MILLENNIAL PERCEPTION OF GAMIFICATION AS A FORM OF ENGAGEMENT IN THE WORKPLACE

Daniel Cohen

International Business
Bachelor's Thesis
Supervisor: Dr. Fodness, Dale
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ABSTRACT OF
BACHELOR'S THESIS

Author:
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Objectives

The main objectives of this study were to determine whether millennials prefer gamification over traditional approaches in the workplace and if millennials perceive gamification in the workplace as engaging.

Summary

Using Perryer, Clestine, Scott-Ladd, & Leighton (2016) findings outlined in the literature review a survey was built around this with the aim to answer the research questions.

Conclusions

After educating millennials about gamification, the survey respondents did prefer the gamified approach over traditional approaches. Moreover, the survey results showed that millennials did perceive gamification as engaging. Specifically, organizational goals and challenging tasks in a gamified setting.

Key words: Gamification, Engagement, Millennial,

Language: English

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1. INTRODUCTION

A common problem facing managers in today's workplace is how best to engage millennial employees (born 1980-1997). Now that millennials, otherwise known as the Y generation or Yers, are entering the workforce it is more important than ever to map out and recognize the traits and attitudes they have towards work and the workplace. There are many prevailing engagement theories and practices but they are not necessarily applicable in today's world where millennials might be managing employees associated with previous cohorts such as generation X or even Baby Boomers; it is not a given that the older generations readily understand the right tools and methods they could use to connect with millennials. One solution is gamifying work. Gamification, referring to adding game-like features to non-game contexts such as human resources or marketing (Deterding, S., Khaled, R., et al., 2011), is currently relevant as new technologies and fast pace of life have shortened both transitions to new challenges and the attention span of many employees, which runs the risk of translating into a relative decrease in productivity and retention and loss of talent. A way to combat this cost is to appeal to what many (millennial) people enjoy: games. The need to combat this challenge is the basis for this research. Although gamification has been researched for some time now (Chen & Michael, 2005; McGonigal, 2010; Schell, 2010; Zichermann, 2010; Djaouti, et al., 2011; Hamari et al., 2014; Fitz-Walter, 2015; Perryer et al., 2016), this thesis aims to go deeper and focus on the possible preferences of approaches towards engagement and to explore whether gamification is perceived as engaging by millennial employees in Finland. Thus, the research questions are as follows:

1. Do millennial employees prefer gamification over traditional approaches in the workplace?
2. Do millennial employees perceive gamification in the workplace as engaging?

In order to help form a common understanding of the research questions and context, key terms used throughout the research are briefly defined below:

Gamification

Gamification is defined as the use of game design elements in non-game contexts (Deterding, S., Khaled, R., et al., 2011) Game design elements refer both to the

mechanics and the design of a game. It can include gameful thinking, i.e. the thought process when making a game (Hamari, 2013)

Gartner specifies the goal of gamification by defining it as “the use of game mechanics and experience design to digitally engage and motivate people to achieve their goals.” (Burke, 2014b). For example, the company Bunchball uses a gamification platform called *Nitro* that implements gamification elements and design into existing systems of another company. It allows the company that buys the solution to create and measure the challenges it creates for the employees, to assign groups based on different criteria and to gain insight into the employees’ motivations through reports and analytics – all in order to increase employee engagement (Bunchball, 2017b).

Employee Engagement

Employee engagement is considered successful when employees are “emotionally attached to their organization and highly involved in their job with a great enthusiasm for the success of their employer, going [an] extra mile beyond the employment contractual agreement.” (Markos & Sridevi, 2010, p. 88-89). The elements include job satisfaction, employee commitment and organizational citizenship behavior, meaning the voluntary commitment in the organization (Markos & Sridevi, 2010).

Millennial

According to the literature, those born approximately between 1980 and 1997 are millennials.

The structure of this thesis is as follows. The research starts with a literature review in order to provide a look at how gamification came about, historical challenges and the current consensus about it. At the end of the literature review, a conceptual framework is constructed connecting the literature with the research questions. Next, the thesis introduces and explains the methodology, consisting of a survey that was conducted for millennials in Finland. Then, the results and findings are presented and analyzed using appropriate statistical methods. Finally, summarizing the thesis, answering the research questions and reconnecting the conceptual framework to the research questions, a discussion and conclusion is presented. The discussion also includes considerations of the implications, limitations and needs for further research.

2. LITERATURE REVIEW

2.1. Thesis statement

Gamification, the application of digital game characteristics into non-gaming contexts, is currently highly hyped in media, education and business. The interest in the concept has increased as the millennial generation–many of whom grew up playing computer games–are a major part of the workforce today. While there is a growing body of studies available on gamification and elements attached to it from various perspectives, there is a need for further research on the role gamification plays in engaging employees. Integrating findings from gamification literature and motivation theory, Perryer et al. (2016) provide six perspectives into ways gamification could be beneficial to employee motivation in the 21st century workplace. Based on this study, a survey with a Likert Scale and open questions was compiled for this thesis. The survey will be applied to a sample of millennial employees to find out whether, and if so, then how, these views may apply to their engagement at work.

2.2. Introduction to the literature

This literature review is intended to bring the reader up to date on the current state of gamification in relation it to millennial employees. The key concepts relating to gamification will be outlined and analyzed. The concept of engagement is explained and discussed from specific points of view in order to provide for comparison. While there is a lot of overlap of various perspectives in the studies, the focus of this thesis is on research conducted on employees and human resources (HR). The six perspectives recommended by Perryer, et al. (2016) will be explained in detail in section 2.12.

2.3. Differentiating gamification from serious games

‘Serious games’ is a concept that occurred previous to that of ‘gamification’. It includes a full digital game with game features and elements but is used for educational purposes rather than for enjoyment or fun as the primary purpose (Djaouti et al., 2011; Chen & Michael, 2005). Currently, Gartner (a survey/research company) defines gamification as “the use of game mechanics and experience design to digitally engage and motivate people to achieve their goals” (Burke, 2014b). Accordingly, it takes some

specific elements in addition to ‘gameful thinking’ of games, and applies it to a non-game context.

2.4. Before the gamification trend

Being a fairly new trend, gamification, intends to add game-like features (such as enjoyability, progression, etc.) to non-game contexts in order to better engage employees. Wishing for positive outcomes, the idea of adding such game-like features has been applied in various contexts even before the current digital gaming trend (Malone, 1980; Palmer, 2012). One example includes the Scouts and their badge system. Though not a digital game per se, badges, include a “progression” feature, an important element of many digital games in today’s market. The purpose of the badges, with its “progression” features was to motivate the Scouts to work harder in order to achieve new ranks and badges (Palmer, 2012), and to feel a sense of achievement. The Scout organization believed that through hard work and a sense of achievement, Scouts would be engaged deeper in the organization’s activities (Zichermann & Linder, 2010).

Another example includes frequent flyer programs. The purpose of these programs is to retain customers through loyalty schemes by providing rewards for their purchases (Burgos, 2011). Although the Scouts and frequent flyer programs could now be identified with some elements like those in gamification, they, according to Burgos (2011), failed to make the activities more engaging partly because it was not enough to just implement game elements. Palmer (2012) points the importance of taking advantage of technologies such as real-time data analytics, mobility, cloud services and social media platform to enhance the effects of gamified processes or products (Palmer, 2012). An interesting difference between the two examples above is the intended audience of gamification: for the Scouts, it is the Scouts as ‘employees’ and for the frequent flyer programs it is the customers. This, among other differences, is discussed in the following sections.

2.5. The beginning

Nick Pelling introduced the word gamification in 2002 (Marczewski, 2013). However, it did not gain momentum until 2009 when an application called *Foursquare* was

released. The game-like elements of *Foursquare*: the points, badges and leaderboards, could be considered a basis for the future designs for gamification (Fitz-Walter, 2013). Despite its early success and the foundation it created, it has now decreased significantly in popularity and their CEO has admitted that there was an over-emphasis on gamification elements in 2013 (Kuo, 2013). This could be contributed to the fact that, at the time, theory and studies of the topic were minimal and, therefore, the design and implementation methods were rudimentary (Google Trends, 2017).

