

**Test Statistics[a]**

| | B_Worker_Score |
|---|---|
| Mann-Whitney U | 337,000 |
| Wilcoxon W | 1562,000 |
| Z | -1,166 |
| Asymp. Sig. (2-tailed) | ,244 |

a. Grouping Variable: GamificationUse

Table 8b: Mann-Whitney U test rank and test statistics table from SPSS, assessing the relationship between the use of gamification and worker's B-impact score.

### 4.2.3. Hypothesis 3: There is a positive relationship between the beneficial perceived usability of gamification and the use of gamification.

A Spearman's rank-order correlation was run to determine the relationship between 66 companies' perceived usability scores of gamification and its use. From table 9a it can be observed that there is a weak, positive correlation between the two variables, which has statistical significance ($r_s(64)=0.376$, $p=0.002$). A second Mann-Whitney U test was used to assess the relationship between the *perceived impacts of gamification* and the *use of gamified* systems; the results can be seen in table 9b. It can be concluded, at a statistically significant level, that the overall perceived usability of gamified systems in companies which use gamified systems was higher (45.56) than in companies which do not have gamified systems in place (29.32) ($U=211.500$, $p=0.002$).

In this case, the null hypothesis can be rejected, and the alternative hypothesis can be accepted. In other words, there is a positive statistically significant relationship between the use of gamification and the positive perception of the tool's usability. Companies which use gamification, ranked the usability of gamification 35% higher than companies which do not use gamification.

| | | | GamificationUse | Usability_Total |
|---|---|---|---|---|
| Spearman's rho | GamificationUse | Correlation Coefficient | 1,000 | ,376** |
| | | Sig. (2-tailed) | . | ,002 |
| | | N | 66 | 66 |
| | Usability_Total | Correlation Coefficient | ,376** | 1,000 |
| | | Sig. (2-tailed) | ,002 | . |
| | | N | 66 | 66 |

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

Table 9a: Spearman's rho nonparametric test from SPSS assessing the correlation between the total perceived usability of gamification and the use of it.

**Ranks**

| | GamificationUse | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Usability_Total | No | 49 | 29,32 | 1436,50 |
| | Yes | 17 | 45,56 | 774,50 |
| | Total | 66 | | |

**Test Statistics[a]**

| | Usability_Total |
|---|---|
| Mann-Whitney U | 211,500 |
| Wilcoxon W | 1436,500 |
| Z | -3,033 |
| Asymp. Sig. (2-tailed) | ,002 |

a. Grouping Variable: GamificationUse

Table 9b: Mann-Whitney U test rank and test statistics table from SPSS, assessing the relationship between the use of gamification and the perceived usability score.

## 4.3 Interviewees' Perception of Enterprise Gamification

Interviews to different companies were conducted to gather information that would complement the quantitative analysis on the perception of enterprise gamification (appendix 3). Participants agreed on the general definition of gamification as the use of games in serious contexts. However, when diving into the perception of the tool, contradicting opinions surfaced. Gamification has been described as a positive and negative technological innovation, depending on the purpose of its implementation. This aspect would delineate the nature of the gamified system implemented, highly connected with the ethical considerations of such. Interviewees who have gamification in place, considered gamification as highly positive (A. Muzi, G. Fabre & L. Duffield, personal communication, May/June 2020), while interviewees without gamified systems in their companies, had mixed feelings about the tool regarding its ethical aspects, and a hypothetical negative impact on the company (C. Ponsinet, M. Sawkill & E.B. Kappelhof, personal communication, May 2020). From the interviews it was clear to deduce that there exists a strong resistance towards the use of gamification, as it is not aligned with the nature of B-corp certified companies (M. Sawkill, personal communication, May 2020; Maltseva, Fieseler and Trittin, 2018). Nonetheless, this view has been refuted by A. Muzi and L. Duffield (personal communications, May/June 2020), who work closely with gamified elements in their

companies. Both agree that this could be the case if the purpose of the gamified system is wrongly set. This issue could be clarified by informing and educating the managers of B-corp certified companies about the correct ways of implementing gamification to create positive impact internally as the main outcome (L. Duffield, personal communication, June 2020).

Xocial is a B-corp gaming platform that rewards positive impacting actions through their program of culture building. This program inspires employee engagement using challenges, points, customization of the challenges based on the culture of the company, and rewards (figure 12)(L. Duffield, personal communication, June 2020).

