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Combining Gamification with Big Data

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ABSTRACT

TITLE: Combining Gamification with Big Data

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This dissertation aims to understand if there is an impact of Gamification and Big Data Technologies combination on the strategy of companies. In order to study this, the present dissertation tests if the benefits raised by the combination of the two creates value to the final users, and moreover, if it can become a sustainable competitive advantage. For this, a research model is developed, where 5 companies that are already introducing such a strategy are analyzed, as well as the Gamification and Big Data dimensions used. For Gamification, elements such as points, badges, competition and levelling up are studied, and for Big Data, functionalities such as user activity, purchase data, feedback in real time and based location are also analyzed. Knowing the benefits that these companies are searching for with such combination, an online survey is developed in order to test their value for the final users, which reached 253 individuals. Subsequently, in order to test if the companies gain competitive advantage over other companies in the same Sector, the RBV model is used. With this study, it is concluded that the benefits proposed by the combination of Gamification and Big Data can create sustainable differentiated value for the final users, and can become a source of competitive advantage for the companies.

RESUMO

TÍTULO: Combining Gamification with Big Data

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Esta dissertação tem como objetivo compreender se existe algum impacto da combinação de Gamification e as tecnologias Big Data na estratégia de empresas. De forma a testar esta combinação, a presente dissertação analisa se os benefícios criados pela combinação dos dois criam valor para os utilizadores finais, como também se se pode tornar numa vantagem comparativa sustentável. Para isto, um modelo foi desenvolvido, onde 5 empresas que já estão a introduzir esta estratégia são analisadas, tal como as dimensões de Gamification e Big Data usadas. Para a Gamification, elementos como pontos, crachás, competição e evolução são usados, e para Big Data, funções como a atividade do utilizador, dados de compra, feedback em tempo real e localização são também analisadas. Sabendo os benefícios que as empresas procuram com esta estratégia, um inquérito online é desenvolvido, com o objetivo de testar o valor criado para os utilizadores finais, cujo alcance foi de 253 indivíduos. De seguida, de forma a testar se as empresas ganhariam vantagens comparativas em relação a outras empresas inseridas no mesmo sector, o modelo RBV é utilizado. Com este estudo, é concluído que os benefícios oferecidos pela combinação de Gamification e Big Data podem criar valor sustentável para os utilizadores finais, tornando assim a estratégia numa vantagem comparativa para as empresas.

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CHAPTER 1. INTRODUCTION

1.1. Background

In the last decade, games became very important in the population daily life, since over the last years the size of the video-game industry has experienced a strong growth, where the industry sales have triplicated in the period between 1996 and 2006 (Burger-Helmchen and Guittard, 2008). According to statistics, the average age of console is well distributed, where 32% of the US gaming population is under 18 years old, 32% between 18 and 35 and 36% for people with more than 36 years old, and correspondingly, 45% of the total players are women (Entertainment Software Association 2013), turning the game industry into an opportunity that needs to be looked upon (Stacey and Nandhakumar, 2007). This willpower for playing games is associated to three motivational categories, being them fantasy, challenge and curiosity (Malone, 1981). Yet, with the progress of the Internet, online features of video games have become persistent, enabling people to play together, and consequently, following studies added other motivating forces such as competition, diversion, and social interaction (Poels, Hoogen, Ijsselsteijn and Kort, 2012). Afterward, the game industry have found that the addition of badges to games has a positive influence in the revenue (Entertainment Software Association, 2013), and since then, game designers tried to increase those motivation feelings with a reward system, which offers recognition to the players, awarding them with points, trophies, badges, between other items (Domínguez, Saenz-de-Navarrete, de-Marcos, Fernández-Sanz, Pagés, Martínez-Herráiz, 2013), as they give rise to intrinsic motivation (Malone, 1981).

It was considering the game industry that the term Gamification appeared for the first time in the media, in October 2010, described as a company's strategy that applies game elements, such as game's mechanics and design, in non-game contexts (Deterding, Dixon, Khaled and Nacke, 2011). Since people are confronted in their everyday life with non-motivational activities, Gamification appeared as a process to induce motivation in those activities (Domínguez, Saenz-de-Navarrete, de-Marcos, Fernández-Sanz, Pagés, Martínez-Herráiz, 2013), in order to encourage people's engagement and stimulate certain behaviors. Other possible definition is that Gamification is capable of having an effect on retention and customer loyalty (Huotari and Hamari, 2011).

The term Big Data was first introduced in 2005 in order to define a great amount of data which traditional data management techniques are not able to manage and process due

to the complexity and size of this data (Ularu, Puican, Apostu and Velicanu, 2012). As Big Data techniques mature, new uses from this new technology are likely to arise (Cumbley and Church, 2013), and consequently, companies are starting to adjust themselves towards the use of Big Data, in order to understand better the multiple benefices of this new concept (Ularu, Puican, Apostu and Velicanu, 2012).

1.2. Aims and Research Question

The understanding of Big Data is becoming very important in order to determine the best strategy for a company, and it is essential that the data is properly analyzed (Ularu, Puican, Apostu and Velicanu, 2012). Knowing this, Big Data can be a helpful source for Gamification, since by correlating this two technologies, businesses would have more data and so, not only the companies' customers but also partners, employees and other potential stakeholders could be more engaged, more active and more loyal to the company (Paharia, 2013).

Considering all this, the main purpose of the present dissertation is to recognize how Gamification and Big Data really work, understand the impact of this union across different companies, identify the benefits that arise from such combination, and afterwards see if these benefits create value to the companies' customers.

Therefore, the research question that this dissertation addresses is:

Can the combination of Gamification and Big Data have a strategic impact on companies?

1.3. Methodology

This dissertation proposes to study the strategic impact of the combination between Gamification and Big Data might have on the consumers. For this, the existing literature is taken into consideration, which initially explains the influence of motivation incentives, since Gamification is a strategy that consists in giving more intrinsic motivation to the individuals in their daily life by introducing gaming elements. The evolution of the game industry, the Gamification and Big Data concepts are also reviewed in order to provide a sustained theoretical background for the research.

Afterwards, with the objective of explaining the study, a research model is developed, which includes an analysis of 5 different companies that are already implementing Gamification and Big Data, and identification of the Gamification elements and Big Data functionalities used by these companies. From the benefits that arose from the

combination of the two, hypothesis are created with the objective of exploring and then answer the research question. Knowing this, a questionnaire is designed, with the objective of analyzing if these benefits created have value to the final users, and consequently, to validate or not the hypothesis proposed.

1.4. Structure

In order to answer the research question proposed, this dissertation structure is decomposed into 5 chapters. In chapter 2 – Literature Review – which consists in the theory and deep analysis of existing literature, it is focused first in motivation theories, since it is directly related with Gamification strategy, and afterwards emphasizes theoretical background, such as the evolution of the game industry. Formerly, the concepts in question, Gamification and Big Data, take action and are described in a depth method, along with when and how did they appeared and current examples of how they are being used. Chapter 3 – Methodology – explains the research model, while making a clear connection to the research question, and also describes the hypothesis that rose from the model and the questionnaire developed to validate those hypotheses. In chapter 4 – Data Analysis – it is presented the sub conclusions from the methodology used and consequently, validating or not the hypothesis suggested, making possible to draw the main findings about the problem statement proposed. It also presents a RBV model in order to test if the strategy can become a source of competitive advantage. And the final chapter – Final Conclusion – gives a brief overview of what has been discussed throughout the present dissertation and then answers the research question, while giving the limitations and possibilities for future research.

CHAPTER II: LITERATURE REVIEW

This literature review chapter starts by describing in an overall basis the definition of motivation and the existing types, making possible to correlate the current video game industry and motivation, which is in the following sections. For this, the video game industry background and the evolution of the internet and Web 2.0 are also focused in this chapter.

In the section 2.3, literature of the key theme of this dissertation is revised, being this Gamification. It starts with a brief definition of the concept, the gaming elements that are already being used from game design and some examples of current usage by some companies. Knowing the Gamification concept, it starts a description of the second core key, being it Big Data. The concept is explained as well as the new ways to gather more data and the existing technologies being used.

2.1. Motivation

To be motivated means to be moved by something (Ryan and Deci, 2000), which means that, motivation is the attribute that move individuals to do or not to do a sort of action (Broussard and Garrison, 2004). Most people that works or plays are concerned with motivation, yet, motivation is not a unitary phenomenon since people have different kinds of motivation. Besides the level of motivation there is also the orientation of individuals, which consists in the attitudes and goals that give rise to an action (Ryan and Deci, 2000).

2.1.1. MOTIVATION TYPES

Based on the different reasons and goals that give rise to an action, different types of motivation can be observed. The most basic distinction is between intrinsic and extrinsic motivation (Ryan and Deci, 2000), where the first one refers to the motivation behaviors that are engaged by the pleasure and satisfaction derived from one's performance, while the second one is performed not out of concern but because they are believed to be of material nature (Deci, Vallerand, Pelletier and Ryan, 1991).

In a deeper analysis, intrinsic motivation refers to doing an activity for the satisfaction of the activity itself. This means that, instead of deriving from instrumental outcome, intrinsic motivation is related to an activity that engages people through fun, challenges, competition (Ryan and Deci, 2000), between other factors. They are activities that people voluntarily perform in the absence of material rewards, and depend for the need for feeling of competence and autonomy and also enjoyment and excitement (Deci and Ryan,

1985). On the other hand, extrinsic motivation is defined as doing something because it leads to an instrumental outcome (Ryan and Deci, 2000), which means that they are behaviors that are engaged in as a mean to an end and not for their own sakes.

Recent studies show that the relationship between extrinsic and intrinsic motivators is connected (Ryan and Deci, 2000). This implies that extrinsic motivation is also important for the engagement of an individual, since an outcome is also important as feeling enjoyable by achieving a goal, however, it is considered as a flat broke form of motivation (deCharms, 1972), since it is improving people commitment through material rewards instead of giving them satisfaction. Therefore, enabling individuals to work toward maximal intrinsic motivation should be essential in the workplace (Deci and Ryan, 2000), however this type of motivation can be weakened by the company's environment, since tangible rewards can always be expected upon task performance (Deci and Ryan, 1985).

2.2. Game Industry

2.2.1. BACKGROUND

In the last decade, games became very important in the population daily life, since over the last years the size of the video-game industry has experienced a solid growth, where the industry sales have more than triplicated (Burger-Helmchen and Guittard, 2008). In the present years, with the substantial free time that people have, gaming has become a hugely popular and vastly profitable industry, with a profit approximately of \$60 billion per year (Bunchball, 2010), and consequently, the game industry became an opportunity that needs to be looked upon (Stacey and Nandhakumar, 2007). According to statistics, the average age of console is well distributed, where 32% of the US gaming population is under 18 years old, 32% between 18 and 35 and 36% for people with more than 36 years old, and correspondingly, 45% of the total players are women (Entertainment Software Association, 2013) , since in early console generations the most appealed were children and male teenagers, yet, subsequent generations attracted also young men and then also female consumers and families (Marchand and Hennig-Thurau, 2013).

2.2.2. WEB 2.0

With the advent of the Internet, online features have become universal in the current video game environment, enabling people to play with friends or thousands of complete strangers (Peng and Hsieh, 2012). Web 2.0 is seen as a platform that can be used by different individuals according to their activities, for instance, marketers can use it to communicate, and companies may use it to do business, between others. With this, Web

2.0 consists of a wide number of attributes, being them participation, collaboration, competitively, social networking and rich user experience. In other words, Internet users are no longer simple information consumers but they are also information producers (Simões, Redondo and Vilas, 2013). As social networks became popular applications, they gave rise to social games. These kind of games are played by social networks' users as a way to interact with other people (Klopfer, Osterweil, Groff and Haas, 2009), which distinguish these games from the traditional video games.

2.2.3. GAMES AND MOTIVATION

Games are hedonic products, where their usage involves emotional reactions and creates fantasy (Holbrook and Hirschman, 1982). Malone (1981) applied intrinsic motivation concepts to computer games and identified three basic motivational categories, being them fantasy, challenge, and curiosity. Challenge is captivating because it engages a person's self-esteem, and in a situation of success of any challenging activity, people feel better about themselves, however, failure can lower a person's self-esteem. Other easy way to increase the fun of learning is to take an existing curriculum and overlay it with a game where the player improves towards some fantasy goal. Finally curiosity is also a motivation related to gaming, which depends not only on the learner's understanding but also on the feedback to reduce uncertainty (Malone, 1981).

Following studies included other motivation factors, such as competition, diversion, social interaction (Poels, Hoogen, Ijsselsteijn and Kort, 2012), achievement, status and self-expression (Bunchball, 2010). Some people are motivated by the need to achieve, to accomplish a difficult task, to work towards a goal. With this motivation, people tend to seek out challenges and set moderately difficult, yet achievable goals, and their most satisfying reward is the recognition of their achievements. Other people seek opportunities to express their autonomy and originality, to mark themselves as having unique personalities from those around them. This is the human desire to show off a sense of style, identity, and personality (Bunchball, 2010). Other factor is social interaction, which is also a primary reason for many people to play games, since it gives people a virtual world, where they can participate with their friends and family and compete, collaborate and connect in ways that they can't in real life (Paharia, 2013).

Once more, with the introduction of the Internet, people were able to play together, turning the competition and collaboration into some of the most important mechanisms to increase motivation (Vorderer, Hartmann and Klimmt, 2003), and most game designers and players agree that these mechanics increase engagement and motivation (Peng and

Hsieh 2012). It has been proven that higher levels of performance can be achieved when a competitive environment is established and the leader is rewarded. That happens because individuals gain a certain amount of satisfaction by comparing their performance to that of others (Bunchball, 2010). As the participation in challenging and competitive situations appears to be an important motivation felt by computer game players, some individuals may experience more enjoyment from this activity than others, since there are individual differences for the engagement in competitive situations (Vorderer, Hartmann and Klimmt, 2003).