In 2010, as the word started to circulate about this new concept with possible business applications, companies such as Bunchball and Badgeville monetized their know-how in gamification (Bunchball, 2017; Badgeville, 2016; see also Zichermann & Linder, 2010; Schell; McGonigal, 2010). Moreover, Zichermann's (2010) book, *Games-Based Marketing*, allowed the academic community to get a grasp on the topic. Although the book focused on marketing and gamification, some key points in it can be identified in HR today. These include essential components of gamification such as status and levels which demonstrate success and new challenges, points, which allow to track progress, rules to prioritize the player, and demonstrability, which is the leaderboard (ibid.). A diverging point with some scholars comes with the effectiveness of competition through leaderboards (Harackiewicz & Sansone, 1991). Those with high-achievement motivation enjoyed the gamified application and benefited from the competitive setting, whereas those with low-achievement motivation reviewed the application poorly (Song et al., 2013). Zichermann and Linder (2010) argues that people enjoy competing against themselves when there are no contenders. In an HR setting, however, finding a setting that has no contenders can be difficult. Despite this, Zichermann reinforces his points by emphasizing positive leaderboards, which would encourage healthy competition such as names of participants in a weight-loss program and awarding them points for losing weight.

Zichermann and Linder (2010) also introduce Richard Bartle's player types. The four player types Bartle (1996) describes are 'achievers' who like to act on the world, i.e. earn points and status, 'socializers' who like to interact with other players, i.e. play in collaboration, 'explorers' who like interacting with the world, i.e. appreciate pleasure and fun, and 'killers' who like acting on other players, i.e. competing and winning at

the expense of others. Bartle's four player types becomes a hot topic for gamification scholars for a number of years. (Deterding, 2011b; Dixon, 2011).

2.6. Academic Clash

In 2011 clashing opinions became increasingly visible. The author and public speaker for gamification, Gabe Zichermann and a software architect Christopher Cunningham published a book, *Gamification by Design,* in 2011. They defined gamification as "the process of game-thinking and game mechanics to engage users and solve problems" (p. xiv). This early-stage definition can include serious games, a distinction from a current definition of gamification. Sebastian Deterding, despite coining an academic definition for gamification as "the use of game design elements in non-game contexts" (Deterding et al., 2011), dissects the Zichermann & Cunningham book critically (Deterding, 2011a; Deterding, 2011b): the definitions for gamification or lack thereof; engagement for blindness of sentiment and valence; and loyalty as in accusing them of plagiarism. Deterding (2011b) also criticized the foundation of Bartle's player types by arguing that the validity of the player types depends on the context and that there is no empirical research behind the model (see also Dixon, 2011).

After a response from Zichermann, Deterding defended his critical review by shifting the focus from for and against gamification to "pro gamification, but against the specific rendition in *Gamification by Design*" (Deterding, 2011a). Deterding summarizes his arguments by claiming that Zichermann's "Gamification by Design" underplays existing research, "overplays importance of social status" and neglects complications it may bring. Deterding also critiques Zichermann's argument that incentives and social status are the "core psychology of what makes games compelling", rather than other engagement components such as achievement, competence, autonomy, trust, safety, and purpose (Deterding, 2011a). Finally, he raises the question: "[w]hy not inform readers about the complications and caveats involved?" – which can still, to some extent, be seen as central in today's gamification. This also serves as a point of shift in thinking about gamification away from plain game mechanics towards elements of design.

In addition to the above criticism towards gamification, the award-winning game designers Ian Bogost (2015) and Margaret Robertson (2010) criticized the concept of gamification for excluding important aspects of games. They were of the opinion that points and badges are not enough to represent the “core experience” and offered storytelling as a remedy (Robertson, 2010; Bogost, 2015). Bogost went as far as calling Zichermann’s version of gamification “exploitationware”. Some of the criticism and promotion are reflected in Gartner’s *Hype Cycle* in which gamification technology was added in the peak of inflated expectations section in 2011 (Zichermann, 2011). The expectations for gamification were high but results were lacking. Furthermore, Gartner (2011) predicted that by 2015, “more than 50 percent of organizations that manage innovation processes will gamify those processes”, which allowed gamifying companies to raise funding with less friction (Arrington, 2011).

Drawing upon Deterding, Khaled et al. (2011), Fitz-Walter (2011) researched gamified design possibilities and explored effects of game achievements on university students. Their results indicate that, although game elements such as achievements in a non-game context can be enjoyable, it may also cause undesirable effects such as cheating if clear rules and the right balance between usability and enjoyment are not found (Fitz-Walter, 2011). Moreover, they recognized that short term results were quite promising but longer lasting studies were needed.

2.7. Uncertainty

In 2012, gamification was entering the trough of disillusionment phase of the hype cycle (Burke, 2014a). Gartner (2012) predicted that 80% of gamified applications will fail by 2014. The organization expresses its concern with the challenges managers face with gamification as a lack of talent for game design. Despite the evident trough phase, believers such as Barry Kirk, the VP of Bunchball thought that even bad gamification would work to a certain point (Kirk, 2012). Moreover, the funding towards gamified solution companies continued (Red Herring, 2012). Furthermore, the popularity in the academic circles can be seen by the growing number of articles published on the topic (for a literature review on empirical studies up to then, see Hamari, Koivisto & Sarsa, 2014).

During this year, academics Huotari and Hamari (2012) questioned Deterding's definition for gamification. Referring to the need to include service sector companies, the two scholars redefined it as "a process of enhancing a service with affordances for gameful experiences in order to support user's overall value creation" (p. 20). In other words, they saw a need to think the game mechanics further to serve more meaningful (business) ends. Moreover, they argue that Deterding's definition does not consider value creation as it stands in service literature. In all, they provided a broader definition, not just game elements but rather gameful experience, which the elements alone do not necessarily provide (Huotari & Hamari, 2012). However, it should be noted that, since then, Deterding has shifted his focus from elements to gamefulness as well (Deterding, S., Dixon, D., et al., 2011).

Thom et. al (2012), were one of the first groups of researchers to study the effects of engagement if a point-based incentive, a gamified solution based on point-based incentive, was removed from an organization. Although the study resulted in negative effects in engagement, it was noted as a limitation that it was conducted in a single organization in one context and thus influenced by that organization's corporate culture. It was recognized that, as such, it may work differently in different contexts.

2.8. Growth in academic knowledge

In 2013 Hamari published the results of over a year-long exploratory experiment that gave a better overall understanding of some effects of badges on user retention in a utilitarian service. However, the results were two-sided. On the one hand, users who actively exposed themselves to badges and monitored others, showed increased use of the gamified product. On the other hand, the claim that gamified features would themselves lead to higher use of gamified product, could not be confirmed (Hamari, 2013). According to him, there was not detailed enough awareness of psychological theories in relation to gamification at the time of the above study. Therefore, it was uncertain whether the increased user activity was due to the badges or some other game mechanism. He acknowledges this and suggests further studies to focus on the link between game mechanics, psychological effects and hence behavioral changes. Furthermore, even if user activity would have risen due specifically to the badges game element, it is difficult to say whether the informants in the study had "gameful"

experiences as the newer definition of gamification suggests (Hamari, 2013). By the end of 2013, research has shown that gamification creates positive effects but is dependent on the context in which gamification takes place (Hamari, Koivisto & Sarsa 2014). Additionally, researchers Alberto Mora et al. (2015) summarize that the studies on gamification are highly theoretical, game design principles are widely implemented and that there is a strong need for further psychological studies.

Hamari and Koivisto's (2013) empirical study focused on the social factors, such as social influence, recognition and reciprocal benefits. They were able to show that social factors such as these influence attitudes directed at gamified services its use intentions. Finally, they were able to infer that "pointsification" can have a purpose if shared with a common community.

2.9. Narrowing down gamification studies

During the next three years, studies start to get more precise focusing on specific elements and effects of gamification.

Hamari and Koivisto (2014), for example, conducted a study on gamification measuring the concept of flow (Csikszentmihályi's 1991): flow as the optimal balance between a person's skill set and the challenge they are performing. Other closely related elements to gamification include examples such as clear goals, feedback, control and purpose. They found that in an exercise setting, using psychometric properties measured on a Dispositional Flow Scale, components of flow measured in the study fit quite well into the current scale yet even better into their devised scale with higher thresholds (Hamari & Koivisto, 2014). The study is highly technical yet useful in its presentation of precise measurement methods and validation techniques for the gamification field.

Hamari and Koivisto (2014b) also researched demographic differences such as gender, age and time in perceived benefits (social, hedonic and utilitarian) from gamification in an exercise setting. They found that perceived enjoyment and usefulness diminish over time and that women value social benefits more than men, and the ease of use is negatively affected with age, which further validated earlier

studies on digital divide (Hamari & Koivisto, 2014 b; see also Iljsselsteijn et al., 2007; Morris & Venkatesh, 2000). Moreover, men do not perceive better utilitarian benefits, which goes against earlier research (Hamari & Koivisto, 2014; Venkatesh & Morris, 2000). The study should be critically evaluated since the survey data was self-reported which may suggest that only active users of the service were examined, a fact that may skew the data.