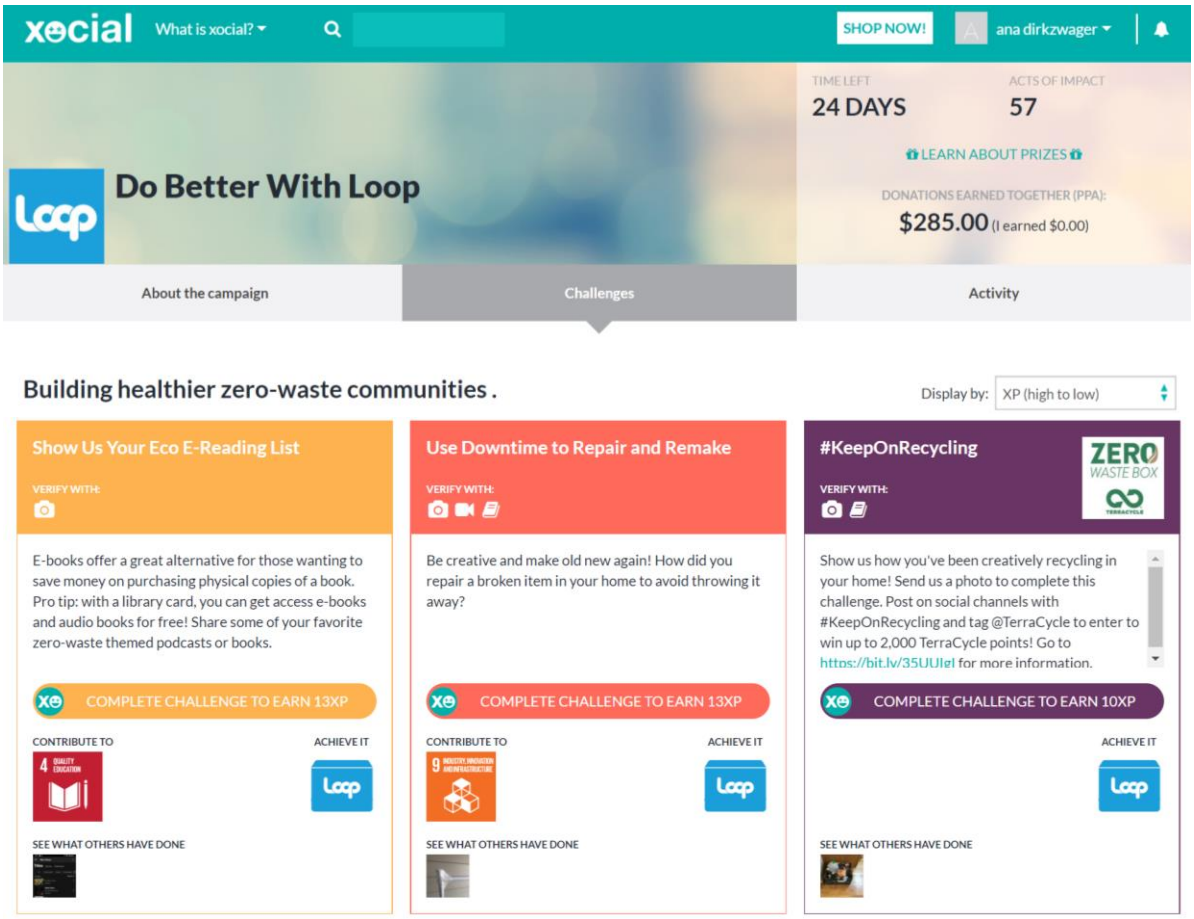



Figure 12: Gamification elements in place such as rewards, point systems, challenges, social interaction, and customization of the campaign to the values of Loop. From *Xocial: Do better with Loop*, https://app.xocial.com/campaign/HtwRDnSyyxMsevpHv/challenges. Copyright 2020 IOU Concepts.

# Chapter 5: Discussion

## 5.1 Findings

The aim of the research was to assess the use and perception of gamification as a tool to promote employee engagement in B-corp certified companies. From the results obtained (4.2.3 Hypothesis 3), the study can conclude that there is only one hypothesis that can be accepted, H3: there is a positive relationship between the beneficial perceived usability of gamification to promote employee engagement and the use of gamification. Thus, B-corp certified companies using gamified systems score higher on the perceived usability of gamification than companies not using gamification, having a more positive view on the tool. Two interpretations can be formulated. First, companies use gamification because they have a more positive perception of it. Secondly, once gamification is in place, its beneficial outcomes in terms of engaging employees with their daily tasks, become more tangible (Whittaker, 2015). From figure 11, it can be observed that most of the participants do not have an opinion on several items related to the use of gamification since “neither” scores the highest in every case. However, participants tended to “agree” with the items more often than disagreeing.

On the other hand, the remaining hypotheses have been rejected. The relations between the different characteristics of the company, and the use and perception of gamification, as well as the B-impact score on workers (4.2.1 Hypothesis 1), were not strong enough to be statistically significant. First, it can be assumed that since gamification is a relatively new tool, not many companies have adopted it yet (Deterding, 2011; Maltseva, Fieseler, & Trittin-Ulbrich, 2019). Thus, no relation can be found between the characteristics of companies and the use of gamification. In addition, enterprise gamified systems can take different shapes and forms, depending on the different necessities of the company implementing the tool (Greuter, Walz & Raftopoulos, 2015). Gamification can be shaped to fit any location by translating the system; in any industry, involving different aspects of dynamics and elements; in companies with different sizes, developing a larger or smaller system; and for any annual revenue, depending on how much a company is willing to spend on the system (Greuter, Walz & Raftopoulos, 2015; Schiele, 2018). Thus, there is no direct connection with the characteristics. Secondly, the relationship between the perception of use and the corporation’s characteristics is not strong enough. Gamification is still an emerging, and innovative tool; thus, this creates many areas were knowledge is lacking regarding gamified systems (Whittaker, 2015; Simpson & Jenkins, 2015). General knowledge of the tool, such as its definition, implementation, use, and impact in the managerial sector, is still deficient (Simpson & Jenkins, 2015; Whittaker, 2015; L. Duffield, personal communication, June 2020). Lastly, the characteristics of the corporations and the B-impact workers’ score, do not show a strong relationship that can be concluded as significant. This could be since the

B-corp certificate is formulated in such a way that it is neutral to different types of corporations (Lacmanovic & Milec, 2018). The certificate has rigorous instances which do not depend on the company's characteristics such as industry, location, company size nor annual revenue (Lacmanovic & Milec, 2018). Rather, it depends on aspects such as the work environment, the way those employees are being involved in the company, how they are compensated, and their possibilities to grow inside the corporation (Cao, Gehman & Grimes, 2017; Lacmanovic & Milec, 2018).

The relationship between the use of gamification and the B-impact score on workers resulted to be not powerful enough to mean something statistically, even though the means of the B-impact scores were slightly higher for companies involved with gamified systems (4.2.2 Hypothesis 2). As Whittaker (2015) stated, there is no real connection between gamification use and corporate social responsibility, thus this result is not unexpected. However, it is slightly surprising that it has no statistical significance, due to the many theoretical connections that exist between the positive impacts of gamification to promote employee engagement, and the associations of being a socially responsible corporation (Whittaker, 2015; Schiele, 2018; Simpson & Jenkins, 2015).

## 5.2 Implications

From a managerial perspective, the impact of gamification in a corporation highly depends on the culture of the company, the transparency of the game, its design and objectives and many other aspects that are linked to the nature of the company (A. Muzi & L. Duffield, personal communication, May/June 2020; Whittaker, 2015; Ulliyan, 2015; Deterding, 2011). If the game is introduced in the right ways, with the right intentions, the outcomes of the gamified system can be perceived as positive (Hypothesis 4.2.3). First, it can be positive for the employee, in terms of being more engaged with its work. Second, for the firm positively conditioning productivity, because of having a happy workforce which is involved, curious and enthusiastic about their tasks (Maan, 2013; Ulliyan, 2015; Whittaker, 2015). However, more research and pilots are required to observe and assess the outcomes of such implementations in more detail. In addition, to try to understand the connections with different corporations' characteristics and the use of gamification. Further research is needed to comprehend the ethical aspects of the tool and its design, to align the nature of the firm with the objectives of the game.