The main reason for people to be so motivated by game mechanics is related to game dynamics. People have fundamental needs and desires, such as the desire for reward, status, achievement, self-expression, competition, and altruism among others. The fact is that these needs are universal, across generations, demographics, cultures, and genders (Bunchball, 2010). That is the reason why games try to guarantee and intensify those feelings with reward systems that give recognition to players' success, being these systems composed by points, trophies, badges and other items on task completion (Domínguez, Saenz-de-Navarrete, de-Marcos, Fernández-Sanz, Pagés, Martínez-Herráiz, 2013).

2.3. Gamification

2.3.1. CONCEPT

It was considering the game industry that the term gamification appeared for the first time in the media, in October 2010, described as a company's strategy that applies game elements, such as game's mechanics and design, in non-game contexts (Deterding, Dixon, Khaled and Nacke, 2011). Since people are confronted in their everyday life with non-motivational activities, Gamification appeared as a process to prompt motivation in those activities (Domínguez, Saenz-de-Navarrete, de-Marcos, Fernández-Sanz, Pagés, Martínez-Herráiz, 2013), in order to encourage people's engagement and stimulate certain behaviors. Considering this, gamification can be defined in two different ways, being them the use of game elements in non-game contexts (Deterding, Dixon, Khaled and Nacke, 2011) or as a process of providing gameful experiences which support the customers' overall value creation (Huotari and Hamari, 2011).

Regardless of the name, Gamification is not about creating games. In Gamification, the experience is the centerpiece and the gaming mechanics go around it. In other words, it implies that something must already exist, such as a website, loyalty program, and only

then, it is transformed, with the addition of Gamification mechanics (Paharia, 2013). The idea prevails that gamification simply refers to adding game mechanisms into a service, with the purpose of becoming more engaging and manage a better retention of customers. This last definition also emphasize that, for gamification to have an effect on retention and customer loyalty, the individuals are the most important aspect in this model, and therefore, should be the firsts to be engaged in gameful experiences (Huotari and Hamari, 2011). In principle, this is also how gamification differs from loyalty programs, although it is often used for pursuing similar goals. Most loyalty programs aim to offer economic benefits from the continuous use of services, which means that uses extrinsic motivations. These, in turn, have been demonstrated to be detrimental to intrinsic motivations, such as autonomy and creativity (Deci, Koestner and Ryan 1999), competition and collaboration (Bunchball, 2010). Game mechanisms, however, do not provide economic benefits for the users, but are believed to create value to the service by the usage of motivations and intentions (Huotari and Hamari, 2011).

With the advent of the internet and the vast approval of the video games, people are now accepting this game mechanics described in other part of their lives, and as a result, Gamification is becoming a powerful tool for the organizations, in order to retain customers and increase their loyalty to the company, but also to motivate and persuade the employees (Bunchball, 2010).

2.3.2. GAME ELEMENTS

Most of the game elements of Gamification came from this technological revolution in gaming, and video game designers have known for years the components to motivate and persuade players, which is through the data that their games generate. Whether is player's score which enables them to level up, and consequently providing achievements and badges to unlock, they successfully used the data to motivate their customers to new heights (Paharia, 2013). The idea is to offer the ability to customize something that would give the individual a certain status and recognition, and the fact is that virtual goods help achieve the creativity, competition and self-expression. Virtual goods are simple non-physical, intangible objects that are used in online communities or online games, and the key to the Gamification strategy is whether or not virtual goods fit with the objectives of the company (Bunchball, 2011).

Badges are considered the blueprint of Gamification, since they were the first game mechanism in gamified applications. With the introduction of badges, game industry studies found that by adding this element to games, there was a critical reception and an

increase in the companies' revenue (Entertainment Software Association, 2013). Since then, other 9 gaming mechanics were introduced, which are inspired in video games, but have been proven to work in a non-game context, and they hit both intrinsic and extrinsic motivations (Paharia, 2013). These total of ten mechanisms are described next.

Fast Feedback: in a game, each time a player takes an action, he receives instant and real-time progress. Positive feedback reinforces the individual strategy and behavior, while a negative feedback enables the player to quickly learn and adjust (Paharia, 2013). In Gamification experiences, feedback is used to let the user know that he has accomplished a goal and also to suggest a next action and draw users participation chain (Bunchball, 2011).

Transparency: Players are able to see exactly where they stand and where everyone else stands in real-time, being then able to compare themselves with other individuals of the overall community (Paharia, 2013).

Goals: the whole purpose of a game is to have a goal and to strive for it, often with secondary goals that provide small wins along the way. Without goals to work toward, games become repetitive. Goals serve to clearly identify to participants what activities are possible in the experience as well as what behaviors are valued. They can be of different forms, but they should be personalized to each individual (Paharia, 2013).

Badges: it is an indicator of a specific accomplishment or conquest of a specific task or skill. The value is in what it represents in a community, since they are a mark of achievement and status, and in the community it can identify engagement, skills and expertise (Paharia, 2013). It must be something that users can care about and are proud of (Bunchball, 2011).

Levelling up: levels are used as a shorthand way of indicating sustained achievement and status in a community (Bunchball, 2011). Levels also serve to provide players with intermediate goals along the game, giving you higher status and better benefits. Just like an employee who works his way up on his career. The benefits are related to the office space, job title, responsibilities and influence (Paharia, 2013), this because, to keep users engaged, unlockable features should be offered (Bunchball, 2011).

Onboarding: video games have mastered the art of teaching users to play, since if designers dropped the player into the game without any instructions the user wouldn't

know what to do. It is just like training, and businesses that train their customers effectively to use their products will amplify their revenue (Paharia, 2013).

Competition: it can take many forms, like for example leaderboards. It's something aspirational, a feeling of fame and status (Bunchball, 2011), a measure of how is the individual doing when compared to his friends, colleagues and everyone else, giving them a chance to compete. However, competition is not appropriate in every community, some are much more focused on collaboration (Paharia, 2013).

Collaboration: people have an innate need for social connection and, consequently, to collaborate as part of teams, which provide individuals an opportunity to work together in order to accomplish goals and compete with other teams. Studies concluded that teams are much more effective when working together and to collectively accomplish team missions than individually (Paharia, 2013).

Community: many Gamification mechanics lose significant amount of their value without a community, since if there is no one to compete with and no one to collaborate with and no one to compare badges and points, there is no sense in the activity. In other words, if there is no community, it is still possible to use Gamification, however, it will not be as impactful (Paharia, 2013).

Points: this item is a great way of rewarding a user for doing something that is of value (Bunchball, 2011). This can be a way of keeping score, and can also be the foundation for some of the other Gamification techniques, such as levelling up. It is a tangible way to measure the accomplishments (Paharia, 2013).

Fundamentally, individuals are motivated by rewards, which is something of value given for some kind of action. A reward, tangible or intangible, is presented after the achievement of a goal with the intent to cause the behavior to occur again, such as material rewards. However, obtaining virtual goods, leveling up, and even completing achievements also satisfy this desire. This happens because intrinsic motivators, are anything that has not actual monetary value, making them more valuable than extrinsic motivators (Paharia, 2013).

2.3.3. GAMIFICATION CURRENT EXAMPLES

2.3.3.1. CUSTOMER ENGAGEMENT

Frequent Flyer Programs

In 2010 more than 120 million people were accumulating points, leveling up, and earning rewards in the Frequent Flyer Programs (FFPs), which are offered by almost every major airline. FFPs are complex games, where customers earn miles, which are considered the points, for every flight they take, and consequently, moving from Bronze to Silver and Gold status, which is considering the levelling up in gaming mechanics, and it also includes challenges (Bunchball, 2010).

Nike+

Being the largest manufacturer in athletic footwear, Nike has gamified exercise by launching the application Nike +, which have more than 1.8 million runners around the world that use it in order to capture data such as the distance, pace, calories lost, using a GPS sensor of the clients iPod. With this application, Nike rewards their customers when they reach a milestone, and the main idea is that when individuals finish their workout, they go online and upload their data, statistics, goals, challenges accomplishes and other information, and then connect with other runners in the social networks in order to compete (Bunchball, 2010).

2.3.4. GAMIFICATION LIMITATION

What changed Gamification in the last few years has been the availability of data, which enables businesses to use these gaming elements at a bigger scale. Businesses should always be tracking and monitoring the users' actions, since they are closely related to the business goals. With more data, user patterns can be identified, enabling it to make adjustments to optimize the Gamification design (Bunchball, 2011). In other words, data is sent to the company in real time, and formerly, a Big Data Technology processes the data, updates all the necessary statistics and then responds to the user in real time feedback. However, only a small percentage of businesses that have Gamification mechanisms are using Big Data as a method to improve it (Paharia, 2013).

2.4. Big Data

2.4.1. CONCEPT

The term "Big Data" was first introduced in the media by Roger Magoulas in 2005, in order to define a great amount of data that traditional data management techniques couldn't manage and process due to the complexity and size of this data. It is shaped by its size, which consists of a large, complex and independent cluster of data sets, each one with potential information (Ularu, Puican, Apostu and Velicanu, 2012). For IBM Global Services, Big Data has four aspects:

Volume: is probably the characteristic that most associates with big data, since it refers to the quantity of data collected by a company (Schroeck, Shockley, Smart, Romero-Morales, and Tufano, 2012), which can be used further to obtain important knowledge. Enterprises are overflowing with data of all types, easily amassing terabytes and even petabytes (Ularu, Puican, Apostu and Velicanu, 2012).

Velocity: refers to the time Big Data can be processed. In other words, is the speed at which data is created, processed and analyzed continues to accelerate (Schroeck, Shockley, Smart, Romero-Morales, and Tufano, 2012), There are some activities that need immediate responses and that is why fast processing maximizes company's efficiency (Ularu, Puican, Apostu and Velicanu, 2012). However, data is still being generated at a pace that is impossible for traditional systems to capture, store and analyze (Schroeck, Shockley, Smart, Romero-Morales, and Tufano, 2012).

Variety: Big data consists in any type of data, being structured, semi-structured and unstructured data, such as text, sensor data, audio, video, click streams, log files and more (Ularu, Puican, Apostu and Velicanu, 2012). Knowing this, organizations need to analyze data from a complex range of both traditional and non-traditional information sources (Schroeck, Shockley, Smart, Romero-Morales, and Tufano, 2012).

Veracity: refers to the level of reliability associated with certain types of data, which is fundamental for any business. High quality data is an essential big data requirement, yet challenging, since even the best data cannot remove the unpredictability of data (Schroeck, Shockley, Smart, Romero-Morales, and Tufano, 2012).

The big issue of Big Data is the fact that it cannot be handled with standard data management techniques due to the inconsistency and volatility of the possible combinations. However the main importance of Big Data consists in the potential it has to improve the efficiency of using a large volume of data (Schroeck, Shockley, Smart, Romero-Morales, and Tufano, 2012). If Big Data is used properly, organizations can get a better view on their business, hence leading to efficiency in some of the company's department such as in information technology in order to improve security and troubleshooting by analyzing the patterns, in customer service by using information in order to get the customer pattern and thus enhance customer satisfaction by customizing services, and in improving services and products, since knowing the potential customers preferences the company can address their products to a larger area of people (Ularu, Puican, Apostu and Velicanu, 2012), between others factors.

2.4.2. NEW DATA AVAILABLE

With the expansion of computing power and mobile devices, a massive amount of information became available. A vast number of sets of unstructured information became available as nearly everything that is done is being mediated by technology and therefore able to generate data (Paharia, 2013). There is a vast sum of new methods to track new huge amounts of data, such as electronic communications, for example as e-mails, social network messages, postings, profiles which are now becoming very important, giving new data about individuals that wasn't available in the past. Internet tracking, for instance cookies, search analysis and other internet features, in order to build detailed analysis of individual's usage habits, which is already being used by some companies to get significant information about their clients life and interests. The use of radio frequency identification (RFID) which is a technology that is increasing, and also Global Positioning System (GPS) which gives location-based information and allows individual's location to be monitored (Cumbley and Church, 2013), mostly done by mobile phone usage (Paharia, 2013). There is also another sort of methods to gather information such as video surveillance which has experienced a huge growth, and with these systems being networked and connected to other systems, a massive amount of information can be gathered, and likewise, financial information since cash purchases are becoming less common, and more payments are made by using electronic cards, e-money and other methods, which gives a record about each individual (Cumbley and Church, 2013).

This information gathered can be intrusive and increases privacy risks (Cumbley and Church, 2013). However, these and almost unlimited other sources have greatly expanded the amount of data being generated and available for businesses to consume (Paharia, 2013) since it creates valuable datasets (Cumbley and Church, 2013).

2.4.3. BIG DATA TECHNOLOGIES

Through the years, several techniques and technologies were developed and adapted in order to analyze and visualize Big Data. There are numerous grounds such as statistics, mathematics and computer science between others, which are used to analyze datasets. With this, organizations can gather value from Big Data by adopting a flexible technique. Some of the current techniques are presented below (Manyika, Chui, Brown, Bughin, Dobbs, Roxburgh and Byers, 2011).

A/B testing: This technique compares a test group with a variety of other test groups in order to analyze what actions will improve a given objective variable, like for example a

marketing advertising. Big data is capable of testing huge numbers of tests and analyze them, in order to make sure that they can detect important information.

Data mining: Is designed as a set of techniques with the objective of extracting patterns from large datasets. It results on the combination of methods from statistics and machine learning with database management, and include association rule learning, cluster analysis, classification, and regression.

Machine learning: Is a computer science concerned with the development of algorithms, which main objective is to automatically learn and recognize complex patterns and make decisions based on data.

Besides this techniques, there is also a growing number of technologies used to aggregate, manipulate, manage, and analyze big data. Here are some of the current Technologies:

Business intelligence (BI): It's a software which objective is to report, analyze, and present data. This software is usually used to read data that is already stored in a data warehouse or data mart, and is able to display information on real-time

Cassandra: Is a database management system that can handle great amounts of data in a distributed system.