A closely related study by Hamari and Koivisto (2015) fills in some gaps for the lack of empirical evidence. They link several studies in which they look at the general overview why people use gamification services and by doing so, they found that the link between utilitarian benefits and use is mediated by the attitude towards use. Additionally, they conclude that hedonic benefits have a direct positive link with use of the service. Despite strongly associated with attitude, social factors have only a weak connection with intentions to continue use. The data, again, is self-reported and in an exercise setting which may suggest context- dependency of results (Hamari & Koivisto, 2015).

Hamari's (2015) empirical studies address the mechanic of badges as well. The two-year study found that badges resulted in more likely to post trade proposals, carry out transactions, comment on proposals and thus, actively use the service. Despite the lack of a reliable way to measure psychological effects of the study, he argues that there is a relationship between psychological affordances of the system and behavioral change, which is what they measured in relation to implementing gamified service (Hamari, 2015).

2.10. Millennials and gamification

A Gallup study between 2013 and 2014 shows that millennials in the US are the least engaged at work (under 30%) compared to older generations; Xers and Baby Boomers with a bit above 32% (Adkins, 2015). Increasing employee engagement is crucial as business units in the top quartile of employee engagement are 17% more productive, suffer 70% fewer safety incidents, experience 41% less absenteeism, have 10% better customer ratings and are 21% more profitable in relation to those in the bottom quartile (Bailey, 2016).

The author Claire Raines (2002) argues that for companies to succeed, they must succeed in managing millennial workers. She praises them as sociable, optimistic, talented, well-educated, collaborative, open-minded, influential and achievement-oriented. They have higher expectations and can share their thoughts much easier than earlier generations. Moreover, Holt et al. (2012) add to this list of traits of millennials with high self-esteem, self-centeredness, multitasking abilities, tech savvy and team orientation. Raines (2002) and Gilbert (2011) recognize that there are potential clashes and differences with other generations. For example, X-generations may view millennials as self-absorbed and Boomers not nearly as flexible as millennials. Gallup, however, mentions some shared work characteristics they have or should have among different generations. These include, for example, expectations and performance goals (Bailey, 2016). Furthermore, Gallup's study argues that managers may have a misconception about accountability and in fact, most millennials want to be held accountable for their work, thus engaging them better. Although millennials are viewed as social and in favor of altruistic rewards, Holt et al (2012) claim that they do not value these aspects any more than Generation X or Baby Boomers.

Although Holt et al (2012) did not speak of gamification, their argument for transformation leadership can suggest that gamification cannot work alone or replace effective management or leadership. However, parallels between their results and gamification aspects can be seen. They found that millennials seek challenges, want to connect, receive instant feedback and experience personal growth (p. 81-91). One must critically look at these results as the methodology included a convenience sample on the streets of Los Angeles. Stopping and answering questions during a work day may not be an ideal setting to think of deep questions.

The CEO of Venture Spirit, Buyse, argues that anonymity is important in the gamified process as it allows junior people to evaluate seniors without fear (Babej, 2015). Although, Raines (2002) views millennials as confident, the anonymity also allows for an easier transition in employee-manager relationships.

2.11. Motivation, engagement and gamification

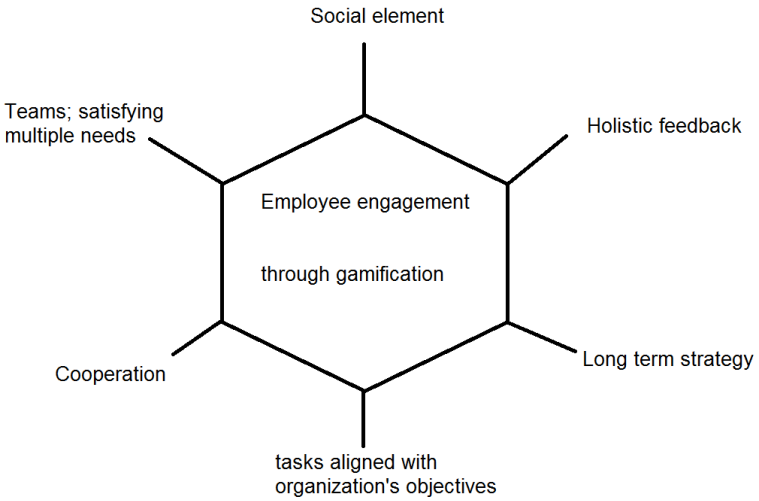
The theories for supporting motivational factors in gamification setting is somewhat lacking. For this reason, many companies and studies have hastily recommended or implemented gamified solutions without proper evidence on psychological factors or personality traits (Mekler et al., 2015). Moreover, many studies in the area are methodologically lacking. Where individual game elements should have been studied, multiple elements simultaneously were, thus skewing the results to not represent the correct effect on motivation or performance (Hamari, Koivisto, & Sarsa, 2014). Even those where individual elements were examined; the results show a discrepancy in the elements in relation to motivation. Despite this, there are some positive resulting studies in which motivation towards specific types of behavior is examined (Mavletova, 2015; Hsu, Chang, & Lee, 2013; Hamari & Koivisto, 2015). Furthermore, basic studies suggest that gamification has potential in a work environment (Perryer et al., 2016).

Many motivational theories closely related to engagement, make an important distinction. When gamifying a process or product one must differentiate between intrinsic and extrinsic motivation. Intrinsic implies that the act or task in question is inherently fun. Extrinsic implies that a task is performed only to get a wanted outcome (Ryan & Deci, 2000). When applied into gamification, employees can be awarded extrinsic benefits or satisfy inner desire with the help of game elements (Perryer et al., 2016). Intrinsic rewards tend to be more valued in a gamified setting (Stock, Oliveira & von Hippel, 2015). Moreover, Osterloh and Frey (2000) argue that extrinsic rewards can suppress the pre-existing intrinsic motivation.

2.12. Conceptual framework

The conceptual framework below is adapted from Perryer, Clestine, Scott-Ladd, and Leighton (2016) who provide six views into ways gamification could be beneficial to employee motivation in the 21st century workplace. Their findings are based on earlier studies, extensively discussed in this literature review. They argue that gamification elements that have a social element to it are more enjoyable and engaging than ‘single-player’ elements. The gamified application should satisfy multiple needs of employees for example through teams. In close relation to teams is cooperation which they consider better than emphasizing competition. Moreover, the tasks on the

gamified application should be in-line with the objectives of the organization. They make use of the users' knowledge and abilities and challenge cautiously. Furthermore, the strategies implemented should align with long term organizational goals as well as employees' long term personal goals. Finally, a holistic environment with continuous feedback is considered better than in-browser content (Perryer et al., 2016). This thesis will test whether these holds true in context.



3. METHODOLOGY

3.1. Research Approach and Design

The aim of the study was to answer the following research questions:

1. Do millennial employees prefer gamification over traditional approaches in the workplace?
2. Do millennial employees perceive gamification in the workplace as engaging?

Once the research questions are answered Perryer's et al (2016) findings are used to link the literature review to the research questions. The specific findings that focused on the research questions were:

- Gamification elements that encompass a social element are generally experienced by users as more enjoyable and engaging than 'single-player' elements.
- Gamified systems should align with the already existing tasks and objectives in the organization. They should have elements that stretch participants'

knowledge, skills and abilities but should avoid too high a learning curve that could lead to demotivation.
- Gamification that promotes cooperation may be more effective than that which emphasizes one-on-one competition.

The survey type was self-completed, web-based survey via Qualtrics website. The survey was done online since it is quicker, cheaper and easier to extract data. Moreover, it can improve response rate and completeness. Additionally, the survey was open for 8 days.

A Likert scale was used in most of the questions to measure the attitudes of participants. This ordinal scale measures the degree of agreement or disagreement. More specifically, a 5-point Likert scale, one being strong disagreement and 5 being strong agreement, was used. This allowed the participants to have a neutral stance either because they did not know or were uncertain. However, a weakness to this approach is, for example, an “agree” answer for one participant may not reflect the exact same attitude of an “agree” answer of another participant. Moreover, extremes are often avoided by participants.

3.2. Sample Selection and Data Collection

The study was based on a convenience sample. The survey was posted on two student-run Facebook pages. Bias may have occurred as those that actively wanted to participate, can, but may not represent the general population. Furthermore, assessing this bias is difficult, as it is unknown who decides to participate or not.

The study was aimed at millennials in Finland. More specifically, the geographic area was predominantly in the Helsinki and Mikkeli region. Moreover, the aim was to collect 50 responses. 61 responses were recorded.