## 5.3 Limitations

Questionnaires are commonly used as a method to collect data and researchers highly depend on the willingness of the people to respond to these questionnaires. This study had a low response rate even though actions to increase the response rate were taken such as translating the questionnaire and sending out a reminder of the questionnaire after a week from the first instance. It is valuable to acknowledge the possible reasons for this. From many email responses, it has been concluded that the main reason was the Covid-19 pandemic, businesses had other priorities to focus and put their resources on. The low response rate produces potential biases since the target population is not represented correctly in the sample. It was previously concluded that the results from the Kolmogorov-Smirnov normality test showed a deviated sample data from the normal distribution. Nevertheless, these assumptions have only a minor influence on the findings in this study since the tests acknowledged that the normal distribution was rejected. For example, alternatives to t-tests have been used to assess the different relationships. A solution could be to increase the sample size of the research. By doing so, the data would come closer to the limits and the behavior of the data would increase its normality. Due to the lack of available time, this could not be assessed.

# Chapter 6: Conclusions

The main objective of this research was to answer both research questions: *how does the implementation of enterprise gamification, to promote employee engagement, affect to B-Corp certified companies,* and *how is gamification perceived by B-Corp certified companies?,* To be able to formulate an answer, this research analyzed the different relationships between the various variables involved in the quantitative analysis such as the companies' characteristics, the use of gamification, the perception of usability of the tool, and the workers' B-impact score. In addition, qualitative analysis was used to complement the quantitative analysis on the perception of the use of gamified systems with insight from interviews. The conclusion that can be drawn out of this research is that enterprise gamification, as a tool to promote employee engagement, does not have a significant relation with B-corp companies, neither to the B-impact score on workers nor to the company's characteristics. On the other side, gamification is perceived to have a positive internal impact, however there is still a lot of controversy in relation to the ethical aspects of the systems. Furthermore, B-corp companies which have the system in place perceive the system more positively than companies that do not have gamified elements in place. The key message that can be formulated out of this research is that gamification could positively impact B-corp companies internally since these corporations' culture is already promoting positive impact. More specifically, the impacts of gamification on employees largely depends on the design of the system. This design is guided by

the goals, objectives, and purposes that the company sets. Since B-corp companies are built upon the principles of positive social impact, gamification systems will also seek positive impacts as outcomes of their implementation. It can be concluded that gamification is a potential system which B-corp certified companies could consider implementing to engage employees as an alternative to traditional ways, when focusing mainly on the employee wellbeing.

## Acknowledgements

I would like to thank my supervisor, my thesis group, dad, and sister for their help and support through the whole process at a distance. A special thanks to my mom for being by my side in every step of the way, ready to help me out with anything. In addition, I would also like to thank the B-Corporations which helped me carry out this research, specially Eat Well Global, Pulperia Quilapán, Xocial, MetroPallets, Clean Technology Partners and Code for Australia for your words. Lastly, I would like to give a shout-out to Elsa and John B for their statistical knowledge.

## References

Ašeriškis, D., & Damaševičius, R. (2014, March). Gamification of a project management system. In *Proc. of Int. Conference on Advances in Computer-Human Interactions ACHI2014* (pp. 200-207).

Badibanga, J. (2019). *Leadership Skills, Promoting Flow and Generating Profit: A Study of Millennial Managers Through Gamification* [Doctoral Dissertation, University of North Florida]. University of North Florida Digital Commons.

Baumgartner, R. J. (2014). Managing corporate sustainability and CSR: A conceptual framework combining values, strategies and instruments contributing to sustainable development. *Corporate Social Responsibility and Environmental Management*, *21*(5), 258-271.

Brooke, J. (1996). SUS-A quick and dirty usability scale. *Usability evaluation in industry*, *189*(194), 4-7.

Bučiūnienė, I., & Kazlauskaitė, R. (2012). The linkage between HRM, CSR and performance outcomes. *Baltic Journal of Management*, 7(1), 5-24. https://doi.org/10.1108/17465261211195856

Cao, K., Gehman, J., & Grimes, M. G. (2017). Standing out and fitting in: Charting the emergence of Certified B Corporations by industry and region. *Hybrid ventures: Perspectives and approaches to blended value entrepreneurship. Advances in Entrepreneurship, Firm Emergence and Growth*, *19*, 1-38.

Carroll, A. B. (1999). Corporate social responsibility: Evolution of a definitional construct. *Business & society*, *38*(3), 268-295.

Cassen, R. H. (1987). Our Common Future: Report of the World Commission on Environment and Development, International Affairs, 64(1). Oxford, New York: Oxford University Press.

Clark, V. L. P., & Creswell, J. W. (2008). Choosing a Mixed Methods Design. In *The mixed methods reader* (pp. 53-106).

Crane, A., & Glozer, S. (2016). Researching corporate social responsibility communication: Themes, opportunities, and challenges. *Journal of management studies*, *53*(7), 1223-1252.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness. *Proceedings of the 15th International Academic MindTrek Conference on Envisioning Future Media Environments - MindTrek 11*. doi: 10.1145/2181037.2181040

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1-4. doi:10.11648/j.ajtas.20160501.11

European Commission, employment, and social affairs, (2001). Green Paper. *Promoting a European framework for corporate social responsibility.* Brussels, Com(2001)366.

Garavan, T. N., & McGuire, D. (2010). Human resource development and society: Human resource development's role in embedding corporate social responsibility, sustainability, and ethics in organizations. *Advances in Developing Human Resources*, *12*(5), 487-507.

Garriga, E., & Melé, D. (2004). Corporate social responsibility theories: Mapping the territory. *Journal of Business Ethics*, *53*, 51-71. https://doi.org/10.1023/B:BUSI.0000039399.90587.34

Gallup. (2019, May 14). *State of the Global Workplace* (Rep.). Retrieved June 30, 2020, from GALLUP PRESS website: https://www.gallup.com/workplace/257552/state-global-workplace-2017.aspx?utm_source=nurture&utm_medium=email&utm_campaign=LegacyNurture_NewsletterSubscription_SOTGWConfirmation&utm_content=DownloadPDF_CTA_1&elqTrackId=7b5dd935b1bc40e59772d03d77a343dd&elq=b162f7e10cdf4514871db8a8f6133c62&elqaid=1622&elqat=1&elqCampaignId=

Greasley, P. (2007). *Quantitative data analysis using SPSS: An introduction for health & social science*. McGraw-Hill Education (UK).

Greuter, S., Walz, S., & Raftopoulos, M. (2015, May). *How enterprises play: Towards a taxonomy for enterprise gamification* [Conference Paper]. Authors & Digital Games Research Association DiGRA: Diversity of play: Games – Culture - Identities.