Cloud computing: A computing paradigm where computing resources are provided as a service through a network (Manyika, Chui, Brown, Bughin, Dobbs, Roxburgh and Byers, 2011). The present cloud services (IaaS, Paas and Saas) basically aggregate resources and data into datasets in the internet (Tsuchiya, Tsuchimoto, Sakamoto, Lee Fujitsu, 2012).

Data warehouse: is usually used for storing large amounts of structured data (Manyika, Chui, Brown, Bughin, Dobbs, Roxburgh and Byers, 2011).

Extract, transform, and load (ETL): The name describes this software tools, since it is used to extract data from outside sources, transform that data, and load them into a data warehouse.

Hadoop: Is a software which the main objective is to process huge datasets on certain kinds of problems, which is now managed by Apache Software Foundation (Manyika, Chui, Brown, Bughin, Dobbs, Roxburgh and Byers, 2011). By scanning these huge datasets, Hadoop can produce results through a highly scalable, distributed system (Zikopoulos, Eaton, deRoos, Deutsch and Lapis, 2012).

MapReduce: Google introduced this software in order to be able to process huge datasets on certain kinds of problems (Manyika, Chui, Brown, Bughin, Dobbs, Roxburgh and Byers, 2011). It basically converts a set of data into a set of data where the elements become tuples, which are considered keys or values, and then those tuples, are combined into small sets of tuples (Zikopoulos, Eaton, deRoos, Deutsch and Lapis, 2012).).

R: Is a programming language for statistical computing and graphics, which main objective is to develop statistical software which is used for statistical software and data analysis.

SQL: Is originally an acronym for structured query language, and was designed for managing data in relational databases. This technology has the ability to insert, query, update, and manage data (Manyika, Chui, Brown, Bughin, Dobbs, Roxburgh and Byers, 2011).

There are also several types of data, such as structured data and unstructured data. The first one is considered all the data that reside in fixed fields, such as relational databases, and the second one is all the data that does not reside in fixed fields, such as free-form text (e.g., books, articles, body of e-mail messages), untagged audio, image and video data. (Manyika, Chui, Brown, Bughin, Dobbs, Roxburgh and Byers, 2011).

Besides all these examples previously described, there are much more techniques and technologies that are being currently used by different companies for different purposes (Manyika, Chui, Brown, Bughin, Dobbs, Roxburgh and Byers, 2011).

2.5. Chapter Summary

Games are becoming very important in the population daily life, since over the last years the size of the video-game industry has experienced a solid growth. With the substantial free time that people have, gaming has become a hugely popular and vastly profitable industry, and consequently, the game industry became an opportunity that needs to be looked upon. Past studies encountered intrinsic motivation concepts in computer games and identified three motivational categories, being them fantasy, challenge, and curiosity. Following studies included other motivation factors, such as competition, diversion, social interaction, achievement, status and self-expression.

Since people are confronted in their everyday life with non-motivational activities, Gamification appeared with the objective of encouraging people's engagement and

stimulate certain behaviors, being described as a company's strategy that applies game elements in non-game contexts. Consequently, with the approval of video games, people are now accepting this game mechanics in other part of their lives, and as a result, Gamification is becoming a powerful tool for the organizations, not only to retain customers and increase their loyalty to the company, but also to motivate and persuade the employees. Most Gamification elements came from this technological revolution in gaming, being them fast feedback, transparency, goals, badges, levelling up, onboarding, competition, collaboration, community and points.

The term "Big Data" appeared for the first time in 2005, defining a great amount of data that traditional data management techniques couldn't manage and process due to the complexity and size of this data. It is composed by four V's, volume, velocity, variety and veracity, and there are several technologies and techniques already being used in order to gather this data.

In conclusion, if Big Data is used properly, organizations can get a better view on their business, hence leading to efficiency in some of the company's department, since that with more data, and statistics, patterns can be identified, enabling it to make adjustments in order to optimize the Gamification design. This is the main point of this dissertation and what will be studied in the following chapter.

CHAPTER III: METHODOLOGY

This chapter covers the research model and the questionnaire used to find an answer to the research question of this dissertation. In the next section, with the objective of explaining the study, the research model is developed, which includes the Gamification strategy and Big Data Technologies used by 5 different companies, and the functionalities that arose from the combination of the two. From the benefits generated by these functionalities, hypothesis are created with the objective of understanding their value to the customers, and only then, a questionnaire is designed in order to validate or not the hypothesis proposed.

3.1. Research Model

The research model has as its main objective to structure and explain the dissertation study. Bringing up the research question, the main focus is to know if the combination of two recent technologies, being them Gamification and Big Data, can have an impact as a strategy of a company. In other words, the intent is to see if companies gain competitive advantage when introducing such combination against other companies in the same industry.

In order to study this research question, companies that are already introducing the combination of Gamification and Big Data Technologies are analyzed in the next sub chapter. Some of them are inserted in different industries, since it is important to take into consideration the differences between them to have a more accurate study. As stated, 5 companies that are already implementing Gamification and Big Data were studied, being them Warner Bros., NBC Universal, Ford, Foursquare and Starbucks,. In a brief description, the first two, Warner Bros. and NBC Universal are in the TV and Movies sector, Ford is the company studied in the Car industry and Foursquare and Starbucks are in the Service sector. There were only 5 companies analyzed because this is a recent strategy that only few companies are developing.

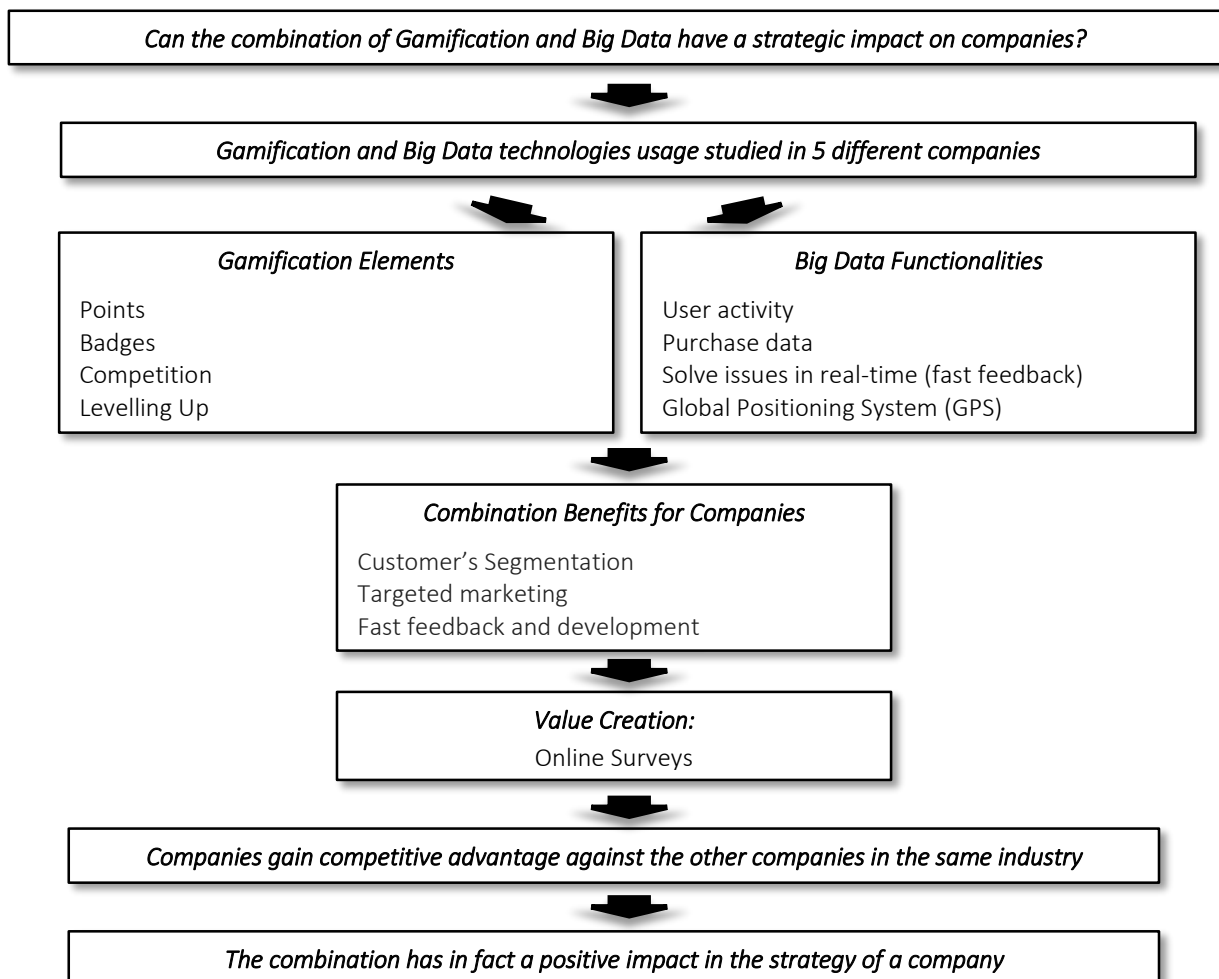
For these 5 companies, the Gamification strategy is explored as well as the Big Data technologies used. This happens because there are countless ways to gather large amounts of data, it doesn't mean that the companies are in fact using Big Data Technologies, such as Hadoop, Data Warehouse, SQL, MapReduce, between other technologies previously mentioned. Subsequently, in a deeper study of the Big Data usage, the functionalities of the technologies are also covered, in order to understand what kind of information the companies are after, such as user activity, purchase data, gathering

data in real-time and location as well, using Global Positioning System (GPS). Afterwards, knowing the Gamification strategy and the Big Data technologies, the benefits that the companies are trying to get with the combination of the two strategies are also covered.

After presenting the benefits the companies believe will gain with this strategy, hypothesis are developed, with the intent of exploring and then answer the research question. In a brief explanation, the hypothesis are divided in two parts, where the first one has the objective of learning about Gamification strategy itself. The other hypothesis proposed are more focused on the research question, since their objective is to perceive if Big Data is in fact important to Gamification. A deeply explanation of the hypothesis is presented further.

That is when the main focus of this dissertation arises, which is to recognize if this strategy creates value for the customers, and consequently giving competitive advantage to the companies. In order to perceive this, Resource-Based View is taken into consideration.

In a brief description, the research model is presented below:



3.2. Combination of Gamification and Big Data in use

3.2.1. WARNER BROS. ENTERTAINMENT

WARNER BROS. ENTERTAINMENT INC. is a global company that stands at the forefront of every aspect of the entertainment industry, which includes films, television, home entertainment, animation, between others. In 2009, Warner Bros. launched a Gamification strategy which connected the company directly to its consumers. This strategy is composed in two different currencies that an individual can earn, points and credits. The points are earned from purchases, such as buying a DVD, movie tickets or even digital content. The credits are earned each time an individual watches a movie trailer, play some sort of games, shares videos in social networks, and with these credits, the individuals would have access to digital content, such as wallpapers, ringtones, MP3 and videos (Paharia 2013).

The company is now combining that strategy with Big Data. By using Big Data Technologies the company is able to collect valuable data such as the user activity, purchase data and social media sharing content. The main benefits that the company intend with this strategy is to be able to track and reward online activity and engagement, measure which activities were more compelling, segment the audience, like for example see all the users that watched the trailer of a movie so they can send an offer with the DVD, and consequently, they would have a relationship with a group of people that can be a positive target for a genre of films, so whenever it comes out they can market to those individuals (Paharia 2013). As a result, the company believes this strategy could get customers to buy more, increase viral sharing and audience growth, and also develop a deeper customer relationship.

3.2.2. NBC UNIVERSAL

NBC Universal, Inc. is an American media and entertainment company which is engaged in the production and marketing of entertainment, news, and other information and services. In 2010, the corporation launched a digital engagement program for fans of a TV Show, enabling them to sign up online and see the show's content online, by watching videos, sharing to social networks, playing games, chatting with other friends and other examples. By doing this, the consumers can accomplish goals and earn points. Those points can be redeemed for virtual items and also can be expended in the show's merchandise, such as DVD's, posters, and other products (Paharia 2013).

By using Big Data Technologies such as the Hadoop, HBase, Cassandra, SQL for the structured, relational data and also cloud computing through Elastic MapReduce for simulation and data mining (Matthew Eric Bassett, 2013), NBC Universal is able to collect the user activity, e-commerce purchase data, and also video on demand services. Consequently, with the introduction of Big Data Technologies, the company believes it can help marketing and distribution. According to Matthew Eric Bassett (2013) the company will be able to track how the market is responding to the advertising campaigns, and then use the information more precisely to reach their audience. NBC Universal is searching for a dramatic increase in the online engagement, an increase in the merchandise sold and a viral audience growth.

3.2.3. FORD

Ford Motor Company is an American multinational that sells automobiles and commercial vehicles under the Ford brand and luxury cars under the Lincoln brand. One of the features that Ford is touting is the addition of Gamification, which aims to encourage drivers to drive more efficiently on the road by providing a drive score. The drive score is an overall score based on your driving habits. This score takes into consideration braking, acceleration, top speed, and other features, and individuals are more likely to earn more points when accelerating and braking in a gently way, as well as keeping their speed under the limit.

When using complex mathematical models, experimenting Hadoop for managing large sets of data and the R Project for statistical analysis, Ford is able to receive data back to the factory for real-time analysis and return to the driver via a mobile application. This data is considering how the car operates and responds in different road and weather conditions and any other forces that could affect the car. The company is also using Big Data to find out what their customers want, and to develop better cars faster (Hiner, 2012). This way, the company believes that can improve their cars regarding fuel consumption, safety, quality and emissions, and at the same time is encouraging drivers to drive more efficiently on the road by using this Gamification strategy.