3.3. Survey Instrument

The survey started with five preference questions relating to a task that is often considered when speaking of engagement. Moreover, the five tasks focused on engagement that can be linked to the research questions. Furthermore, the preference

questions gave a traditional approach to a task and a digital (gamified) approach to choose from. After answering the preference questions, a definition of gamification was provided and 16 attitude questions followed. Within the 16 attitude questions some specifically measured attitudes towards gamification and some that gave a better understanding of the respondent's thinking. For example, a question on gamification and its relation to competitiveness was presented. After that, another question followed asking about personal preferences to competition over co-operation. This was done to see if the task preferences coincided with their attitudes towards gamification according to its definition or if it changed. Finally, a maximum of seven questions, depending on the participants' answers, were included to extract demographic information and to see if that had any effect on the findings.

3.4. Data Analysis

The recorded responses from the survey were first filtered to exclude all 10 partial responses to get cohesive results. Then cross tabulations were calculated using Qualtrics data analysis. The cross tabulations were constructed with the research questions in mind. Moreover, the cross tabulations aimed at further validating or disproving the hypothesis, that is, Perryer's et al (2016) findings.

3.5. Reliability and Validity

The emphasis of the study was based on the validity rather than reliability of the results since the study was more exploratory than quantitative in nature. Hence, results may be difficult to replicate. More specifically, the face validity was considered sufficient. The face validity refers to the survey questions as being reasonable to obtain the necessary information.

4. RESULTS

This section presents the survey results divided into 3 subsections: Demographic, Task preference and Attitude. The tables allow for a better understanding of the overview of survey results.

4.1. *Demographic*

A total of 61 responses were collected and above 90 per cent were born between 1980 and 1997 (millennials). Other answer options were given to allow for a comprehensive comparison but due to the medium used for distributing the survey and thus, the small representative sample for the other options, comparison is not possible. However, this simplifies analysis presented in the findings section.

Table 1 Date of birth

Answer	# responses	%
Earlier than 1980	0	0
1980-1997	57	93 %
Later than 1997	4	7 %
Total	61	100 %

The table below shows that about three quarters of respondents are currently not working. However, more than 61 responses are shown since the question allowed selection of multiple answers. This was done since a respondent may be employed, for example, Full-time and Permanent or Full-time and Fixed term. The main distinction is to recognize those that are working in some form and those that are not, i.e. full-time students or unemployed. A challenge relating to analyzing these data is that it is difficult to investigate if a respondent clicked two contradictory answers, for example part-time and currently not working.

Table 2 Current employment, in survey as "my job"

Answer	# responses	%
Part-time	5	8 %
Full-time	6	10 %
Fixed term	6	10 %
Permanent	1	2 %
Freelance	1	2 %
I am currently not working	46	75 %
Total	65	107 %

4.2. *Task preferences*

In all five tasks, the traditional face-to-face approach, shown in bold, was preferred. On average, the traditional approach received 43 answers which translate to about 70 per cent. Task 1 focused on bonding experiences. Task 2 asked about two ways to receive assistance. Task 3, the least spread between answers, approached feedback from two directions. Task 4 related to teamwork and task 5 gave examples of ways to develop and advance one's career. Although all answers were leaning on the traditional side, it may not explain the full picture. It is worth recognizing that the task preference questions were presented to the respondent first. This will be addressed in the findings section. Additionally, the cultural background or environment, Finnish culture and Finland, may influence the decision-making of respondents. This was not considered in the survey.

Table 3 task preferences results

	Answer	**# responses**	**%**
Task 1	Having a friendly competition in a recreation job-related activity with the coworkers. The activity can include physical activity and a leaderboard.	**39**	**64 %**
	Participating in friendly job-related challenges on an online application individually and in teams. Challenges can include quizzes, achievements and leaderboards.	22	36 %
	Total	*61*	*100 %*
Task 2	Asking my superior or coworkers for guidance.	**48**	**79 %**
	Post a question on an internal digital forum for help.	13	21 %
	Total	*61*	*100 %*
Task 3	Asking for direct feedback from my superior or coworkers	**31**	**51 %**
	Asking for feedback through an online platform where team members and superior can give feedback anonymously.	30	49 %
	Total	*61*	*100 %*
Task 4	Discussing ideas face-to-face and working on-site with my team when completing a project.	**48**	**79 %**
	Discussing ideas and working flexibly via digital medium with my team when completing a project.	13	21 %
	Total	*61*	*100 %*
Task 5	Having an instructor-led training day(s)	**48**	**79 %**
	Completing web-based challenges and tasks	13	21 %
	Total	*61*	*100 %*

4.3. *Attitudes*

In all cases the majority chose the option favorable to gamification as shown in green. However, a minimum of 10 per cent and a maximum of about 30 per cent in each case were unsure about engagement benefits presented in the question. In the final question (see last section in table 4), there were a few less respondents since those that had experience with gamification in an organization they worked in and recognized its existence were excluded. This allowed a reduction for personal bias, for example if someone had a bad experience with gamification. Some gamification related questions were excluded from the table above, since they were more supportive questions, allowing for deeper examining of why respondents answered the way they did. This will be addressed in the findings section. A challenge relating to measuring attitudes was whether the right questions were chosen for the survey and the table above. Excluding relevant questions may skew the results.

Table 4 Gamification related attitude results

		Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Total
Gamification seems to provide enjoyable social interaction.	# responses	11	34	12	3	1	61
	%	18 %	56 %	20 %	5 %	2 %	100 %
Gamification seems to help complete objectives at hand.	# responses	8	37	13	3	0	61
	%	13,11 %	60,66 %	21,31 %	4,92 %	0 %	100 %
Gamification seems to hinder the work pace.	# responses	2	7	20	28	4	61
	%	3 %	11 %	33 %	46 %	7 %	100 %
Gamification seems to allow better means of feedback.	# responses	8	37	7	9	0	61
	%	13 %	61 %	11 %	15 %	0 %	100 %
Gamification seems to complicate teamwork.	# responses	2	11	10	33	5	61
	%	3 %	18 %	16 %	54 %	8 %	100 %
Gamification seems to allow people to better reach their personal goals.	# responses	5	29	22	5	0	61
	%	8 %	48 %	36 %	8 %	0 %	100 %
Gamification seems to challenge people's skills and abilities for a given task.	# responses	15	29	14	3	0	61
	%	25 %	48 %	23 %	5 %	0 %	100 %
Gamification seems to align personal goals with the organization's goals.	# responses	6	32	17	6	0	61
	%	10 %	52 %	28 %	10 %	0 %	100 %
Based on the gamification description would you prefer a gamified environment over traditional?	# responses	3	25	15	13	1	57
	%	5 %	44 %	26 %	23 %	2 %	100 %

5. FINDINGS

The following section will analyze at the results in terms of the research questions. The research questions were:

1. Do millennial employees prefer gamification over traditional approaches in the workplace?
2. Do millennial employees perceive gamification in the workplace as engaging?

To answer the first research question table 3 can explain the initial view of millennials towards gamified tasks. As mentioned earlier, in all cases the traditional approach to a task was preferred. Since the respondents were introduced to these tasks first and without any context, this can imply that they chose the task that was more familiar to them and that will not disappoint. It may suggest that their understanding of gamification was lacking.

Evidence to support the lack of familiarity towards gamification may be explained by the lack of experience. The chart below examines the relationship between preferences to the tasks and whether the respondent has worked in a gamified setting. Only a few have worked in an organization that uses gamified design, whereas, the majority has not (compare blue to green and yellow). Moreover, about a quarter of respondents are unsure whether they have worked in an organization that uses gamified design. Conversely, this may be due to the given definition of gamification or the exact categorization of gamified approach; tasks actually gamified or just digital.

After the task questions, the respondents were shown a definition of gamification and asked attitude questions relating to the definition. As shown in table 4 most of the respondents saw gamification more holistically and to have benefits that they may have not realized earlier. This is somewhat further supported by the final question which asked those unfamiliar to working in a gamified environment whether they would prefer it now that they know more about it. However, those who have definitely worked in such an environment were not measured to see if their attitude towards gamification changed. This is due to their potential bias if they had an overly positive or negative interaction with a gamified solution.

Concluding that gamification is preferred over traditional approach to engagement is not strongly supported. Relating to the last question, more than a quarter remain undecided and below 50 per cent were for the gamified approach.