Herzig, P., Ameling, M., & Schill, A. (2012). A generic platform for enterprise gamification. In *2012 Joint Working IEEE/IFIP Conference on Software Architecture and European Conference on Software Architecture* (pp. 219-223).

International Business Machine Corporation (n.d.). *Reliability Analysis* [PDF File]. Retrieved from https://www.ibm.com/support/knowledgecenter/en/SSLVMB_23.0.0/spss/base/idh_reli.html

Korn, O., & Schmidt, A. (2015). Gamification of business processes: Re-designing work in production and service industry. *Procedia Manufacturing*, *3*, 3424-3431.

Lacmanovic, S., & Milec, D. (2018). The Relevance and Distribution of Certified B Corporations in the European Union Economy. *Economic and Social Development: Book of Proceedings*, 337-346.

Lo, Y. Y. (2019). *Creating a Sustainable Campus through Digitalization: Exploring Workplace Practices to Increase Employee Engagement.* (Dissertation, KHT Royal Institute of Technology, Stockholm). Retrieved from http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-249717</div

Maltseva, K., Fieseler, C., & Trittin-Ulbrich, H. (2019). The challenges of gamifying CSR communication. *Corporate communications: An international journal*, 24(1), 44-62. https://doi.org/20.1108/CCIJ-09-2018-0092

Mirvis, P. (2012). Employee Engagement and CSR: Transactional, Relational, and Developmental Approaches. *California Management Review, 54*(4), 93-117. doi:10.1525/cmr.2012.54.4.93

Moghaddam, A. (2006). Coding issues in grounded theory. *Issues in educational research*, *16*(1), 52-66. Retrieved from http://iier.org.au/iier16/moghaddam.html

Morsing, M., & Schultz, M. (2006). Corporate social responsibility communication: stakeholder information, response, and involvement strategies. *Business ethics: A European review*, *15*(4), 323-338.

Nordby, A., Øygardslia, K., Sverdrup, U., & Sverdrup, H. (2016). The art of gamification; Teaching sustainability and system thinking by pervasive game development. *Electronic Journal of E-Learning*, *14*(3), 152-168.

Oracle: Engagement Cloud. (2018). *Sales Performance Management* [PDF File]. Retrieved from https://www.oracle.com/a/ocom/docs/sales-performance-management-spm-ds.pdf

Porter, M. E., & Kramer, M. R. (2006). The link between competitive advantage and corporate social responsibility. *Harvard business review*, *84*(12), 78-92.

Raftopoulos, M. (2016). *How organizations play: creating stakeholder value with enterprise gamification* (Doctoral Dissertation, RMIT University). RMIT University Research Repository.

Rauch, M. (2013). Best practices for using enterprise gamification to engage employees and customers. In *International Conference on Human-Computer Interaction* (pp. 276-283).

Robert, K. W., Parris, T. M., & Leiserowitz, A. A. (2005). What is sustainable development? Goals, indicators, values, and practice. *Environment: science and policy for sustainable development*, *47*(3), 8-21.

Robson, K., Plangger, K., Kietzmann, J. H., McCarthy, I., & Pitt, L. (2016). Game on: Engaging customers and employees through gamification. *Business horizons*, *59*(1), 29-36.

Robson, K., Plangger, K., Kietzmann, J. H., McCarthy, I., & Pitt, L. (2015). Is it all a game? Understanding the principles of gamification. *Business Horizons*, *58*(4), 411-420.

Rogers, E. M. (2010). *Diffusion of innovations*. Simon and Schuster.

Rowley, J. (2012). Conducting research interviews. *Management Research Review, 35*(3/4), 260-271. doi:10.1108/01409171211210154

Ruhi, U. (2015). Level up your strategy: Towards a descriptive framework for meaningful enterprise gamification. *Technology Innovation Management Review*, *5*(8).

Schiele, K. (2018). Utilizing Gamification to Promote Sustainable Practices. In S., Dhiman (Ed.). *Handbook of Engaged Sustainability* (427–444).

Schwartz, M. S., & Carroll, A. B. (2003). Corporate social responsibility: A three-domain approach. *Business ethics quarterly*, *13*(4), 503-530.

Shahri A., Hosseini M., Phalp K., Taylor J., Ali R. (2014). Towards a Code of Ethics for Gamification at Enterprise. In: Frank U., Loucopoulos P., Pastor Ó., Petrounias I. (Eds) The Practice of Enterprise Modeling (235-245). PoEM 2014.

Shields, J. F., & Shelleman, J. M. (2017). A Method to Launch Sustainability Reporting in SMEs: The B Corp Impact Assessment Framework. *Journal of Strategic Innovation and Sustainability, 12*(2). doi:10.33423/jsis.v12i2.798

Simpson, P., & Jenkins, P. (2015). Gamification and Human Resources: an overview. *Brighton: Brighton Business School*.

Stanculescu, L. C., Bozzon, A., Sips, R. J., & Houben, G. J. (2016, February). Work and play: An experiment in enterprise gamification. In *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (pp. 346-358).

Trittin, H., Fieseler, C., & Maltseva, K. (2019). The Serious and the Mundane: Reflections on Gamified CSR Communication. *Journal of Management Inquiry*, *28*(2), 141-144.

Ulliyan, W. M. (2015). *Incorporating Gamification into Performance management to Drive Employee's Engagement Case Study Mercy Corp* (Master's Thesis, The Islamic University). Palestine Polytechnic University Library.

Whittaker, C. J. (2015). *The Gamification of Corporate Responsibility* (Doctoral dissertation, University of Southern California).

Wilburn, K. and Wilburn, R. (2015), "Evaluating CSR accomplishments of founding certified B Corps", *Journal of Global Responsibility*, Vol. 6 No. 2, pp. 262-280. https://doi.org/10.1108/JGR-07-2015-0010

Xocial. (n.d.). *Do better with loop: building healthier zero-waste communities.* Retrieved from https://app.xocial.com/campaign/HtwRDnSyyxMsevpHv/challenges

Zichermann, G., & Cunningham, C. (2011). *Gamification by design: Implementing game mechanics in web and mobile apps*. Retrieved from https://ebookcentral.proquest.com

# Appendix

**Appendix 1:** Questionnaire

Section 2

Q6. Does the company use gamification elements as a tool to engage with employees?

- Yes
- No

Q7. If yes, how long has there been gamified elements in place?

- <1 year
- 1-3 years
- 3-5 years
- 5-10 years
- 10-20 years
- 20-30 years
- >30 years

Q8. Which are the key game elements used to engage employees in your company?