3.2.4. FOURSQUARE

Foursquare is a location-based social networking website for mobile devices. The whole concept is a Gamification strategy, since it is a mobile application that enables users to check in to a physical location. By doing this, users broadcast to their friends where they are and what they are doing at real time. The company already included several gaming

elements such as points, badges, which are gained by checking various venues and mayorship, which is earned by checking a place on more days than anyone else.

Since the beginning that Foursquare is using Big Data Technologies such as Hadoop, Apache hive (SQL) and Data warehouse as well, by using ETL tools (Moore and Rathboma, 2013). With such technologies, the company is able to gather important data just like the check-ins, tips that current users are creating, likes, dislikes that their users are tagging locations with, how popular the locations are and how loyal the customers are (Paharia, 2013). With the introduction of Big Data, Foursquare can improve its Gamification strategy by using Big Data functionalities, such as recommending places based on the user activity, his friends and people like him, filter search based on what it knows about the individual, provide much better ratings, using the likes and dislikes, and the check-ins information (Paharia, 2013). These benefits only happen when using the functionalities of Big Data Technologies previously stated, and the the main focus of the company is to attract more users.

3.2.5. STARBUCKS

Starbucks Corporation is the largest coffee company in the world, which serves hot and cold beverages, whole-bean coffee, pastries, and snacks, between other products. In 2009, Starbucks launched its Gamification strategy as a mobile application, which features a fast way to pay and an incentive system to promote repeated visits. The My Starbucks application rewards users with a star whenever they use the application to pay, and when the user reaches the first milestone of 5 stars, that user is rewarded with a higher status, which is related to a prize (Bunchball 2013).

Starbucks is now using Big Data Technologies, such as Oracle Exadata Database Machine and Oracle Business Intelligence Enterprise Edition. They also utilize Oracle OLAP option, enabling fast and sophisticated analytics and a Machine Learning algorithms, which depends of Support Vector Regression, M5 decision trees, and Linear Regression with regularization (Oracle).

With this, Starbucks is able to gather more data, such as customer purchase information. One of the benefits of this data is to deliver targeted advertising and discounts directly to the mobile devices of its customers, since they are able to identify customers and link them with what products they buy where and when. As a result Starbucks could understand the complete product purchasing behavior, and consequently send discounts towards customers whose buying behavior shows that they may not be returning soon.

3.3. Research Hypothesis

In order to explore and reach the final conclusions for the research question, hypothesis are developed. They are divided in two parts, where the first one is to gather information about the Gamification strategy itself of the 5 companies. For this, hypothesis H1, H2 and H3 were raised, and they will analyze if the current Gamification strategy in use by the industries actually create value for the consumers. The second part, which are the rest of the hypothesis, is related to the main focus of this dissertation, which means that analyzes the combination of Gamification and Big Data, and perceives if Big Data is in fact a good strategy to take into consideration. These hypotheses will then be tested based on the survey developed.

First, it is essential to know if Gamification influences individuals' motivation on the different industries studied. This happens because if the Gamification strategy has no impact by itself, then with the introduction of Big Data the strategy might still not have influence on individuals, and so the study would be incorrect.

H1: Gamification has value for the users in the TV and Movies Sector.

H2: Gamification has value for the users in the Car Industry

H3: Gamification has value to the users in the Service Sector.

Knowing that Gamification has value to users, the introduction of Big Data can be analyzed. As some of the companies analyzed are searching for benefits from this strategy such as an increase of customers, targeted marketing strategies and an increase in the merchandise sold, it is important to understand if those functionalities create value to the consumers.

H4: Big Data functionalities create value for the users in the TV and Movies Industry.

H5: Big Data functionalities create value for the users in the Car Industry.

H6: Big Data functionalities create value for the users in the Service Sector.

Afterwards, is crucial to learn about Big Data's major problem, which is the increase of the privacy risks, and so it is important to recognize if the individuals are willing to dispose more information about themselves.

H7: People are willing to give personal information to the companies in order to receive the benefits proposed in return.

Finally, one of the most important things that these companies are looking for is if the benefits proposed by the companies create value to the users so that they would choose companies that are introducing this strategy over companies in the same industry that are not.

H8: People prefer companies that are already using the combination of Gamification and Big Data as a strategy instead of the companies of the same industry that are not.

3.4. Survey Methodology

In this section, the research methodology used to gather the necessary data in order to test the hypothesis previously described is deeply explained.

With the objective of gathering qualitative data to answer the research question proposed in this dissertation, an online survey was developed. The online survey is in English with the purpose of collecting responses from foreign countries, in order to reach a bigger sample and consequently achieving results more accurate. This questionnaire was designed in Qualtrics Survey Software and can be visualized in appendix 1.

3.4.1. SURVEY STRUCTURE

The questionnaire starts with a brief description of what is supposed to learn with it. The first questions are intended to understand the respondents' profiling and perceive if the respondents are well aware with the Gamification concept. Afterward, in order to give a brief notion of gamification, a small description of the concept is presented.

After this first introduction, the questionnaire is divided in 3 parts, where each one is related to an industry previously studied, the TV and Movies Industry, the Car Industry and the Service Sector.

The first hypotheses corresponds to the Gamification strategy of the companies of the TV and the Movies Sector analyzed, which were Warner Bros. and NBC Universal. This strategy was related to the websites of both companies, which offered points and virtual currencies each time an individual watched videos, shares to social networks, plays some sort of games and so ever. With this points, those individuals could have access to digital content such as wallpapers, ringtones, and could also expend in other sort of merchandise using this points as discounts. In order to validate this hypotheses Q5, Q6 were created.

Q5 asks the person if with these points, that person would be more motivated to register in a website and revisit in the future, and Q6 asks if the individual would be willing to buy more merchandise from the website if they could use the points as discounts.

The second hypotheses corresponds to the Gamification strategy of the Car industry company analyzed, which was Ford. This strategy aims to encourage drivers to drive in a more efficient way by providing a drive score. A person is more likely to earn higher scores when accelerating and breaking gently and keeping speed under the limit. To test this hypothesis, Q10 and Q11 were raised, where Q10 questions if the introduction of Gamification elements, such as the points earned, would encourage individuals to drive in a more efficient way and Q11 asks if the accessibility to compete with other people was important for them, considering the way they drive.

The third hypotheses corresponds to the Gamification strategy of the Service Sector companies analyzed, which were Starbucks and Foursquare. The strategy of both companies is related to a mobile application with the purpose of appealing repeated visits. For this, they offer points, badges and also rewards, when the individuals use the application to check in the places they visit. In order to validate H3, Q15 is developed, and asks if the users would register in a mobile application or website and revisit in a frequent basis if they could earn points and have the possibility to level up, and consequently have access to discounts in the service stores in question.

For the key hypothesis of this dissertation, being them H4, H5 and H6 since they are directly related to the research question, the questions Q7, Q12 and Q16 were developed. Hypothesis 4 tries to understand if the introduction of Big Data technologies creates value to the users, considering the companies analyzed in the TV and Movies Sector. When these companies introduced the Big Data technologies previously mentioned, they were able to gather more data related to the user activity, purchase data and social and media sharing. Therefore, Q7 asks how the individuals would feel if they received digital content related to a video that they viewed, liked and shared, or in other words, gave it publicity and also individuals were asked if they find interesting the possibility of receiving information about new products that are tailored to their tastes and their friends'.

H5 tests if the introduction of Big Data technologies creates value to the users, considering the company analyzed in the Car industry, which was Ford. The main focus for the usage of Big Data technologies by Ford is to gather data regarding the way the cars responds to different road and weather conditions, and understand what the customers want to

develop better and the car's problems in real time. Hence, Q12 asks if the consumers were interested if the companies could understand the cars' problems in real time and also if the customers would be interested if the company could understand better what they want to develop better in the car.

To understand if the combination of Gamification and Big Data technologies creates value to the customers in Service Sector Hypothesis 6 was raised. By using Big Data technologies, these companies could gather much more data considering user activity, purchase data, and location-based data. With these, they could have much better filters, according to the individuals personal information, and so. Thus, Q16 asks individuals if being recommended places based on their activity, his friends and other individuals with similar tastes would be interesting to them, and also if receiving targeted advertising and discounts was an important feature for them.

In order to perceive if the customers are willing to give more personal information to the companies in order to access these benefits, which is hypothesis H7, questions Q8, Q13 and Q17 were created, each one related to a type of sector. Finally, with the purpose of validating H8, Q9, Q14 and Q18 were developed. Each question is related to a type of industry analyzed, and asks the individuals if in the same industry, they would prefer the companies that are introducing this strategy instead of others that are not.

Below is presented the correlation between the hypothesis proposed and the questions developed to test them.

Hypothesis	Survey Questions
H1: Gamification has value for the users in the TV and Movies sector.	Q5 Q6
H2: Gamification has value for the users in the Car Industry	Q10 Q11
H3: Gamification has value to the users in the service Sector	Q15
H4: Big Data functionalities create value to the users in the TV and Movies Industry	Q7
H5: Big Data functionalities create value to the users strategy in the Car Industry	Q12
H6: Big Data functionalities create value to the users in the Service Sector	Q16
H7: People are willing to give personal information to the companies in order to receive the benefits proposed in return.	Q8 Q13 Q17
H8: People prefer companies that are already using the combination of Gamification and Big Data as a strategy instead of the companies of the same industry that are not.	Q9 Q14 Q18

CHAPTER IV: DATA ANALYSIS

This chapter covers the data gathered from the online survey previously described, and presents the results in the proper table and graph.

Before analyzing the data gathered, it is fundamental to describe the sample examined. Afterwards, the results gathered from the online survey are discussed and analyzed in order to validate the hypothesis proposed in this dissertation. With this, it will be possible to take intermediary conclusions, which will then lead to the final conclusions and consequently, answer to the research question of this dissertation. After knowing if the benefits created by the combination of the two technologies creates value to the users, it is also important to analyze if they are a sustainable competitive advantage or not, which is tested through the RBV model.

4.1. Sample Description

The questionnaire has been seen by 257 individuals, but only 253 are valid, which means that only those 253 finished the survey. From these 253 individuals, 146 were male and 107 were female, which correspond to 57.7 % and 42.3 % respectively of the total sample (Appendix 2). Regarding the age, 3 individuals of the total respondents were less than 18, 48 individuals were between 25 and 29 years old, 19 were between 30 and 34 years old and 32 have more than 35 year old. The major age range was between 18 and 24 with a total of 151 respondents, corresponding to 59.7% of the total sample (Appendix 3)

Since the thesis theme is an innovative strategy, being it Gamification, it was interesting to know if people were already aware with this concept. As foreseeable, more than half of the respondents didn't know the definition of the concept, since 142 answered "No" to the third question, corresponding to 56.1 % (Appendix 4).

4.2. Hypothesis Analysis

4.2.1. HYPOTHESIS 1

The first hypotheses corresponds to the Gamification strategy of the companies of the TV and the Movies Sector analyzed. In order to validate this hypothesis, two questions were formulated. The first question asks the person if with this points, that person would be more motivated to register in a website and revisit in the future. For this, 220 of the 257 answered yes, which represents the majority of 87 % (Appendix 6). The second question asks if the individual would be willing to buy more merchandise from the website if they could use the points as discounts, and once again, the answer was positive, since there

were 210 individuals saying yes, corresponding to 83% of the total respondents (Appendix 7).

Knowing this, Hypothesis 1 is validated, since the Gamification strategy used by the companies in the TV and Movies industry is creating value to the final consumers.

4.2.2. HYPOTHESIS 2

The second hypotheses corresponds to the Gamification strategy of the Car industry company analyzed. Considering H2, two questions were also developed in order to test this hypothesis. The first question enquires if the introduction of Gamification elements, such as the points earned, would encourage individuals to drive in a more efficient way. The result was positive since 190 of 253 individuals answered yes, corresponding to 75.1 % (appendix 12). The second question is related to another feature of this Gamification strategy, which is competition. By earning this points, the drivers would be able to compete with their friends and other people, considering the way they drive, and so, the question is very direct and asks if the accessibility to compete with other people was important to them, considering the way they drive. With a cumulative percentage of only 18.2 % considering the scale levels 1, 2, 3 and 4, the answer was very positive, since the other 81.8 % of the respondents found this element important (appendix 13).

Taking this into consideration, Hypothesis 2 is validated, since the Gamification strategy used by the company in the Car industry is creating value to the customers.

4.2.3. HYPOTHESIS 3

The third hypotheses corresponds to the Gamification strategy of the Service Sector companies analyzed. For this hypothesis, one question was raised in order to validate H3. The question developed asks if the users would register in a mobile application or website and revisit in a frequent basis if they could earn points and have the possibility to level up, and consequently have access to discounts in the service stores in question. For this question, a positive result was also presented, since 205 individuals of the total 253 responded yes, being it 81% of the total sample (appendix 18).

Considering this, hypothesis 3 is also validated, since the Gamification strategy used by these two companies are creating value to the final users.

4.2.4. HYPOTHESIS 4

Hypothesis 4 tries to understand if the introduction of Big Data technologies create value to the users, considering the companies analyzed in the TV and Movies Sector. Regarding

this hypothesis, two questions were developed in order to validate it. The first question, is related to the fact that the company would be able to trace the users' activity, and for this, the respondents were asked how they would feel if they received digital content related to a video that they viewed, liked and shared. With a cumulative percentage of only 21.7 % for the irrelevant scale levels 1, 2, 3 and 4, the answers were very positive, since 78.3 % said it would be interesting (appendix 8). The second question is regarding the fact that a company would be able to segment their audience, and so, they could have a positive target for marketing strategies. For this, individuals were asked if they find interesting the possibility of receiving information about new products that are tailored to their tastes and their friends'. The result was positive, since a cumulative percentage of 71.5 % of the total respondents found this benefit interesting, considering the levels 5, 6 and 7 of the scale level (appendix 9)

Considering this, Hypothesis 4 is validated, since the benefits created by the combination of Gamification and Big Data Technologies are creating value to the final users in the TV and Movies Sector.