Chart 1 Crosstabulation with worked in a gamified organization vs task preferences

		Task 1. Bonding with co-workers.			Task 2. Asking for help on a task			Task 3. Getting feedback			Task 4. Project work in teams			Task 5. Job training and		
		Traditional	Digital	Total	Traditional	Digital	Total	Traditional	Digital	Total	Traditional	Digital	Total	Traditional	Digital	Total
I have worked in an organization that implements gamified design?	Yes	2	2	4	3	1	4	1	3	4	4	0	4	4	0	4
	Not sure	6	4	10	8	2	10	5	5	10	9	1	10	9	1	10
	No	31	16	47	37	10	47	25	22	47	35	12	47	35	12	47
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61

Chart 2 Statistically relevant figures for chart 1

	Task 1.	Task 2.	Task 3.	Task 4.	Task 5.
Chi Square	0,49	0,04	1,18	2,35	2,35
Degrees of Freedom	2	2	2	2	2
p-value	0,78	0,98	0,56	0,31	0,31

To answer the second research question, table 4 can be examined in more detail. In all cases millennials do predominantly perceive gamification as engaging. To understand a bit more why millennials perceive it as engaging, we can look at which specific elements were identified for gamification were perceived as engaging. This is done by conducting regression analysis and examining which attitude question has the highest correlation with the last question (Q. 22), which explained the change in attitude. Using question 22 as the dependent variable and the other attitude questions from table 4 as separate independent variables the summary of the regression analysis was calculated as shown in appendix 2.

The table below highlights question 7, “Gamification, as described above, seems to allow better means of feedback”, to have quite high correlation, R Square, with question 22, “Based on the gamification description above, would you prefer a gamified environment over traditional”? However, the p-value highlighted in the table is not significant (significant if <0,05) and thus the null hypothesis cannot be rejected at a 95 per cent confidence level. Therefore, there is a possibility that the results occurred by chance.

Table 5 Extract from appendix 2. regression analysis

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,853529949
R Square	0,728513375
Adjusted R Square	0,638017833
Standard Error	5,857978274
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	276,2522716	276,2522716	8,050268111	0,065792695
Residual	3	102,9477284	34,31590946		
Total	4	379,2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	4,313629702	3,619539551	1,191762002	0,319039151	-7,205360567	15,83261997
Q 7.	0,580850024	0,204719324	2,83729944	0,065792695	-0,070658233	1,232358282

Table 6 highlights an opposing conclusion where the R square is higher yet the p-value is below 0,05. Therefore, we can reject the null hypothesis and say with a 95 per cent certainty that 85 per cent of the Q 22. is explained by Q 15, “Gamification, as described earlier, seems to align personal goals with the organization's goals.”

Table 6 Extract from Appendix 2. regression analysis

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,924247532
R Square	0,8542335
Adjusted R Square	0,805644667
Standard Error	4,292421876
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	323,9253433	323,9253433	17,58086053	0,024741822
Residual	3	55,27465668	18,42488556		
Total	4	379,2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2,725967541	2,822156104	0,96591664	0,405337078	-6,255392725	11,70732781
Q 15.	0,710986267	0,169566926	4,192953676	0,024741822	0,171348629	1,250623905

Although we can conclude that respondents perceive gamification as engaging at work based on the survey data, it is also possible to extract other qualities of the respondents for the use of the work place. It allows for further understanding of the underlying attitudes towards engagement.

Tables 7-9 highlight the responses which underlying attitudes could be examined. Only “I enjoy challenging tasks” and “Organizational goals are important to me personally” Show a distinct result. In these cases, most respondents enjoy challenging tasks and find organizational goals important to themselves. In all other cases results are very mixed between somewhat agree and somewhat disagree including a large proportion of unsure responses. From this we can deduce that when implementing gamified design, keep especially in mind the organizational goals and the employees’ potential personal goals as well as have the gamified tasks challenging enough for your employees.

Table 7 Underlying attitude questions

		Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Total
Gamification, as described earlier, seems to allow for more co-operation rather than competition	# responses	5	23	10	20	3	61
	%	8 %	38 %	16 %	33 %	5 %	100 %
I enjoy a competitive atmosphere at work	# responses	7	17	11	23	3	61
	%	11,48 %	27,87 %	18,03 %	37,70 %	5 %	100 %
I prefer working by myself rather than in teams	# responses	7	21	11	19	3	61
	%	11 %	34 %	18 %	31 %	5 %	100 %
I feel secure using gamification	# responses	5	28	20	7	1	61
	%	8 %	46 %	33 %	11 %	2 %	100 %
I enjoy challenging tasks at work	# responses	20	38	2	1	0	61
	%	33 %	62 %	3 %	2 %	0 %	100 %
Organizational goals are important to me personally	# responses	9	37	13	2	0	61
	%	15 %	51 %	21 %	3 %	0 %	100 %

Table 8 Underlying attitude questions (continued)

		Directly from superior	Anonymously	Quickly	From Peers	I don't	Other	Total
How do you like to receive feedback for the work you do?	# responses	50	24	38	41	2	0	155
	%	32 %	15 %	25 %	26 %	1 %	0 %	100 %

Table 9 Underlying attitude questions (continued)

		Extremely important	Very important	Moderately important	Slightly important	Not important	Total
How important is aligning your personal goals with organizational goals?	# responses	9	19	28	5	0	61
	%	15 %	31 %	46 %	9 %	0 %	100 %

6. DISCUSSION AND CONCLUSION

This thesis attempted to address the challenges managers face with the growing number of millennials in the workforce and their lack of engagement. The research questions were

1. Do millennial employees prefer gamification over traditional approaches in the workplace?
2. Do millennial employees perceive gamification in the workplace as engaging?

Attempting to answer these questions, a literature review was conducted to lay the groundwork for the survey. This was done mostly in a chronological order since it was a relatively new area of research among academics. Moreover, it focused on what was meant by gamification, why it was hyped and specific study results. Towards the end of the literature review the focus shifted to millennials (1980-1997) and the traits they have at the workplace. The final section before the conceptual framework discussed how gamification relates to engagement. Based on the literature review and with the research questions in mind, Perryer et al (2016) findings were incorporated into the framework.

In regard to the first research question, most the respondents preferred a traditional face-to-face approach to the task. After educating them on gamification, most could see themselves preferably working in a gamified environment. Therefore, we can conclude with some certainty that millennials do prefer a gamification over a traditional approach.

For the second research question, attitude questions were examined and a regression analysis was calculated with attitude questions versus the final question (Question 22. showing the change in attitude). Millennials mostly saw the benefits of gamification in all the relevant attitude questions. With a closer examination of which engagement practices seemed most to correlate with the change in attitude was question 15 which referred to gamification linking personal goals to organizational goals. Therefore, we can conclude that engagement practices presented in the survey are perceived as engaging by millennials in the workplace.

In order to get a better understanding of underlying traits of millennials, and with an intention to touch upon “why” the respondents answered the way they did, an additional examination of the results was performed. Results relating to non-gamification questions were quite mixed and only two distinct questions stood out. Question 3 showed that the majority of respondents enjoy challenging tasks. Moreover, question 14 showed that most of the respondents found organizational goals as important to them personally. This supports the view that with the change in attitude, the linkage between organizational goals and personal goals is highly correlated. These underlying traits should be kept in mind when a manager is working with millennials.

Perryer et al (2016) findings were broken down into three of the most relevant ones.

1. Gamification elements that encompass a social element are generally experienced by users as more enjoyable and engaging than ‘single-player’ elements.
2. Gamified systems should align with the already existing tasks and objectives in the organization. They should have elements that stretch participants’ knowledge, skills and abilities but should avoid too high a learning curve that could lead to demotivation.
3. Gamification that promotes cooperation may be more effective than that which emphasizes one-on-one competition.

Based on the results from the survey, we cannot directly answer finding 1. A social element is important as most respondents agree but they were not given a separate scenario where “single-player” elements were present.

Finding 2, on the other hand, shows supporting evidence in the survey conducted. Both the organizational objectives and challenging tasks were highly regarded by respondents. However, even without measuring it in this study, too high a learning curve should probably be avoided as Perryer et al. (2016) suggest.

Finally, finding 3 shows somewhat mixed results in the survey. Questions relating to cooperation and competition did not give a clear result in terms of preference, whether in a gamified setting or a personal trait.

The implications to managers concern their understanding of millennial employees. Although the survey was conducted in Finland, either the methodology or the results should be used cautiously. This study allows for a more educated process to enhancing engagement. For example, understanding whether the workers one hires or trains are infused with Finnish culture or ‘mindset’ could be an important factor. Moreover, this study allows for cross-cultural comparisons. If a gamified solution seems expensive, it may first be worth exploring who are the people in the organization, their ages and preferences towards engagement. This study allows the manager to get some insight into the millennial employees’ thinking for engagement.