- Achievements: badges/trophies
- Challenges & missions
- Experiences
- Leaderboards
- Narrative
- Points
- Progression: levels
- Rewards
- Social: friends/chat/connect
- Status, success & recognition
- Other

Q9. Which are the main purposes for the use of gamification regarding employee engagement?

- Benefits & compensations
- Communication
- Community building
- Corporate culture
- Education
- Entertainment
- Health & safety
- Innovation
- Ownership
- Problem solving
- Recruitment
- Retaining
- Staff morale & motivation
- Staff productivity
- Training & skill development
- Other

Section 3

Q11. Please indicate which are the main perceived barriers for the implementation of gamified elements:

- Adoption of the platform
- Budget constraints
- Data integrity issues
- Development of team resources

Game elements / game design
Gamification platform restrictions
Limited reporting capabilities
Not knowing the target audience
On time delivery
Project management
Scalability issues
Technological limitations
Other

Q12. Please indicate which are key enablers for a successful implementation of gamified elements

Agile development
Design aspects
Measurements
Project management
Target audience
Teamwork
Technology
Other

Q13. Please indicate from (1) disagree strongly to (5) agree strongly which most closely corresponds with how you perceive gamification.

*Perceived Usefulness:*
I think it enables employees to accomplish the purpose of the task more quickly.
I think it enables employees to fulfill the purpose of the task more effectively
I think it enables employees to satisfy the purpose of the task easier.
*Perceived ease of use:*
I think it is easy for employees to become skillful at gamified tasks.
I think it is easy for employees to understand the tasks with gamified elements.
I think it is easy for employees to complete a task with gamified elements.
*Attitude:*
I think that employees feel good about completing a task with gamified elements.
I think that employees like participating in tasks with gamified elements.
I think that employees find the use of gamified elements to be a wise thing to do.
*Behavioral intentions to play an online game:*
I think it is worth having gamified elements in serious tasks to engage employees
I think that gamified elements will be frequently used in the future.

**Appendix 2:** Reliability: Item-Total Statistics and Scale Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| Item 1 | 34,29 | 47,593 | ,777 | ,805 | ,925 |
| Item 2 | 34,36 | 45,773 | ,850 | ,826 | ,922 |
| Item 3 | 34,26 | 46,410 | ,788 | ,783 | ,925 |
| Item 4 | 34,12 | 49,893 | ,596 | ,646 | ,932 |
| Item 5 | 34,23 | 49,655 | ,608 | ,536 | ,932 |
| Item 6 | 34,20 | 49,607 | ,609 | ,614 | ,932 |
| Item 7 | 33,91 | 47,130 | ,773 | ,668 | ,925 |
| Item 8 | 33,95 | 47,029 | ,723 | ,676 | ,927 |
| Item 9 | 34,45 | 48,621 | ,642 | ,614 | ,931 |
| Item 10 | 34,18 | 45,997 | ,800 | ,687 | ,924 |
| Item 11 | 34,26 | 45,394 | ,769 | ,673 | ,926 |

*Table 4.1: Item-Total Statistics*

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 37.62 | 57.162 | 7.561 | 11 |

*Table 4.2: Scale Statistics*

**Appendix 3:** Perceived Usability of Enterprise Gamification in B-Corp certified companies, based on (1) perceived usefulness, (2) perceived ease of use, (3) perceived attitude, and (4) perceived behavioral intention.

Figure 1: Perceived Usefulness

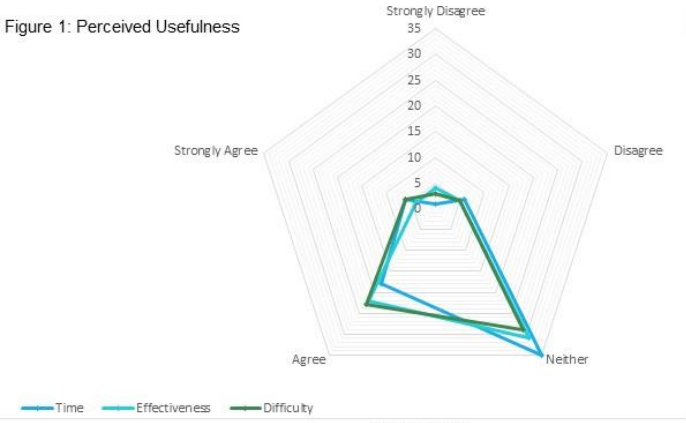



Figure 2: Perceived Ease of Use

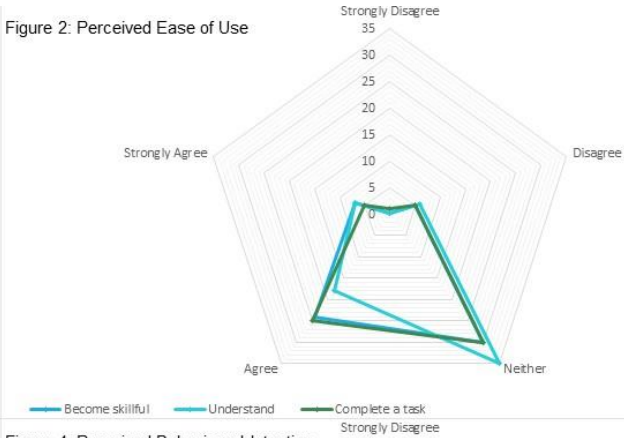



Figure 3: Perceived Attitude

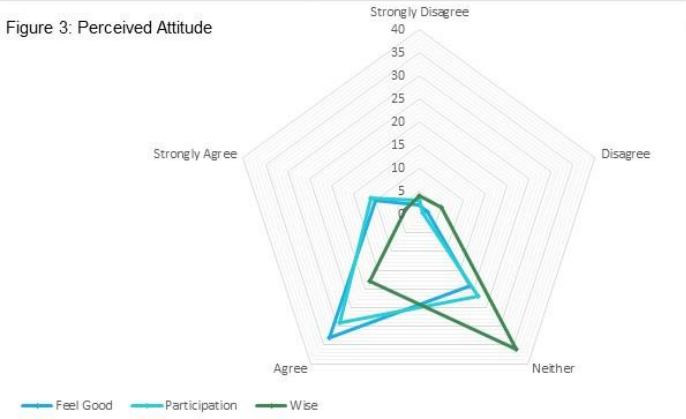
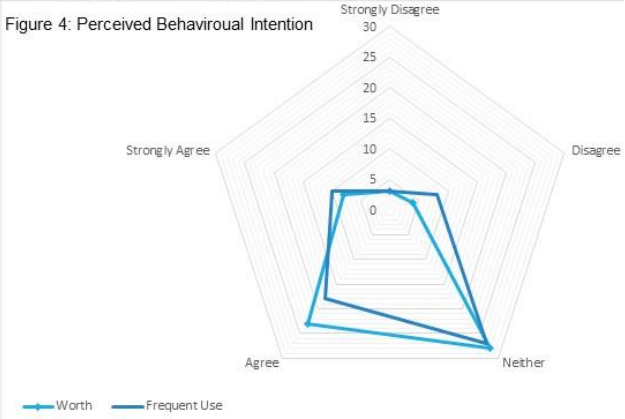