4.2.5. HYPOTHESIS 5

H5 tests if the introduction of Big Data technologies create value to the users, considering the company analyzed in the Car industry. In order to validate this hypothesis, two main questions were raised. The first question is related to the first benefit of the usage of Big Data technologies, and so, it asks if the consumers were interested if the companies could understand the cars' problems in real time. This question was well appreciated by the respondents since most of them found this feature very interesting, as 81.8 % of the total is well distributed between the scale levels 5, 6 and 7 (appendix 14). The second question, which asks if the customers would be interested if the company could understand better what they want to develop better in the car, didn't have the same amount of positive answers, however, in an overall matter, the result was very positive as well, since 78.7 % found the idea interesting (Appendix 15).

Considering this, Hypothesis 5 is also validated, since the benefits created by the combination of Gamification and Big Data Technologies are creating value to the final users in the Car Industry.

4.2.6. HYPOTHESIS 6

Hypothesis 6 tries to understand if the combination of Gamification and Big Data technologies creates value to the customers in Service Sector. With the purpose of

validating H6, two questions were developed. The first question regards the first benefit that these companies are offering, which is to understand each individual's information and recommend places based on that. And that was precisely what was asked to the final users, if being recommended places based on their activity, his friends and other individuals with similar tastes would be interesting to them. For this, a positive result of 74.3 %, distributed between the scale level 5, 6 and 7, which correspond to the interesting levels, was gathered (Appendix 19). The second question took into account another benefit for these companies, which was targeted marketing taking into consideration the purchase behavior. For this, the individuals were asked if receiving targeted advertising and discounts was an important feature for them. With only a cumulative percentage of 28.9 % saying it is irrelevant, it can be considered an important feature for the users (Appendix 20), since the scale levels 5, 6 and 7 represent 71.3 %.

Based on this information, Hypothesis 6 is also validated, since the benefits created by the combination of Gamification and Big Data Technologies are creating value to the final users in the Service Sector.

4.2.7. HYPOTHESIS 7

This seventh hypothesis takes into consideration one of the major problems of Big Data Technologies, which is the increase of privacy risks. And so, regarding this situation, it is fundamental to know if individuals are disposed to give more personal information in order to access the benefits these companies are offering. For this, three questions were raised, which each one is related to a type of sector, TV and Movies, Car and Service.

Taking this into consideration, for the TV and Movies Sector, only 51.4% of the total respondents are willing to give more personal information in order to access the benefits (appendix 10). As we can see, a large proportion of people are not willing to share personal information despite the benefits offered by the companies, with a cumulative percentage of 32.2% distributed between level 1, 2 and 3 of the scale. The other 15.4% are indifferent.

For the Car Industry, 58.5 % are willing to share personal information, about the way they drive, in order to access the benefits proposed by the company in question (appendix 16). As well as the TV and Movies Sector, a massive amount of the individuals are not willing to share information either, representing a cumulative percentage of 30 %, and the other 11.5 % are indifferent.

Finally, for the Service Sector, the lowest percentage of people willing to share information was presented, with 48.6%, which is distributed between 5, 6 and 7 scale levels (appendix 21). 35.2 % are not willing to give more personal information in order to access the benefits offered by these companies, and 16.2 % are indifferent.

These questions weren't so accepted as the others previously indicated, and a possible reason for this is that it is related to an individual personal information, and people tend to think twice before giving information about themselves, since they don't know what other intentions these companies are after. However, since in an overall basis the individuals are willing to share personal information in order to access the benefits proposed by the companies, this hypothesis is also validated. However, this results must be taken into account when introducing this strategy, because the values presented were minor, and even negative, when considering the Service Sector.

4.2.8. HYPOTHESIS 8

The last hypothesis, the eighth, studies one of the most interesting keys for the companies that are introducing this strategy, which is if the benefits proposed by the companies create value to the users so that they would choose companies that are introducing this strategy over companies in the same industry that are not.

For this, 3 questions were also developed, each one related to a type of industry analyzed, and asks the individuals if in the same industry, they would prefer the companies that are introducing this strategy instead of others that are not. The TV and Movies Industry presented a positive result, since 75.1 % of the total individuals, corresponding to 190 individuals, answered that would prefer a company that was offering these benefits instead of others in the same Sector that were not (appendix 11). The car industry received also a positive result, since 73.5 % answered that would choose a Car Manufacturer Company that is already introducing these benefits previously mentioned (appendix 17). Finally, the Service Sector presented a similar result, where 74.3% of the total respondents answered that would choose these companies instead of others in the same sector that are no introducing this strategy, and consequently, these benefits proposed (Appendix 22).

Considering this, Hypothesis 8 is also validated, since in an overall basis, the result was not only positive but also sublime.

4.3. Main Findings

Considering Gamification strategy itself of the 5 companies, hypothesis H1, H2 and H3 were raised. Knowing that the Hypothesis 1 has been validated with 87% and 83%, which means that individuals find the Gamification elements used in the TV and Movies Industry interesting, Hypothesis 2 has been validated with 75.1% and 81.8%, which means that individuals find the Gamification elements used by the Car industry interesting and Hypothesis 3 has been validated with 81%, meaning that the Gamification elements in the Service industry were also interesting, it can be concluded that the Gamification strategy itself is creating value to the final customers.

Regarding the combination of Gamification and Big Data of the 5 companies, H4, H5 and H6 were developed. Knowing that hypothesis 4 has been validated with 78.3% and 71.5%, which means that individuals find Big Data functionalities interesting in the TV and Movies Industry, Hypothesis 5 has been validated with 81.8% and 78.7%, meaning that the Big Data functionalities are also interesting in the Car Industry and Hypothesis 6 has been validated with 74.3% and 71.1%, meaning that individuals find Big Data functionalities interesting in the service Sector, it can be concluded that the Big Data functionalities combined with the Gamification strategy are creating value to the final users.

Hypothesis 7, which is concerned with the personal information has been also validated, with 51.4% for the TV and Movies Industry, 58.5% for the Car Industry and 48.6% for the Service Sector, since in an overall basis, the individuals are willing to share personal information in order to access the benefits proposed by the companies. Regarding hypothesis 8, which has also been validated, individuals prefer companies that are already implementing the combination of Gamification strategy and Big Data Technologies instead of others in the same Sector that are not, with results of 87% for the TV and Movies Industry, 73.5% for the Car industry and with 74.3% for companies in the Service Sector.

4.4. RBV Analysis

In order to study if this combination of Gamification and Big Data is a sustainable competitive advantage for the companies that are introducing it, a Resource-Based View Model is applied. This model takes into consideration not only the value this strategy creates to the final users, which is analyzed in the previous sub chapter, it also covers rareness, inimitability and non-substitutability of the firm's resources which consists of

all assets, both tangible and intangible, that are possessed by that firm (Barney, 1991). The main assets in question are Gamification and Big Data Technologies.

4.4.1. VALUE

Regarding the value, it can be concluded that the benefits provided by the combination of Gamification and Big Data have value to the final users in the TV and Movies Sector, since the first benefit, which is related to engage users to share and publish videos and movie trailers in social networks by offering them points and then digital content, gave us a positive result of 78.3 % of individuals that find out this functionality interesting, and the second question, which is more related to the audience segmentation, gave us a positive result of 71.5 % of people that find that valuable.

Also, considering the combination of Gamification and Big Data in the Car industry, it is also plausible to conclude that the benefits offered by the two technologies create value to the final users. This happens because the first benefit is if the companies were able to find the car's problems in real time, which had a positive result of 81.8% of individuals interested. The second benefit, which is if the companies could understand better what their customers want to develop better, also had a positive result of 78.7% of people interested. Considering this, the combination of Gamification and Big Data is actually creating value to the final consumers.

Finally, considering the combination of Gamification and Big Data in the Service Sector, it can be observed that it is creating value to the final users. With 74.3% of individuals interested in the first benefit offered by the these companies, which is related to the recommendations based on the user activity and purchase data, and with a result of 71.1% for the second benefit, which is related to targeted marketing, the combination of Gamification and Big Data is creating value to the final users.

Taking this into consideration, the other three dimensions need to be looked upon, being them rareness, inimitability and non-substitutability

Gamification is becoming a powerful tool for the organizations in order to retain customers and increase their loyalty to the company (Bunchball, 2010). Regarding this, the customers are the most important aspect of this strategy, and therefore, they are the first to be engaged in gameful experiences (Huotari and Hamari, 2011). In other words, Gamification is used with the objective of improving the company's relationship with their

customers, by creating new experiences to them, and consequently, creating value. Although, Gamification strategy can, by itself, be easily imitated.

Big Data is defined as a great amount of data that traditional data management techniques couldn't manage and process (Ularu, Puican, Apostu and Velicanu, 2012), and consequently, when combined with the company's Gamification strategy, a massive amount of data related to these Gamification experiences can be gathered, enabling the company to acquire customer patterns and thus enhance customer satisfaction by improving their services and products, which will then create value to the customers. When the clients become accustomed to this value created, they will face switching costs when considering other companies in the same sector. However, despite this, Big Data Technologies can also be easily imitated by competitive companies.

Nevertheless, technologies themselves do not generate core competences, but depend on how they will be used, combined and managed (Soto-Acosta and Meroño-Cerdán, 2008). Regarding this, the intangible asset raised by the combination of Big Data and Gamification, which is the knowledge gathered about the customers can also be considered. And so, although Big Data Technologies can be imitated, these technologies enable firms to use databases, data mining, between other tools, in order to store and analyze the customer's information more efficiently, which are used to find important patterns that can be useful for the company (Zablah, Bellenger and Johnston, 2004), which leads to consumer satisfaction. In this context the knowledge rareness, inimitability and non-substitutability are analyzed.

4.4.2. RARENESS

A resource that is not rare can be easily replaced (Desouza, 2007). Considering that customer knowledge depends on the company customers, since the knowledge can only be gathered by each interaction a company has with its clients, the information is difficult or even impossible to be acquired without engaging in the same type of interaction, if the client or consumer is not willing to do it all over again. In addition to that, when the information is already in the company's data bases, it has to be analyzed in order to find patterns that are useful for the company, and considering the massive amount of information gathered, Big Data Technologies must be used (Schroeck, Shockley, Smart, Romero-Morales, and Tufano, 2012). And so, considering the difficulty to collect and analyze this knowledge, this intangible asset created by the combination of Big Data and Gamification can be considered rare, as long as it is derived by a consumer interaction that has a significant cost to the consumer. The rarity is limited to this cost and as such,

Gamification and Big Data technologies have to be applied in order to increase it thus sustaining the competitive advantage even if the technologies are, by itself, copied by the competition.

4.4.3. INIMITABILITY

Another factor that needs to be looked upon in this analysis is inimitability. The knowledge obtained from one company is also difficult to transfer to another company, since the information gathered, being tacit, depends upon context (DeFillippi & Arthur, 1998). This means that since the company is gathering information about their customer's purchase data, user activity between others, knowledge gathered by a company can only be used by that specific company, since the data would be useless for potential competitors. This happens because even though the external environment might be the same, the internal environment of the companies are different, and so, the same customer patterns traced would be incorrect for the competitive companies. Meaning that the competitive companies can not imitate the knowledge to use for their own sake. And so, considering this, knowledge is also an intangible asset that is inimitable, since it cannot be duplicated. The assumption for applying gamification and big data technologies presented just above also applies.

4.4.4. NON-SUBSTITUTABILITY

Finally, to be non-substitutable the knowledge resource cannot be replaced by any other knowledge resource (Desouza 2007). Regarding this, as it is explained further, the knowledge generated by Big Data Technologies and the Gamification experiences offered to the clients, cannot be substituted either. It was concluded that competitive companies can imitate the use of Gamification and Big Data technologies, which means that they can also generate their own knowledge about their customers, meaning that they can substitute the knowledge of a company by their own knowledge generated. However, due to the switching costs to the consumers previously stated, the customers will not give the chance for competitive companies to gather this information, and so these companies are not able to gather information related to the same customers. And so, despite the existing substitutes for Gamification and Big Data, the knowledge created is non-substitutable and the assumption for applying gamification and big data technologies presented just above also applies.

In summary, competitive companies can imitate Gamification and Big Data technologies use, however, the knowledge gathered by a company is very difficult or even impossible to be acquired and, afterwards, it can only be used by that specific company. And even

though the competitive companies can use the Gamification and Big Data to generate their own knowledge about the customers, due to the switching costs their clients will face, they won't give the chance for competitive companies to gather this information. Considering this, the knowledge created by Gamification and Big Data can be considered a core competence for the company, by creating value, being rare, inimitable and non-substitutable, leading to a competitive advantage for the company, as long as Gamification and Big Data technologies are both applied in order to increase the switching costs for the consumers and thus sustaining the competitive advantage, even if these technologies are easily copied by the competition when used separately.

CHAPTER V: FINAL CONCLUSION

The main purpose of this dissertation is to answer to the following research proposal: “Can the combination of Gamification and Big Data have a strategic impact on companies?”, which means that this dissertation intends to recognize the impact of this union across different companies, identify the benefits that arise from such combination.

In order to study this research question, companies that are already introducing the combination of Gamification and Big Data Technologies are analyzed. Some of them are inserted in different industries, since it is important to take into consideration the differences between them to have a more accurate study. In a brief description, the first two companies analyzed, Warner Bros and NBC Universal are in the TV and Movies sector, Foursquare and Starbucks are in the Service sector, and finally Ford is the company studied in the Car industry. For these 5 companies, the Gamification strategy is explored as well as the Big Data technologies used. Afterwards, knowing the Gamification strategy and the Big Data technologies, and the benefits that the companies are trying to get with the combination of the two strategies are also covered.