Further research is needed, for example, to see if the respondents’ attitudes changed to the better or worse once they have experienced a gamified environment. Moreover, the limitations such as small sample size, not knowing the nationality or possible factors related to cultures or social environments of the respondents and the lack of comparison with age allows for further research possibilities.

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8. APPENDICES

Appendix 1: Employee engagement survey

I am a final-year undergraduate student at Aalto University School of Business, Finland, currently working on my Bachelor Thesis. I am conducting research on employee engagement in the work place. You have been chosen randomly and answering will take about 5 minutes. All answers will remain confidential and anonymous. The results will be used for research purposes and reported in aggregates only. Thank you for taking the time to answer my survey.

This section provides two approaches to employee engagement. The first approach is traditional with face-to-face interaction and the second is a gamification solution which is described in more detail in the next section. Please choose the preferable approach to you.

Task 1. Bonding with co-workers.

- Having a friendly competition in a recreation job-related activity with the coworkers. The activity can include physical activity and a leaderboard. (1)
- Participating in friendly job-related challenges on an online application individually and in teams. Challenges can include quizzes, achievements and leaderboards. (2)

Option	Answer	%	Count
1	Having a friendly competition in a recreation job-related activity with the coworkers. The activity can include physical activity and a leaderboard.	63.93%	39
2	Participating in friendly job-related challenges on an online application individually and in teams. Challenges can include quizzes, achievements and leaderboards.	36.07%	22
	Total	100%	61

Task 2. Asking for help on a task

- Asking my superior or coworkers for guidance. (1)
- Post a question on an internal digital forum for help. (2)

#	Answer	%	Count
1	Asking my superior or coworkers for guidance.	78.69%	48
2	Post a question on an internal digital forum for help.	21.31%	13
	Total	100%	61

Task 3. Getting feedback

- Asking for direct feedback from my superior or coworkers (1)
- Asking for feedback through an online platform where team members and superior can give feedback anonymously. (2)

#	Answer	%	Count
1	Asking for direct feedback from my superior or coworkers	50.82%	31
2	Asking for feedback through an online platform where team members and superior can give feedback anonymously.	49.18%	30
	Total	100%	61

Task 4. Project work in teams

- Discussing ideas face-to-face and working on-site with my team when completing a project. (1)
- Discussing ideas and working flexibly via digital medium with my team when completing a project. (2)

#	Answer	%	Count
1	Discussing ideas face-to-face and working on-site with my team when completing a project.	78.69%	48
2	Discussing ideas and working flexibly via digital medium with my team when completing a project.	21.31%	13

	Total	100%	61

Task 5. Job training and development to advance career

- Having an instructor-led training day(s) (1)
- Completing web-based challenges and tasks (2)

#	Answer	%	Count
1	Having an instructor-led training day(s)	78.69%	48
2	Completing web-based challenges and tasks	21.31%	13
	Total	100%	61

Please read the following definition of gamification and answer the questions below. Gamification is the application of characteristics and design techniques from games (rather than full games) into non-gaming contexts, in this case, the work place. At the most basic level game characteristics can include, achievements, leaderboards and badges. More demanding techniques could include communication platforms with interactive possibilities or feedback platforms for rapid responses. Gamification concepts and techniques are used primarily to engage their ‘players’ to behave in a particular way.

Q 1. Gamification, as described earlier, seems to provide enjoyable social interaction.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)
- Somewhat disagree (4)
- Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	18.03%	11
2	Somewhat agree	55.74%	34
3	Neither agree nor disagree	19.67%	12
4	Somewhat disagree	4.92%	3

5	Strongly disagree	1.64%	1
	Total	100%	61

Q 2. Gamification, as described earlier, seems to allow for more co-operation rather than competition at work

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	8.20%	5
2	Somewhat agree	37.70%	23
3	Neither agree nor disagree	16.39%	10
4	Somewhat disagree	32.79%	20
5	Strongly disagree	4.92%	3
	Total	100%	61

Q 3. I enjoy a competitive atmosphere at work

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	11.48%	7
2	Somewhat agree	27.87%	17
3	Neither agree nor disagree	18.03%	11
4	Somewhat disagree	37.70%	23

5	Strongly disagree	4.92%	3
	Total	100%	61

Q 4. I prefer working by myself rather than in teams

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	11.48%	7
2	Somewhat agree	34.43%	21
3	Neither agree nor disagree	18.03%	11
4	Somewhat disagree	31.15%	19
5	Strongly disagree	4.92%	3
	Total	100%	61

Q 5. Gamification, as described above, seems to help complete objectives at hand.

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	13.11%	8
2	Somewhat agree	60.66%	37
3	Neither agree nor disagree	21.31%	13
4	Somewhat disagree	4.92%	3
5	Strongly disagree	0.00%	0

	Total	100%	61

Q 6. Gamification, as described above, seems to hinder the work pace.

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	3.28%	2
2	Somewhat agree	11.48%	7
3	Neither agree nor disagree	32.79%	20
4	Somewhat disagree	45.90%	28
5	Strongly disagree	6.56%	4
	Total	100%	61

Q 7. Gamification, as described above, seems to allow better means of feedback

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	13.11%	8
2	Somewhat agree	60.66%	37
3	Neither agree nor disagree	11.48%	7
4	Somewhat disagree	14.75%	9
5	Strongly disagree	0.00%	0
	Total	100%	61

Q 8. How do you like to receive feedback for the work you do? Choose at least one

- ❑ Directly from superior (1)
- ❑ Anonymously (2)
- ❑ Quickly (3)
- ❑ From Peers (4)
- ❑ I don't (5)
- ❑ Other (please specify) (6) _____

#	Answer	%	Count
1	Directly from superior	81.97%	50
2	Anonymously	39.34%	24
3	Quickly	62.30%	38
4	From Peers	67.21%	41
5	I don't	3.28%	2
6	Other (please specify)	0.00%	0
	Total	100%	61

Q 9. I feel secure using gamification

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	8.20%	5
2	Somewhat agree	45.90%	28
3	Neither agree nor disagree	32.79%	20
4	Somewhat disagree	11.48%	7
5	Strongly disagree	1.64%	1

	Total	100%	61

Q 10. Gamification, as described earlier, seems to complicate teamwork.

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	3.28%	2
2	Somewhat agree	18.03%	11
3	Neither agree nor disagree	16.39%	10
4	Somewhat disagree	54.10%	33
5	Strongly disagree	8.20%	5
	Total	100%	61

Q 11. Gamification, as described earlier, seems to allow people to better reach their personal goals.

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	8.20%	5
2	Somewhat agree	47.54%	29
3	Neither agree nor disagree	36.07%	22
4	Somewhat disagree	8.20%	5
5	Strongly disagree	0.00%	0

	Total	100%	61

Q 12. Gamification, as described earlier seems to challenge people's skills and abilities for a given task

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	24.59%	15
2	Somewhat agree	47.54%	29
3	Neither agree nor disagree	22.95%	14
4	Somewhat disagree	4.92%	3
5	Strongly disagree	0.00%	0
	Total	100%	61

Q 13. I enjoy challenging tasks at work

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	32.79%	20
2	Somewhat agree	62.30%	38
3	Neither agree nor disagree	3.28%	2
4	Somewhat disagree	1.64%	1
5	Strongly disagree	0.00%	0

	Total	100%	61

Q 14. Organizational goals are important to me personally

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	14.75%	9
2	Somewhat agree	60.66%	37
3	Neither agree nor disagree	21.31%	13
4	Somewhat disagree	3.28%	2
5	Strongly disagree	0.00%	0
	Total	100%	61

Q 15. Gamification, as described earlier, seems to align personal goals with the organization's goals.

- ❍ Strongly agree (1)
- ❍ Somewhat agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Somewhat disagree (4)
- ❍ Strongly disagree (5)

#	Answer	%	Count
1	Strongly agree	9.84%	6
2	Somewhat agree	52.46%	32
3	Neither agree nor disagree	27.87%	17
4	Somewhat disagree	9.84%	6
5	Strongly disagree	0.00%	0

	Total	100%	61

Q 16. How important is aligning your personal goals with organizational goals?