Figure 4: Perceived Behaviroual Intention




**Appendix 4:** B-Impact Score Assumptions of independent errors, collinearity, and standard residuals.

Model Summary[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | ,285[a] | ,081 | ,021 | 5,50644 | 1,981 |

a. Predictors: (Constant), Annual Revenue, Location, Industry, Company
b. Dependent Variable: B - Impact Score on Workers

Coefficients[a]

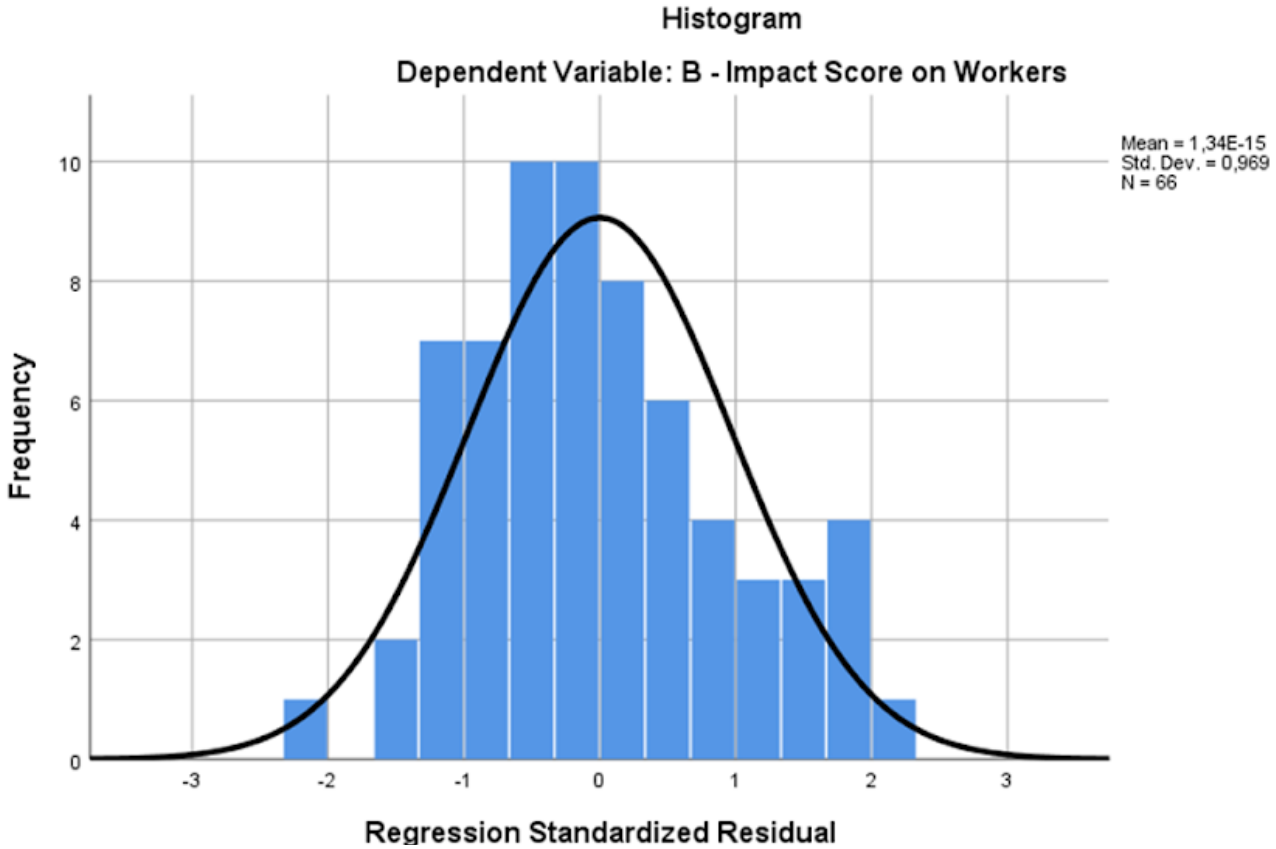
| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | 27,597 | 2,751 | | 10,032 | ,000 | | |
| Company Size | ,798 | ,522 | ,269 | 1,528 | ,132 | ,488 | 2,051 |
| Location | -,422 | ,389 | -,133 | -1,084 | ,283 | ,999 | 1,001 |
| Industry | -,174 | ,109 | -,198 | -1,592 | ,117 | ,969 | 1,032 |
| Annual Revenue | -,649 | ,543 | -,207 | -1,194 | ,237 | ,499 | 2,005 |

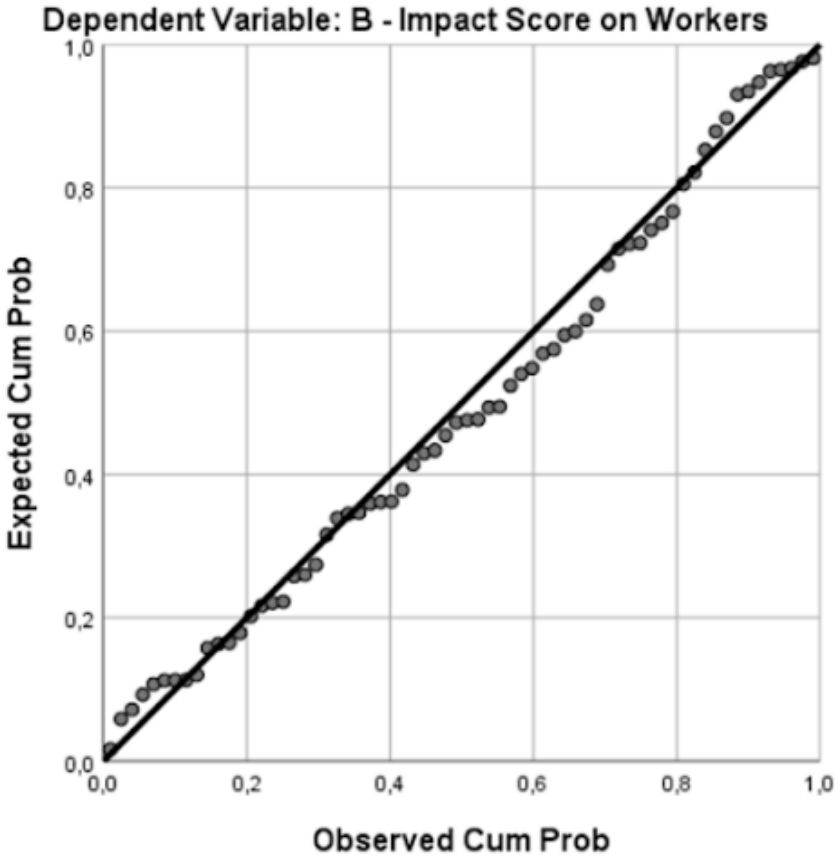
a. Dependent Variable: B - Impact Score on Workers