After presenting the benefits the companies believe will gain with this strategy, some hypothesis are developed, with the intent of exploring and then answer the research question. They are divided in two parts, where the first one has the objective of gathering information about the Gamification strategy itself of the 5 companies. For this, hypothesis H1, H2 and H3 were raised. Knowing that Hypothesis 1, Hypothesis 2 and Hypothesis 3 have been validated, meaning that the individuals find the Gamification elements used by these companies in this industries interesting, it can be concluded that the Gamification strategy itself is creating value to the final customers.

The second part, which is regards H4, H5 and H6, is related to the main focus of this dissertation, which means that analyzes the combination of Gamification and Big Data, and perceives if Big Data is in fact a good strategy to take into consideration. Knowing that hypothesis 4, Hypothesis 5 and Hypothesis 6 have been validated, meaning that the individuals find the benefits proposed by the combination of Big Data Technologies and Gamification elements used by these companies interesting, it can be concluded that the Big Data functionalities combined with the Gamification strategy are creating value to the final customers.

Hypothesis 7, which is concerned with the personal information has been also validated, since in an overall basis, the individuals are willing to share personal information in order to access the benefits proposed by the companies. And finally, regarding hypothesis 8, individuals prefer companies that are already implementing the combination of Gamification strategy and Big Data Technologies instead of others in the same Sector that are not, which validates this hypothesis.

Afterwards, in order to study if this combination of Gamification and Big Data is a sustainable competitive advantage for the companies that are introducing it, a Resource-Based View Model is analyzed. It is concluded in the Data Analysis Chapter that the combination of Gamification and Big Data in the different industries is creating value to the final users, and so, the main purpose of this model is to see if the combination is also rare, inimitable and non-substitutable. It was concluded that Gamification is used with the objective of improving the company's relationship with their customers, by making new experiences to them, and consequently, creating value. With Big Data combined, a massive amount of data related to this Gamification experiences can be gathered, enabling the company to acquire customer patterns and thus enhance customer satisfaction by improving their services and products, and consequently, when the customers become accustomed to this value created, they will face switching costs when considering competitive companies. And so, even though Gamification and Big Data, by itself, can be easily copied by competitive companies, the knowledge created by the two can not.

In summary, the knowledge gathered by a company is very difficult to be acquired and, afterwards, can only be used by that specific company. Moreover, due to the switching costs to the customers, the competitive companies won't be able to generate this data for their own knowledge. And so, considering this, the knowledge created by Gamification and Big Data is considered a core competence by creating value, being rare, inimitable and non-substitutable, leading to a competitive advantage for the company. This happens as long as Gamification and Big Data technologies are both applied in order to increase the switching costs for the consumers and thus sustaining the competitive advantage, even if these technologies are easily copied by the competition when used separately.

Knowing this, the answer to the question "Can the combination of Gamification and Big Data have a strategic impact on companies?" is Yes. The benefits created by the combination of Gamification and Big Data Technologies are not only creating value to the final users as they can become a sustainable competitive advantage for companies.

Limitations

Since Gamification and Big Data are two technologies that are not fully developed yet, there are some limitations that need to be taken into consideration:

- There are not that many companies that are already using such combination of Gamification and Big Data Technologies, and consequently, the companies studied in this dissertation is very limited, being them 5.
- The 5 companies analyzed were only inserted in 3 different industries, being them the TV and Movies Industry, the Car Industry and the Service Sector, meaning that the industry sample is also limited in this study.
- From the companies studied, there were only 4 elements of the Gamification strategy analyzed and only 4 Big Data technologies functionalities included in the research model, and according to the literature review, there are much more existing elements and functionalities, that are not analyzed in this dissertation.
- Finally, the sample of the survey is mainly constituted of respondents aged between 18 and 24 years old.

Future Research

Considering this, the following research topics are proposed for future research work:

- Gather more information about companies that are also using this combination. It would be interesting to compare the results between more industries and more companies, in order to understand if this strategy works in several types of industries and companies.
- Since it was only studied 4 elements of the Gamification strategy and only 4 Big Data technologies functionalities included in the research model, it would be also interesting to study the remaining elements and functionalities described in the Literature Review, and see if they can be managed to be flexible to each industry and company.
- Finally, considering the survey, it would be interesting to see the results from a different sample, which may include other age ranges, and more individuals from different countries, to perceive if this strategy is accepted by other individuals.

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APPENDIX

Appendix 1: Questionnaire

Q1. Gender

- Male
- Female

Q2. Age

- < 18
- 18 - 24
- 25 - 29
- 30 - 34
- > 35

Q3. Are you familiar with the Gamification Concept?

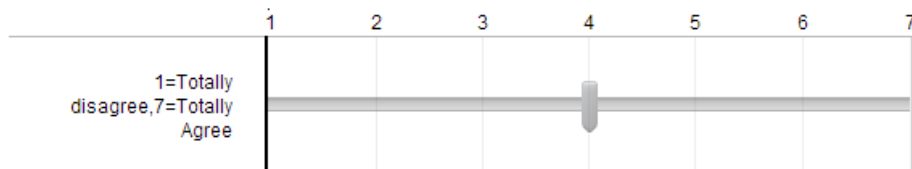
- Yes
- No

Gamification

Since people are confronted in their everyday life with non-motivational activities, Gamification was created to prompt motivation in those activities, in order to encourage people's engagement and stimulate certain behaviors.

The idea prevails that Gamification simply refers to adding game mechanisms into a service such as points, badges and trophies with the purpose of becoming more engaging and manage a better retention of customers.

Q4. Would you be more motivated in some activities in your life (such as work or school) if there were game elements present?



Television and Movie industry

Some companies in this industry are already introducing virtual points in their websites. These points can be earned whenever a person visits a movie website, play games, shares trailers in social networks, and with these points the customers would be rewarded with digital content related to that movie, such as wallpapers, ringtones, MP3 music and videos, and can also expend in other merchandise.

Q5. Would you be more likely to register on a website and revisit same website if rewards were offered?

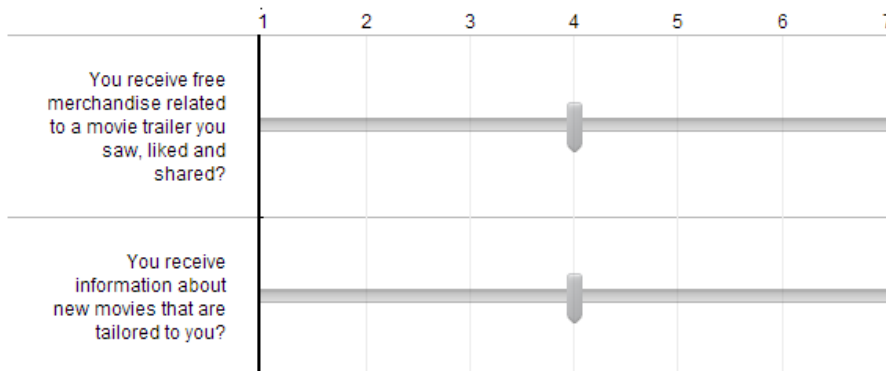
- Yes
- No

Q6. Would you be willing to buy more merchandise if using the points earned as a discount?

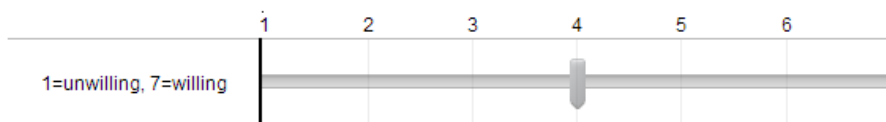
- Yes
- No

Q7. How would you feel if:

(1 = irrelevant, 7 = very interesting)



Q8. With these benefits, would you share more personal information?



Q9. In the same industry, would you be more likely to watch movies and TV shows from companies that are introducing this type of strategy instead of others that are not?

- Yes
- No

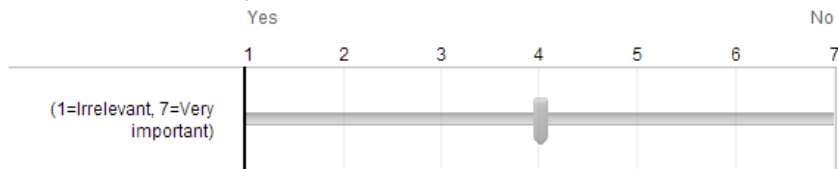
Car Industry

One of the big features that the companies in this industry are touting is the inclusion of Gamification, which aims to encourage drivers to drive more efficiently on the road by providing a drive score. Drivers are more likely to earn a high score for accelerating and braking gently, as well as keeping their top speed at the speed limit. One example is already installing over 74 sensors in cars including sonar, cameras, radar, accelerometers, temperature sensors and rain sensors.

Q10. Would a factor such as Gamification encourage you to drive better?

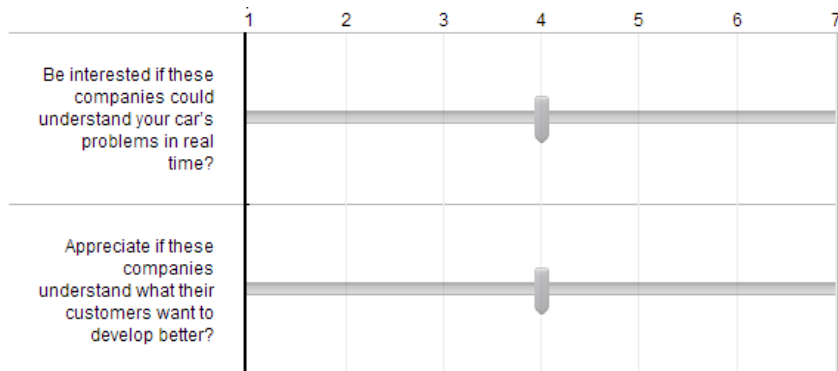
- Yes
- No

Q11. Is the accessibility to compete with your friends and other people, considering the way you drive, important to you?

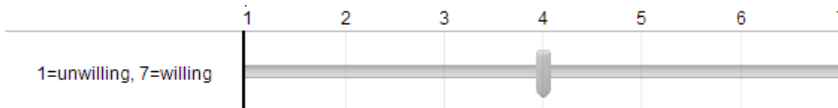


Q12. Would you:

(1 = irrelevant, 7 = very interesting)



Q13. In this context, would you like to share your personal information (about the way you drive)?



Q14. In the same industry, would you be more likely to choose companies that are introducing this type of strategy instead of others that are not?

- Yes
- No

Service industry

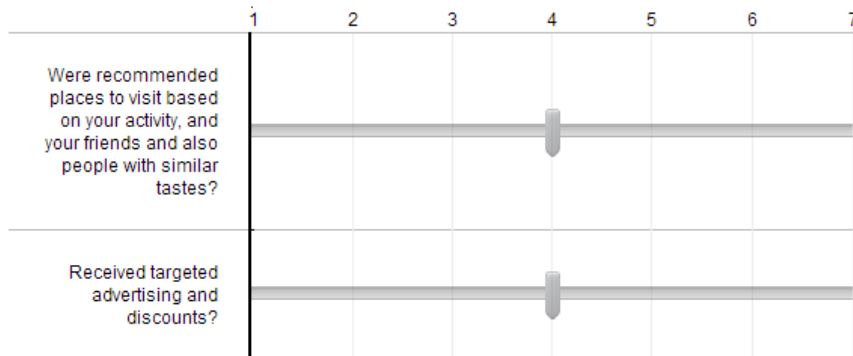
Some Coffee stores and restaurants between other services are already applying Gamification as a mobile application that enables users to check in to a physical location. By doing this, users broadcast to their friends where they are and what they are doing in real time. Each time a customer checks in he will earn points, badges and other gaming elements, which can be used as future discounts.

Q15. Would you register and visit a company's website or application in a frequent basis if you could earn points and "level up" and consequently have access to discounts?

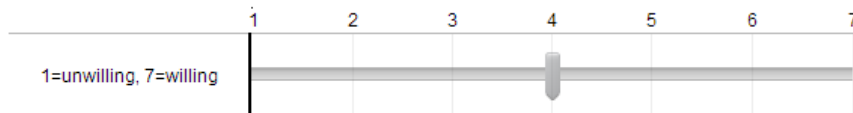
- Yes
- No

Q16. How significant to you would it be if you:

(1 = irrelevant, 7 = very interesting)



Q17. With these benefits, would you share more personal information?



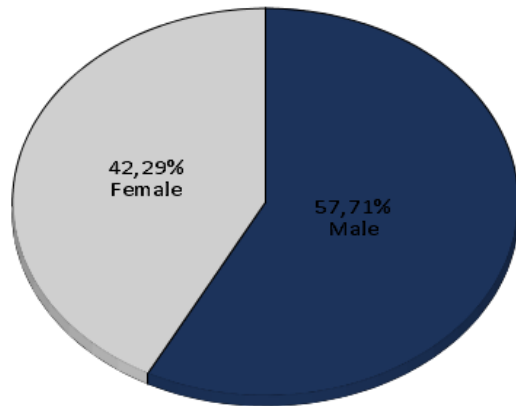
Q18. In the same industry, would you be more likely to choose companies that are introducing this type of strategy instead of others that are not?