- ❍ Extremely important (1)
- ❍ Very important (2)
- ❍ Moderately important (3)
- ❍ Slightly important (4)
- ❍ Not at all important (5)

#	Answer	%	Count
1	Extremely important	14.75%	9
2	Very important	31.15%	19
3	Moderately important	45.90%	28
4	Slightly important	8.20%	5
5	Not at all important	0.00%	0
	Total	100%	61

Q 17. Date of birth

- ❍ Earlier than 1980 (1)
- ❍ 1980-1997 (2)
- ❍ Later than 1997 (3)

#	Answer	%	Count
1	Earlier than 1980	0.00%	0
2	1980-1997	93.44%	57
3	Later than 1997	6.56%	4
	Total	100%	61

Q 18. My job (choose one or more)

- ❑ Part-time (1)
- ❑ Full-time (2)
- ❑ Fixed term (3)
- ❑ Permanent (4)
- ❑ Freelance (5)
- ❑ I am currently not working (6)

#	Answer	%	Count
1	Part-time	8.20%	5
2	Full-time	9.84%	6
3	Fixed term	9.84%	6
4	Permanent	1.64%	1
5	Freelance	1.64%	1
6	I am currently not working	75.41%	46
	Total	106,57%	65

Display This Question:

If My job (choose one or more) I am currently not working Is Not Selected

Q 19. Please specify position at work. (e.g. employee, manager, executive)

Consultant
employee
Employee
employee
Employee
Employee
Indipendent contractor
Trainee
employee
sales trainee
Employee

Employee

Employee

Manager, trainer

Employee

Display This Question:

If My job (choose one or more) I am currently not working Is Not Selected

Q 20. Please specify industry you work in. (e.g. retail, banking, technology)

Data management and information security

retail

Logistics

Marketing and communications

Guarding

Retail

Banking

Imports and exports

retail

hospitality industry

Entertainment

IT

Banking

Beauty

Retail

Q 21. I have worked in an organization that implements gamified design?

- ❍ Yes (1)
- ❍ Not sure (2)
- ❍ No (3)

Display This Question:

If I have worked in an organization that implements gamified design? Yes Is Selected

How is gamification, as described earlier, present in your organization? (e.g. leaderboards, achievements, badges, communication platform etc.)

Feedbacks, communication platform
Communication and anonymous feedback
We had 'bingo' charts where tasks were included, and the employees were competing on who wins bingo first using that chart.
All

Display This Question:

If I have worked in an organization that implements gamified design? Yes Is Not Selected

Q 22. Based on the gamification description above, would you prefer a gamified environment over traditional?

- ❍ Definitely yes (1)
- ❍ Probably yes (2)
- ❍ Not sure (3)
- ❍ Probably not (4)
- ❍ Definitely not (5)

#	Answer	%	Count
1	Definitely yes	5.26%	3
2	Probably yes	43.86%	25
3	Not sure	26.32%	15
4	Probably not	22.81%	13
5	Definitely not	1.75%	1
	Total	100%	57

Appendix 2: Regression results

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,798702176
R Square	0,637925166
Adjusted R Square	0,517233555
Standard Error	6,765076421
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	241,9012231	241,9012231	5,285579998	0,105080931
Residual	3	137,2987769	45,76625898		
Total	4	379,2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	4,159580664	4,367092374	0,952482867	0,411120768	-9,738456328	18,05761766
Q 1.	0,593476995	0,258141342	2,299038929	0,105080931	-0,228043966	1,414997955

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,850491703
R Square	0,723336137
Adjusted R Square	0,63111485
Standard Error	5,913570179
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	274,2890632	274,2890632	7,843483386	0,067817893
Residual	3	104,9109368	34,97031226		
Total	4	379,2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	4,537148131	3,605396824	1,258432387	0,297261809	-6,936833671	16,01112993
Q 5.	0,562528842	0,200858541	2,800621964	0,067817893	-0,07669268	1,201750364

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,349690231
R Square	0,122283258
Adjusted R Square	-0,17028899
Standard Error	10,53296711
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	46,36981132	46,36981132	0,417959184	0,564008968
Residual	3	332,8301887	110,9433962		
Total	4	379,2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	7,716981132	7,392097904	1,043950071	0,373225349	-15,80797353	31,2419358
Q 6.	0,301886792	0,466957308	0,646497629	0,564008968	-1,184179768	1,787953353

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,853529949
R Square	0,728513375
Adjusted R Square	0,638017833
Standard Error	5,857978274
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	276,2522716	276,2522716	8,050268111	0,065792695
Residual	3	102,9477284	34,31590946		
Total	4	379,2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	4,313629702	3,619539551	1,191762002	0,319039151	-7,205360567	15,83261997
Q 7.	0,580850024	0,204719324	2,83729944	0,065792695	-0,070658233	1,232358282

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,357113447
R Square	0,127530014
Adjusted R Square	-0,163293315
Standard Error	10,50143829
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	48,3593813	48,3593813	0,4385137	0,555167355
Residual	3	330,8406187	110,2802062		
Total	4	379,2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	7,92131809	7,046421064	1,1241619	0,342777451	-14,50353859	30,34617477
Q 10	0,285137861	0,430589371	0,66220367	0,555167355	-1,08518969	1,655465413

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,898830244
R Square	0,807895807
Adjusted R Square	0,743861076
Standard Error	4,927673892
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	306,35409	306,35409	12,61652536	0,038037074
Residual	3	72,84590996	24,28196999		
Total	4	379,2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2,897907419	3,253587295	0,890680703	0,438717171	-7,456459448	13,25227429
Q 11.	0,696892834	0,196198696	3,551974853	0,038037074	0,072501019	1,32128465

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,724021504
R Square	0,524207139
Adjusted R Square	0,365609518
Standard Error	7,755012422
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	198,779347	198,779347	3,305264841	0,166646613
Residual	3	180,420653	60,14021767		
Total	4	379,2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	3,905846621	5,387005113	0,725049733	0,520857526	-13,2380079	21,04970114
Q 12.	0,614274867	0,337877766	1,818038735	0,166646613	-0,461002982	1,689552717

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,924247532
R Square	0,8542335
Adjusted R Square	0,805644667
Standard Error	4,292421876
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	323,9253433	323,9253433	17,58086053	0,024741822
Residual	3	55,27465668	18,42488556		
Total	4	379,2			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2,725967541	2,822156104	0,96591664	0,405337078	-6,255392725	11,70732781
Q 15.	0,710986267	0,169566926	4,192953676	0,024741822	0,171348629	1,250623905

Appendix 3: Cross tabulations

Chart 2 Crosstabulation with employment vs task preferences

My job (choose one or more)		Task 1. Bonding with co-workers. Traditional	Task 1. Bonding with co-workers. Digital	Total	Task 2. Asking for help on a task Traditional	Task 2. Asking for help on a task Digital	Total	Task 3. Getting feedback Traditional	Task 3. Getting feedback Digital	Total	Task 4. Project work in teams Traditional	Task 4. Project work in teams Digital	Total	Task 5. career advancement Traditional	Task 5. career advancement Digital	Total
	Part-time	1	4	5	5	0	5	5	0	5	4	1	5	3	2	5
	Full-time	5	1	6	3	3	6	2	4	6	4	2	6	5	1	6
	Fixed term	4	2	6	5	1	6	3	3	6	5	1	6	4	2	6
	Permanent	1	0	1	0	1	1	0	1	1	1	0	1	0	1	1
	Freelance	1	0	1	0	1	1	0	1	1	0	1	1	0	1	1
	I am currently not working	30	16	46	37	9	46	22	24	46	37	9	46	39	7	46
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61

Chart 3 Statistically relevant values relating to chart 3

	Task 1. Bonding with co-workers.	Task 2. Asking for help on a task	Task 3. Getting feedback	Task 4. Project work in teams	Task 5. career advancement
Chi square	6,35	11,84	7,81	4,65	10,04
degrees of freedom	5,00	5,00	5,00	5,00	5,00
p-value	0,27	0,04	0,17	0,46	0,07