Residuals Statistics[a]

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | 20,7926 | 28,2790 | 24,1076 | 1,58704 | 66 |
| Residual | -11,78878 | 11,42482 | ,00000 | 5,33432 | 66 |
| Std. Predicted Value | -2,089 | 2,628 | ,000 | 1,000 | 66 |
| Std. Residual | -2,141 | 2,075 | ,000 | ,969 | 66 |

a. Dependent Variable: B - Impact Score on Workers


Histogram
Dependent Variable: B - Impact Score on Workers
Mean = 1,34E-15
Std. Dev. = 0,969
N = 66
Frequency
10
8
6
4
2
0
-3
-2
-1
0
1
2
3
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: B - Impact Score on Workers
Expected Cum Prob
1,0
0,8
0,6
0,4
0,2
0,0
0,0
0,2
0,4
0,6
0,8
1,0
Observed Cum Prob

**Appendix 5:** Overall Usability Score Assumptions of independent errors, collinearity, and standard residuals

Model Summary[b]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | ,202[a] | ,041 | -,022 | 17,276 | 1,759 |

a. Predictors: (Constant), Annual Revenue, Location, Industry, Company Size.
b. Dependent Variable: Overall usability score

Coefficients[a]

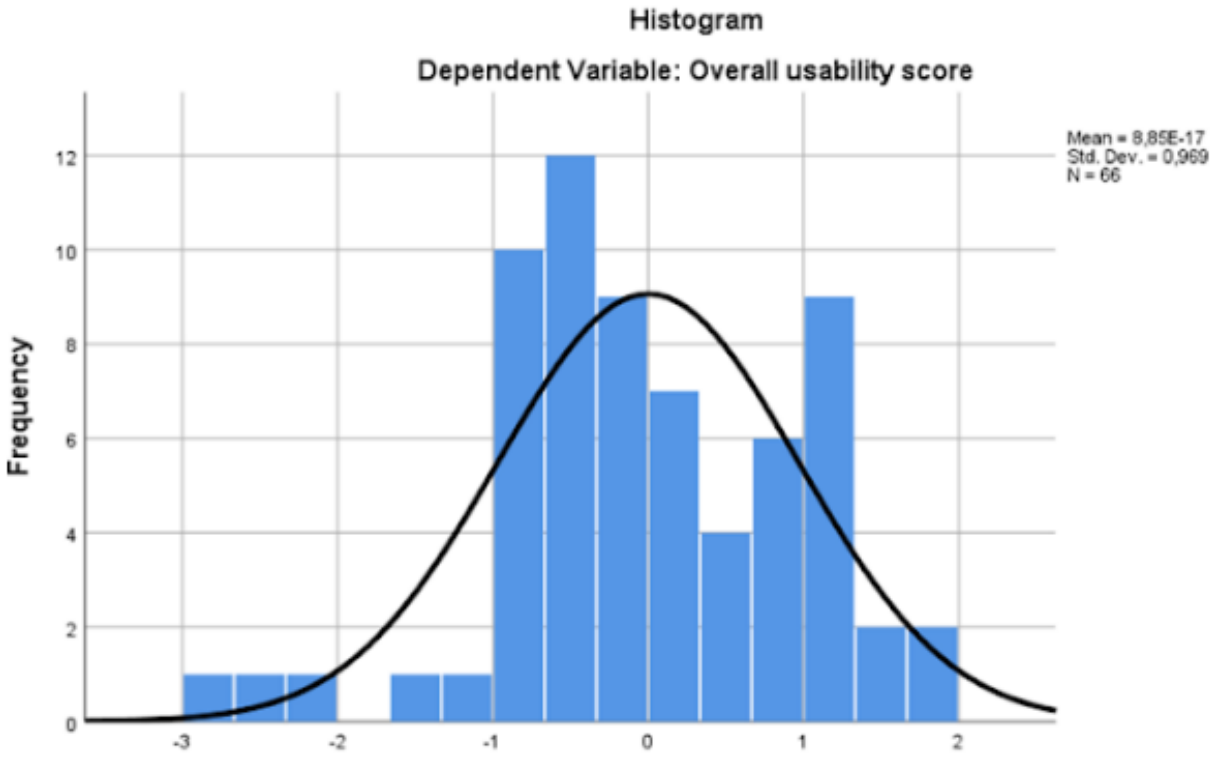
| | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | 59,699 | 8,631 | | 6,917 | ,000 | | |
| Company Size | 2,188 | 1,638 | ,240 | 1,336 | ,187 | ,488 | 2,051 |
| Location | -,074 | 1,221 | -,008 | -,061 | ,952 | ,999 | 1,001 |
| Industry | ,169 | ,342 | ,063 | ,494 | ,623 | ,969 | 1,032 |
| Annual Revenue | -2,325 | 1,704 | -,242 | -1,364 | ,178 | ,499 | 2,005 |