- Yes
- No

Appendix 2: Questionnaire result

APPENDIX 2: QUESTION 1 RESULTS

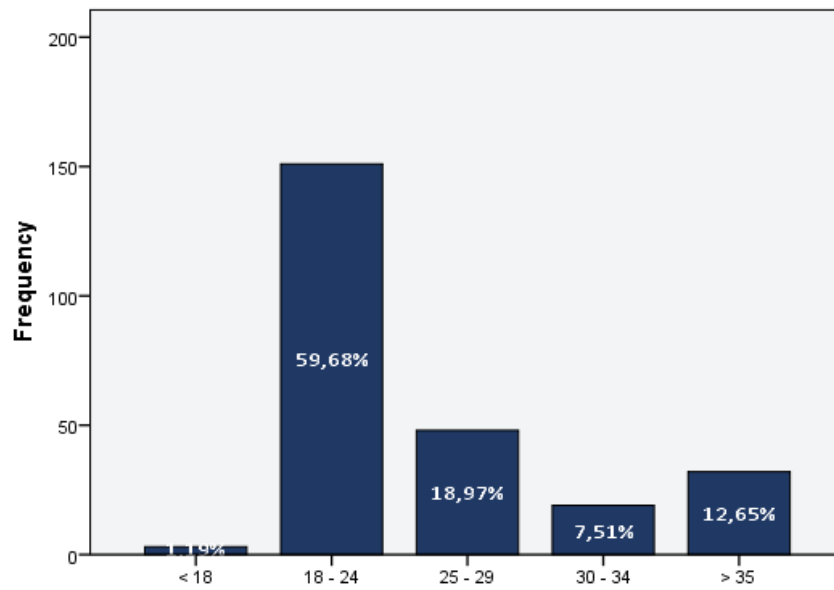
Gender



	Freq.	%	Cum. %
Male	146	57,7	57,7
Female	107	42,3	100,0
Total	253	100,0	

APPENDIX 3: QUESTION 2 RESULTS

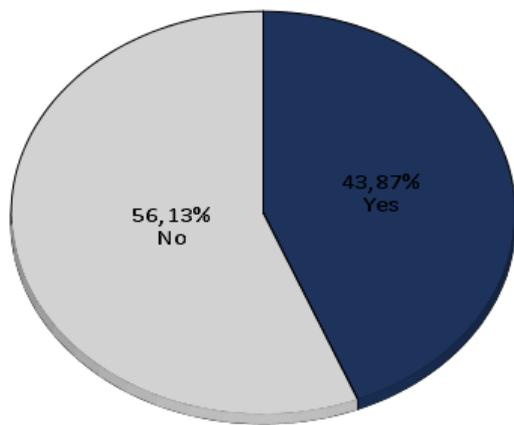
Age



	Frequency	Percent	Cumulative Percent
< 18	3	1,2	1,2
18 - 24	151	59,7	60,9
25 - 29	48	19,0	79,8
30 - 34	19	7,5	87,4
> 35	32	12,6	100,0
Total	253	100,0	

APPENDIX 4: QUESTION 3 RESULTS

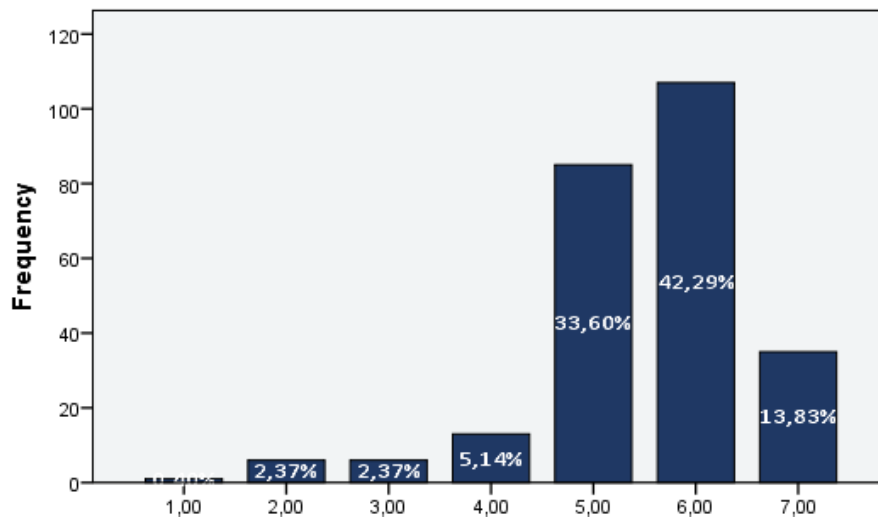
Are you familiar with Gamification concept?



	Freq.	%	Cum. %
Yes	111	43,9	43,9
No	142	56,1	100,0
Total	253	100,0	

APPENDIX 5: QUESTION 4 RESULTS

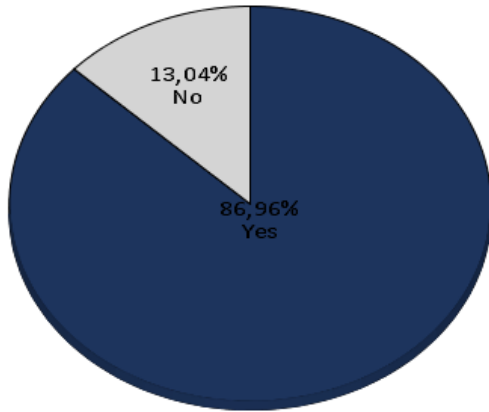
Would you be more motivated in some activities in your life (such as work or school) if there were game elements present? (1= Totally disagree, 7= Totally Agree)



	Frequency	Percent	Cumulative Percent
1,00	1	0,4	0,4
2,00	6	2,4	2,8
3,00	6	2,4	5,1
4,00	13	5,1	10,3
5,00	85	33,6	43,9
6,00	107	42,3	86,2
7,00	35	13,8	100,0
Total	253	100,0	

APPENDIX 6: QUESTION 5 RESULTS

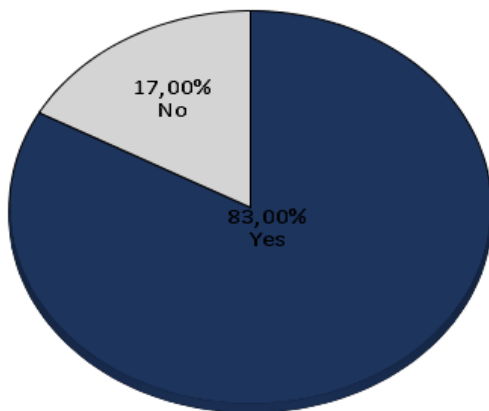
Would you be more likely to register on a website and revisit same website if rewards were offered?



	Freq.	%	Cum. %
Yes	220	87,0	87,0
No	33	13,0	100,0
Total	253	100,0	

APPENDIX 7: QUESTION 6 RESULTS

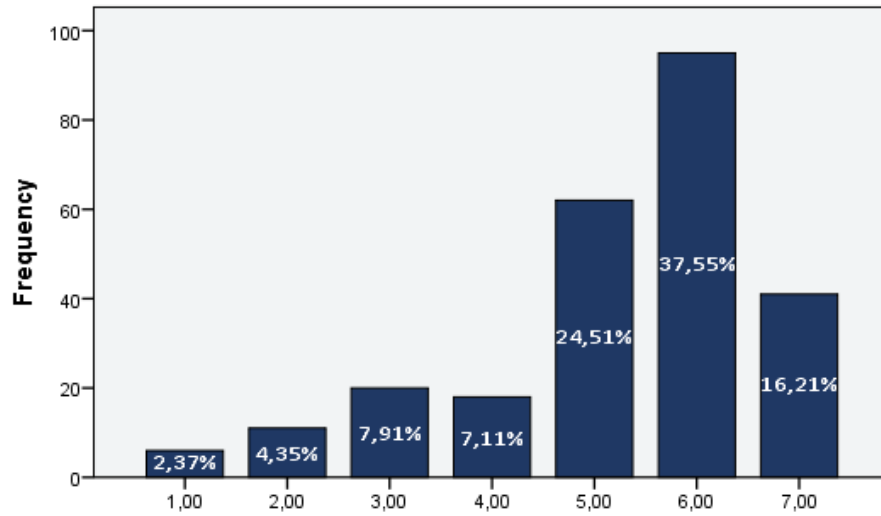
Would you be willing to buy more merchandise if using the points earned as a discount?



	Freq.	%	Cum. %
Yes	210	83,0	83,0
No	43	17,0	100,0
Total	253	100,0	

APPENDIX 8: QUESTION 7A RESULTS

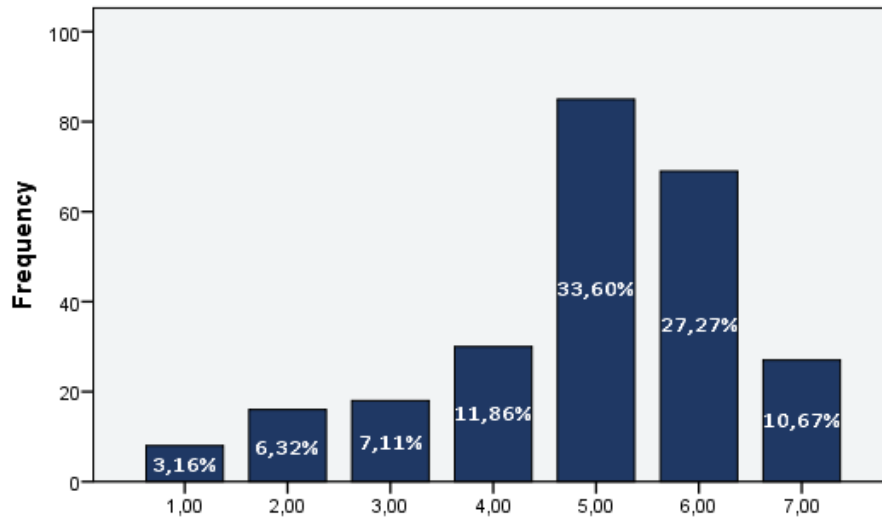
How would you feel if you receive free merchandise related to a movie trailer you saw, liked and shared? (1 = irrelevant, 7 = very interesting)



	Frequency	Percent	Cumulative Percent
1,00	6	2,4	2,4
2,00	11	4,3	6,7
3,00	20	7,9	14,6
4,00	18	7,1	21,7
5,00	62	24,5	46,2
6,00	95	37,5	83,8
7,00	41	16,2	100,0
Total	253	100,0	

APPENDIX 9: QUESTION 7B RESULTS

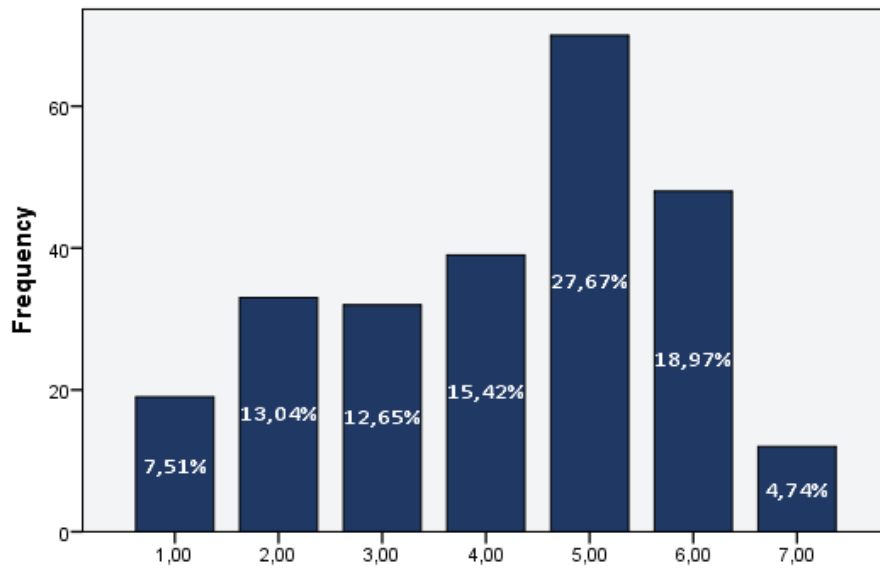
How would you feel if you receive information about new movies that are related to your personal information? (1 = irrelevant, 7 = very interesting)



	Frequency	Percent	Cumulative Percent
1,00	8	3,2	3,2
2,00	16	6,3	9,5
3,00	18	7,1	16,6
4,00	30	11,9	28,5
5,00	85	33,6	62,1
6,00	69	27,3	89,3
7,00	27	10,7	100,0
Total	253	100,0	

APPENDIX 10: QUESTION 8 RESULTS

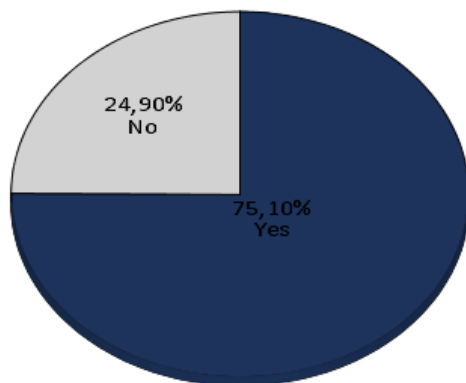
With these benefits, would you share more personal information? (1= unwilling, 7= willing)



	Frequency	Percent	Cumulative Percent
1,00	19	7,5	7,5
2,00	33	13,0	20,6
3,00	32	12,6	33,2
4,00	39	15,4	48,6
5,00	70	27,7	76,3
6,00	48	19,0	95,3
7,00	12	4,7	100,0
Total	253	100,0	

APPENDIX 11: QUESTION 9 RESULTS

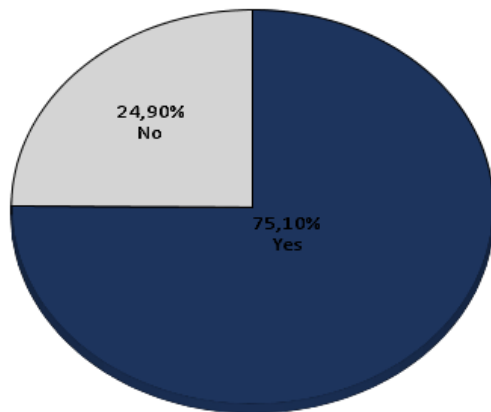
In the same industry, would you be more likely to watch movies and TV shows from companies that are introducing this type of strategy instead of others that are not?