Chart 4 Crosstabulation with gamification-related questions vs task preferences

		Task 1. Bonding			Task 2. help on			Task 3. feedback			Task 4. Project			Task 5. Job		
		Traditional	Digital	Total	Traditional	Digital	Total	Traditional	Digital	Total	Traditional	Digital	Total	Traditional	Digital	Total
Gamification, as described earlier, seems to provide enjoyable social interaction.	Strongly agree	5	6	11	10	1	11	5	6	11	7	4	11	9	2	11
	Somewhat agree	24	10	34	25	9	34	15	19	34	28	6	34	26	8	34
	Neither agree/disagree	6	6	12	10	2	12	8	4	12	10	2	12	10	2	12
	Somewhat disagree	3	0	3	2	1	3	2	1	3	2	1	3	2	1	3
	Strongly disagree	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61
Gamification, as described earlier, seems to allow for more co-operation rather than competition.	Strongly agree	3	2	5	4	1	5	1	4	5	3	2	5	3	2	5
	Somewhat agree	14	9	23	16	7	23	10	13	23	19	4	23	19	4	23
	Neither agree/disagree	6	4	10	9	1	10	7	3	10	10	0	10	9	1	10
	Somewhat disagree	13	7	20	16	4	20	11	9	20	14	6	20	15	5	20
	Strongly disagree	3	0	3	3	0	3	2	1	3	2	1	3	2	1	3
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61
Gamification, as described above, seems to help complete objectives at hand.	Strongly agree	5	3	8	7	1	8	2	6	8	4	4	8	5	3	8
	Somewhat agree	23	14	37	28	9	37	19	18	37	30	7	37	30	7	37
	Neither agree/disagree	8	5	13	10	3	13	7	6	13	12	1	13	10	3	13
	Somewhat disagree	3	0	3	3	0	3	3	0	3	2	1	3	3	0	3
	Strongly disagree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61
Gamification, as described above, seems to hinder the work pace.	Strongly agree	2	0	2	2	0	2	1	1	2	2	0	2	1	1	2
	Somewhat agree	4	3	7	6	1	7	4	3	7	6	1	7	6	1	7
	Neither agree/disagree	14	6	20	18	2	20	10	10	20	15	5	20	18	2	20
	Somewhat disagree	18	10	28	19	9	28	16	12	28	23	5	28	21	7	28
	Strongly disagree	1	3	4	3	1	4	0	4	4	2	2	4	2	2	4
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61
Gamification, as described above, seems to allow better means of feedback.	Strongly agree	6	2	8	5	3	8	2	6	8	4	4	8	7	1	8
	Somewhat agree	21	16	37	28	9	37	16	21	37	32	5	37	30	7	37
	Neither agree/disagree	6	1	7	7	0	7	4	3	7	5	2	7	4	3	7
	Somewhat disagree	6	3	9	8	1	9	9	0	9	7	2	9	7	2	9
	Strongly disagree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61
Gamification, as described earlier, seems to complicate teamwork.	Strongly agree	2	0	2	2	0	2	1	1	2	2	0	2	1	1	2
	Somewhat agree	8	3	11	7	4	11	7	4	11	7	4	11	11	0	11
	Neither agree/disagree	6	4	10	8	2	10	4	6	10	9	1	10	9	1	10
	Somewhat disagree	23	10	33	28	5	33	17	16	33	28	5	33	24	9	33
	Strongly disagree	0	5	5	3	2	5	2	3	5	2	3	5	3	2	5
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61
Gamification, as described earlier, seems to allow people to better reach their personal goals.	Strongly agree	3	2	5	4	1	5	4	1	5	3	2	5	2	3	5
	Somewhat agree	17	12	29	22	7	29	15	14	29	26	3	29	26	3	29
	Neither agree/disagree	15	7	22	18	4	22	9	13	22	16	6	22	16	6	22
	Somewhat disagree	4	1	5	4	1	5	3	2	5	3	2	5	4	1	5
	Strongly disagree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61
Gamification, as described ealier seems to challenge people's skills and abilities for a given task.	Strongly agree	10	5	15	12	3	15	6	9	15	10	5	15	12	3	15
	Somewhat agree	19	10	29	21	8	29	17	12	29	24	5	29	22	7	29
	Neither agree/disagree	8	6	14	12	2	14	7	7	14	12	2	14	11	3	14
	Somewhat disagree	2	1	3	3	0	3	1	2	3	2	1	3	3	0	3
	Strongly disagree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61
Gamification, as described earlier, seems to align personal goals with the organization's goals.	Strongly agree	3	3	6	6	0	6	3	3	6	3	3	6	4	2	6
	Somewhat agree	21	11	32	26	6	32	16	16	32	26	6	32	25	7	32
	Neither agree/disagree	10	7	17	13	4	17	8	9	17	14	3	17	13	4	17
	Somewhat disagree	5	1	6	3	3	6	4	2	6	5	1	6	6	0	6
	Strongly disagree	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	39	22	61	48	13	61	31	30	61	48	13	61	48	13	61

Chart 5 Statistically relevant values relating to chart 5

		Task 1.	Task 2.	Task 3.	Task 4.	Task 5.
Gamification, as described earlier, seems to provide enjoyable social interaction.	Chi square	5,55	2,20	3,21	2,44	0,85
	Degrees of Freedom	4,00	4,00	4,00	4,00	4,00
	P-value	0,24	0,70	0,52	0,66	0,93
Gamification, as described earlier, seems to allow for more co-operation rather than competition.	Chi square	1,90	2,74	4,31	5,12	2,44
	Degrees of Freedom	4,00	4,00	4,00	4,00	4,00
	P-value	0,75	0,60	0,37	0,28	0,66
Gamification, as described above, seems to help complete objectives at hand.	Chi square	1,78	1,41	5,09	5,75	2,21
	Degrees of Freedom	4,00	4,00	4,00	4,00	4,00
	P-value	0,78	0,84	0,28	0,22	0,70
Gamification, as described above, seems to hinder the work pace.	Chi square	4,22	4,26	4,70	3,07	4,90
	Degrees of Freedom	4,00	4,00	4,00	4,00	4,00
	P-value	0,38	0,37	0,32	0,55	0,30
Gamification, as described above, seems to allow better means of feedback.	Chi square	2,72	3,90	11,81	5,49	2,44
	Degrees of Freedom	4,00	4,00	4,00	4,00	4,00
	P-value	0,61	0,42	0,02	0,24	0,66
Gamification, as described earlier, seems to complicate teamwork.	Chi square	10,9	3,83	1,43	8	6,46
	Degrees of Freedom	4,00	4,00	4,00	4,00	4,00
	P-value	0,03	0,43	0,84	0,09	0,17
Gamification, as described earlier, seems to allow people to better reach their personal goals.	Chi square	1,12	0,28	2,75	4,63	7,01
	Degrees of Freedom	4,00	4,00	4,00	4,00	4,00
	P-value	0,89	0,99	0,60	0,33	0,14
Gamification, as described ealier seems to challenge people's skills and abilities for a given task.	Chi square	0,37	1,92	1,78	2,25	0,97
	Degrees of Freedom	4,00	4,00	4,00	4,00	4,00
	P-value	0,98	0,75	0,78	0,69	0,91
Gamification, as described earlier, seems to align personal goals with the organization's goals.	Chi square	1,72	4,74	0,71	3,28	2,20
	Degrees of Freedom	4,00	4,00	4,00	4,00	4,00
	P-value	0,79	0,31	0,95	0,51	0,70

Chart 7 Crosstabulation with preference to work in gamified environment vs task

		Task 1. Bonding with co-workers.			Task 2. Asking for			Task 3. Getting			Task 4. Project			Task 5. Job		
		Traditional	Digital	Total	Traditional	Digital	Total	Traditional	Digital	Total	Traditional	Digital	Total	Traditional	Digital	Total
Based on the gamification description above, would you prefer a gamified environment over traditional	Definitely yes	0	3	3	2	1	3	1	2	3	0	3	3	1	2	3
	Probably yes	18	7	25	18	7	25	12	13	25	20	5	25	22	3	25
	Not sure	9	6	15	12	3	15	8	7	15	13	2	15	8	7	15
	Probably not	9	4	13	12	1	13	8	5	13	10	3	13	13	0	13
	Definitely not	1	0	1	1	0	1	1	0	1	1	0	1	0	1	1
	Total	37	20	57	45	12	57	30	27	57	44	13	57	44	13	57

Chart 8 Statistically relevant figures for chart 7

	Task 1.	Task 2.	Task 3.	Task 4.	Task 5.
Chi Square	6,91	2,67	1,98	11,33	17,01
Degrees of Freedom	4	4	4	4	4
p-value	0,14	0,61	0,74	0,02	0

Chart 8 Job position and industry vs task preferences

1= traditional	2= digital	**Task 1.**	**Task 2.**	**Task 3.**	**Task 4.**	**Task 5.**
Position	**Industry**					
Consultant	Data management and information security	1	2	2	1	2
employee	retail	1	2	2	2	1
Employee	Logistics	2	1	2	1	1
employee	Marketing and communications	1	1	2	1	2
Employee	Guarding	1	2	2	2	2
Employee	Retail	2	1	2	1	1
Indipendent contractor	Banking	2	1	2	1	1
Trainee	Imports and exports	1	1	2	1	1
employee	retail	2	1	2	1	2
sales trainee	hospitality industry	1	2	2	2	1
Employee	Entertainment	2	1	2	2	2
Employee	IT	1	1	2	1	1
Employee	Banking	1	1	2	1	2
Manager, trainer	Beauty	1	1	2	1	1
Employee	Retail	2	1	2	1	1
	Total Traditional	9	11	0	11	9
	Total Digital	6	4	15	4	6
	Total Traditional+Digital	15	15	15	15	15