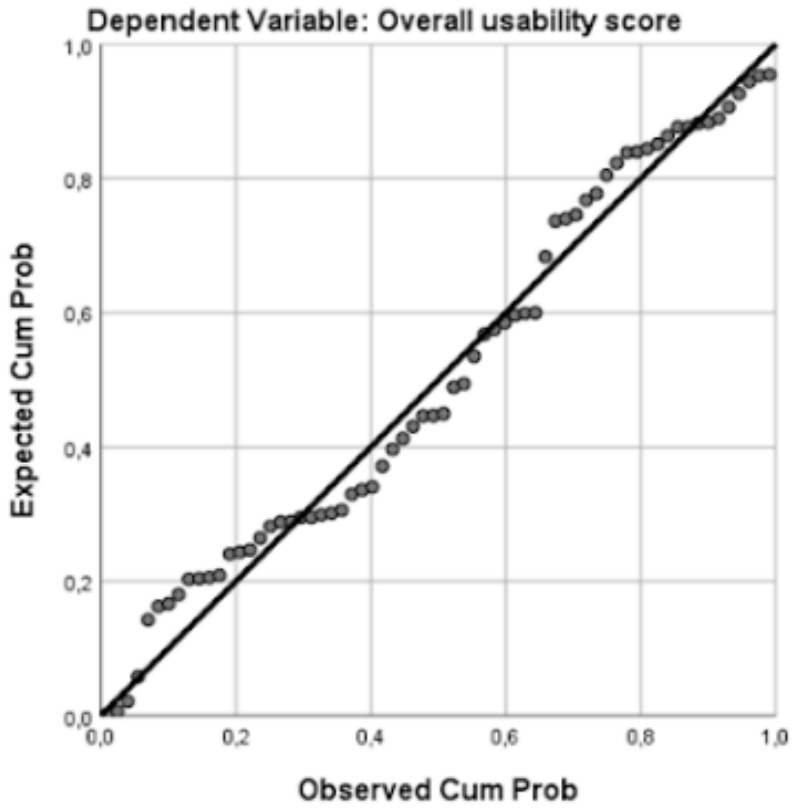
a. Dependent Variable: Overall usability score

Residuals Statistics[a]

| | Minimum | Maximum | Mean | Std. Deviation | N |
|---|---|---|---|---|---|
| Predicted Value | 54,97 | 69,02 | 60,55 | 3,459 | 66 |
| Residual | -47,973 | 29,164 | ,000 | 16,736 | 66 |
| Std. Predicted Value | -1,611 | 2,450 | ,000 | 1,000 | 66 |
| Std. Residual | -2,777 | 1,688 | ,000 | ,969 | 66 |

a. Dependent Variable: Overall usability score




**Appendix 6:** Categories, Codes and Participants' Quotes

| Categories | Codes | Quotes |
|---|---|---|
| Gamification Definition | | "A tool for in the workplace, involving things like incentives, contests and competition to achieve goals, and of course digital and fun."<br>"Something […] used […] to make sure people learned how to use something with games. [something] engaging for the people instead of just policies […], something more engaging and fun to draw interest in it." |
| Gamification Perception | Important Aspects of Gamification | "The most important piece of gamification is having rewards."<br>"A very important piece is the rewards, but even further intrinsic rewards instead of extrinsic rewards, [...] the top three players can donate to their favorite charity on their name."<br>"Strategy around rewards is absolutely critical, and the next one that we found was having what we call a social champion. […] having those people that are the ones that are not pushing people to play but they are the ones that educate, that are maybe more aware of what gamification is, essentially lead by example."<br>"Number one thing is rewards, and then, also really leveraging the customization aspect of it. You can be creative with that, the more creative and aligned a company is with what the company stands for […] helps. [...] Generic campaigns don't work as well; customization has proven to be very valuable."<br>"It is very important to think of one, personal gratification and group gratification [..] that if we reach, we can all have as a gift, a strength, something better."<br>"It is very important for them to be aware of how the thing works, the design, to collaborate, the opportunity to be reflective and give feedback about the experience."<br>"[…] but logically the objective that you put to your game is going to be what defines, what is the DNA of the company. You have to define what you want to sustain the game." |
| | Ethical Considerations | "It is still a brand new concept, [..] people think that competition contradicts the do good part of it.[...] People have to realize that we are simply leveraging on the natural human tendency to compete |

| | | |
|---|---|---|
| | | to condition positive behavior, whether it is for the environment, for social issues or whatever."<br>"It can be really manipulative. […] Behaviors that can be implicitly or assumed to be okay or encouraged by the designer of the game might be different behavior cultural norms of the real world, it is quite an unclear area."<br>"There is a lot of emphasis placed on ethics, and ethical design. Any research that you see that has an impact on people is an area that people take in seriously. It's quite an emerging field the ethical considerations of gamification."<br>"Ultimately, if there is a chance that your workplace needs different ways of motivating your workforce, I prefer an organization not change that stuff. Gamification is great but certainly in the context of b-corp, examples of good practices and highly considered a world of welfare, it is our job to see gamification and its adoption as a stance now."<br>"In our particular case we bet on empowering each of the people. I tell you that this is a bit tricky because it turns out that when you empower people, inevitable, you also benefit the company. When your work teams begin to be more professional in what they do, because they feel more secure in themselves, or they gain achievements, they feel more safety, and the company inevitably improves. […] Therefore, it goes hand in hand with an improvement in your productivity." |
| | Positive Aspects | "[…] it can surely be positive if used in the right way and in the right context."<br>" […] in theory it can be a really positive tool to motivate people."<br>"I think that what can be really good is that it is a training, […] it is a way of passing information."<br>"[…] in the conventional format, the only tool you have left is that of economic stimulus. So, it is very easy to find in organizations people who say they want to improve but, they are comfortable were they are. Then they do not bring out the best in themselves. However, if you propose a game to them, playing almost without realizing it, they will evolve. One day when they look back, they |

| | | |
|---|---|---|
| | | realize how much they evolved, but they didn't even realize that they got there by playing."<br>"I would have said before that it is useful to change behavior but now I think it could be implemented to help the workforce to better manage their workload, better utilize the engineers, and identify the skills of everybody."<br>"[…] there are definitely opportunities for benefits and improved outcomes, making things easier for the worker."<br>"The only time we would involve it would be for personal development of the workforce, but it wouldn't be used for business outcomes. |
| | Negative Aspects | "[…] workforce is too competitive and are undermining each other."<br>"If I wanted to focus and don't want to have an ethical view, I don't care, and I only want to improve my production, I could, but believe me, I'm going to hit a wall very soon because [employees] would find out and won't want to play anymore."<br>"Overall, I probably feel very negative and Courtois on gamification in the workplace. [..] The stories that are most famous, are companies that are associated with negative experiences for workers."<br>"There is a lot of complexity when you try to bring gamification concepts in the workplace, it can work I guess amplifying the differences between employer and employees. You might be making a big jump between a virtual reward or money." |