	Freq.	%	Cum. %
Yes	190	75,1	75,1
No	63	24,9	100,0
Total	253	100,0	

APPENDIX 12: QUESTION 10 RESULTS

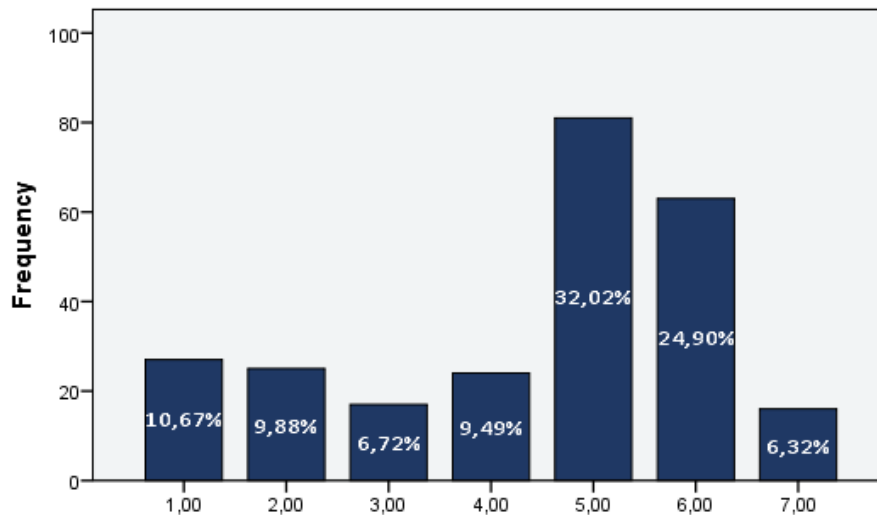
Would a factor such as Gamification encourage you to drive better?



	Freq.	%	Cum. %
Yes	190	75,1	75,1
No	63	24,9	100,0
Total	253	100,0	

APPENDIX 13: QUESTION 11 RESULTS

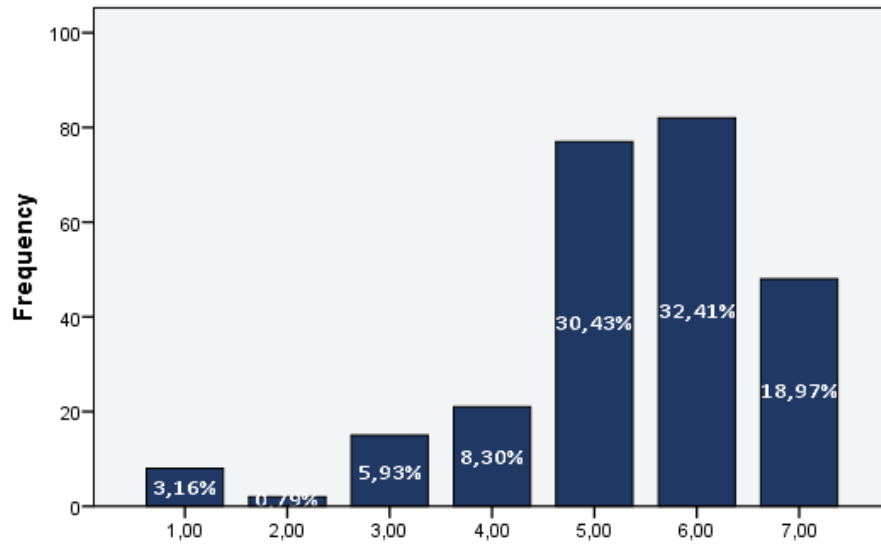
Is the accessibility to compete with your friends and other people, considering the way you drive, important to you? (1=Irrelevant, 7=Very important)



	Frequency	Percent	Cumulative Percent
1,00	19	7,5	7,5
2,00	33	13,0	20,6
3,00	32	12,6	33,2
4,00	39	15,4	48,6
5,00	70	27,7	76,3
6,00	48	19,0	95,3
7,00	12	4,7	100,0
Total	253	100,0	

APPENDIX 14: QUESTION 12A RESULTS

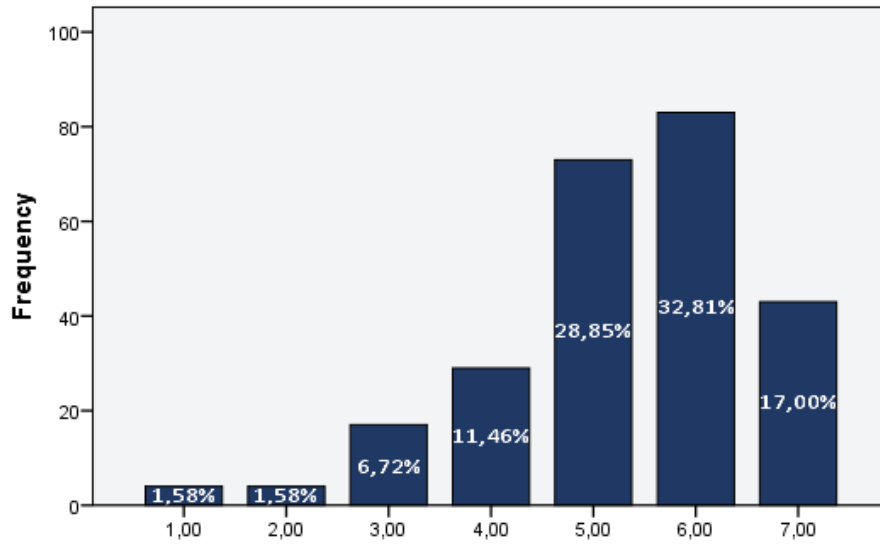
Would you be interested if these companies could understand your car's problems in real time? (1 = irrelevant, 7 = very interesting)



	Frequency	Percent	Cumulative Percent
1,00	8	3,2	3,2
2,00	2	,8	4,0
3,00	15	5,9	9,9
4,00	21	8,3	18,2
5,00	77	30,4	48,6
6,00	82	32,4	81,0
7,00	48	19,0	100,0
Total	253	100,0	

APPENDIX 15: QUESTION 12B RESULTS

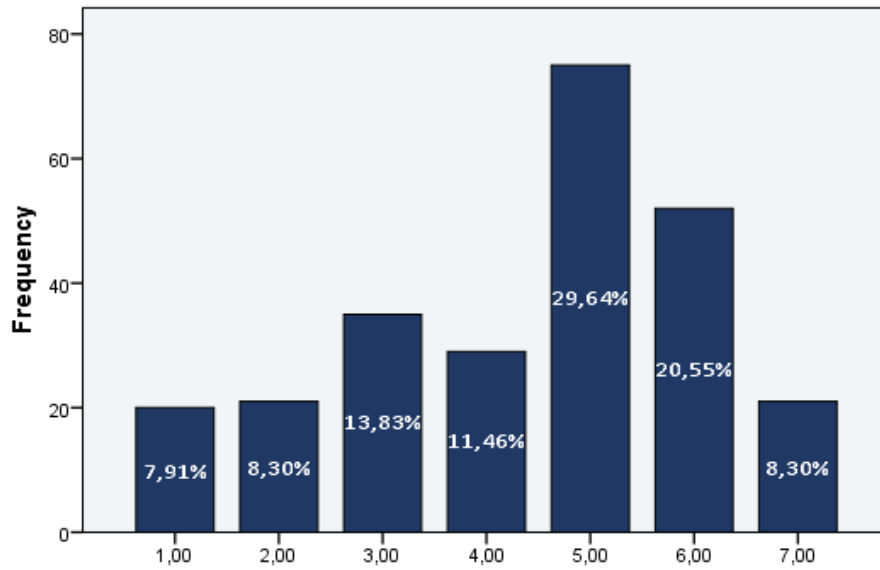
Would you appreciate if these companies understand what their customers want to develop better? (1 = irrelevant, 7 = very interesting)



	Frequency	Percent	Cumulative Percent
1,00	4	1,6	1,6
2,00	4	1,6	3,2
3,00	17	6,7	9,9
4,00	29	11,5	21,3
5,00	73	28,9	50,2
6,00	83	32,8	83,0
7,00	43	17,0	100,0
Total	253	100,0	

APPENDIX 16: QUESTION 13 RESULTS

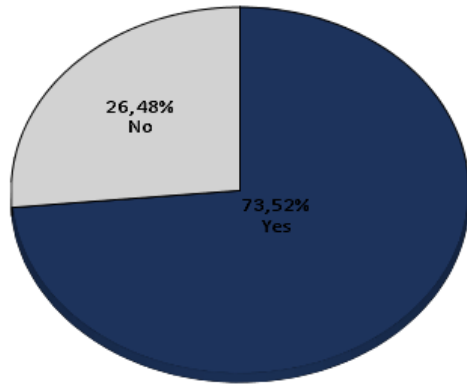
In this context, would you like to share your personal information (about the way you drive)? (1= unwilling, 7= willing)



	Frequency	Percent	Cumulative Percent
1,00	20	7,9	7,9
2,00	21	8,3	16,2
3,00	35	13,8	30,0
4,00	29	11,5	41,5
5,00	75	29,6	71,1
6,00	52	20,6	91,7
7,00	21	8,3	100,0
Total	253	100,0	

APPENDIX 17: QUESTION 14 RESULTS

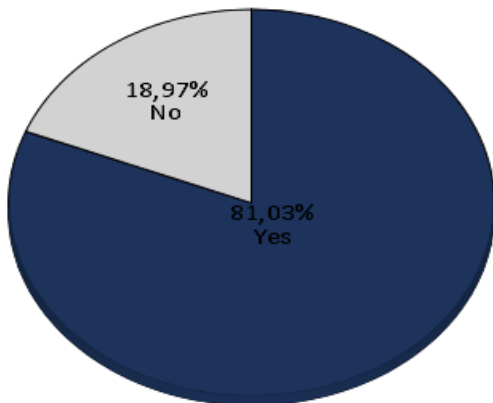
In the same industry, would you be more likely to choose companies that are introducing this type of strategy instead of others that are not?



	Freq.	%	Cum. %
Yes	186	73,5	73,5
No	67	26,5	100,0
Total	253	100,0	

APPENDIX 18: QUESTION 15 RESULTS

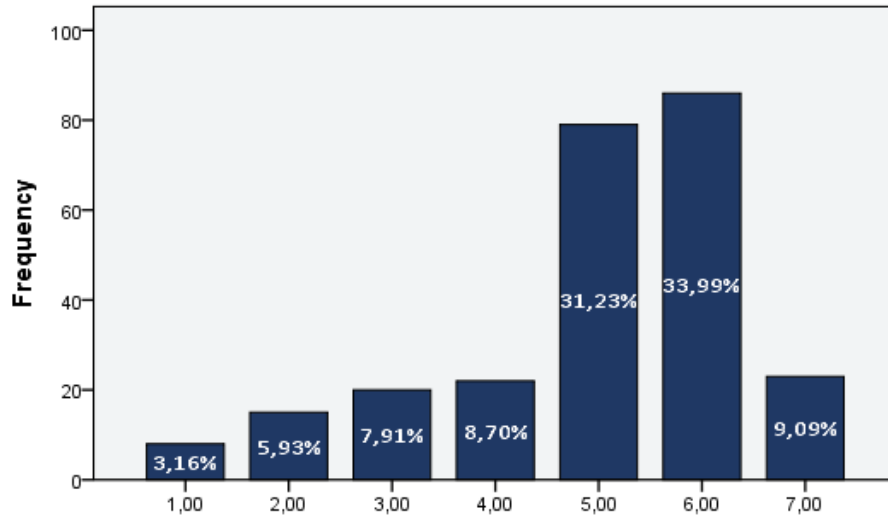
Would you register and visit a company's website or application in a frequent basis if you could earn points and "level up" and consequently have access to discounts?



	Freq.	%	Cum. %
Yes	205	81,0	81,0
No	48	19,0	100,0
Total	253	100,0	

APPENDIX 19: QUESTION 16A RESULTS

How significant to you would it be if you were recommended places to visit based on your activity, and your friends and also people with similar tastes? (1 = irrelevant, 7 = very interesting)

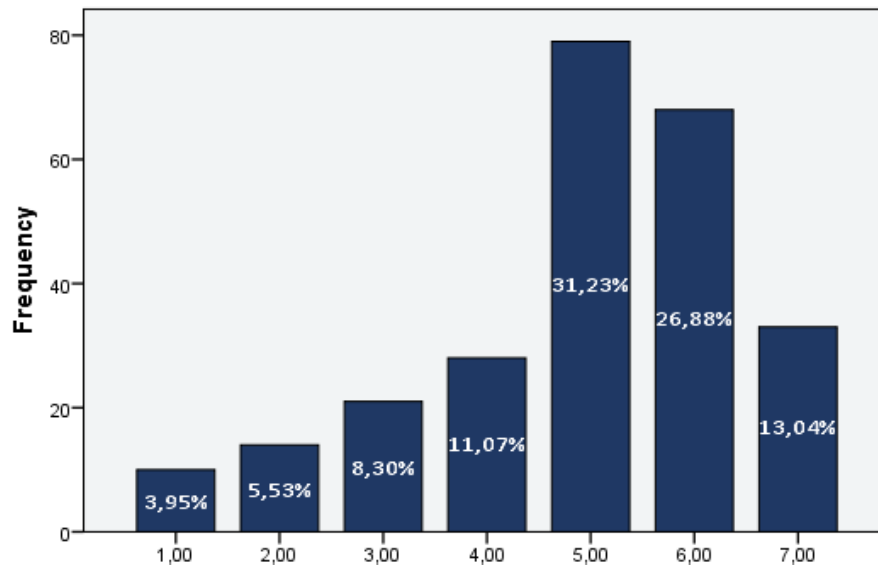


	Frequency	Percent	Cumulative Percent
1,00	8	3,2	3,2
2,00	15	5,9	9,1
3,00	20	7,9	17,0
4,00	22	8,7	25,7
5,00	79	31,2	56,9
6,00	86	34,0	90,9
7,00	23	9,1	100,0
Total	253	100,0	

APPENDIX 20: QUESTION 16B RESULTS

How significant to you would it be if you received targeted advertising and discounts? (1

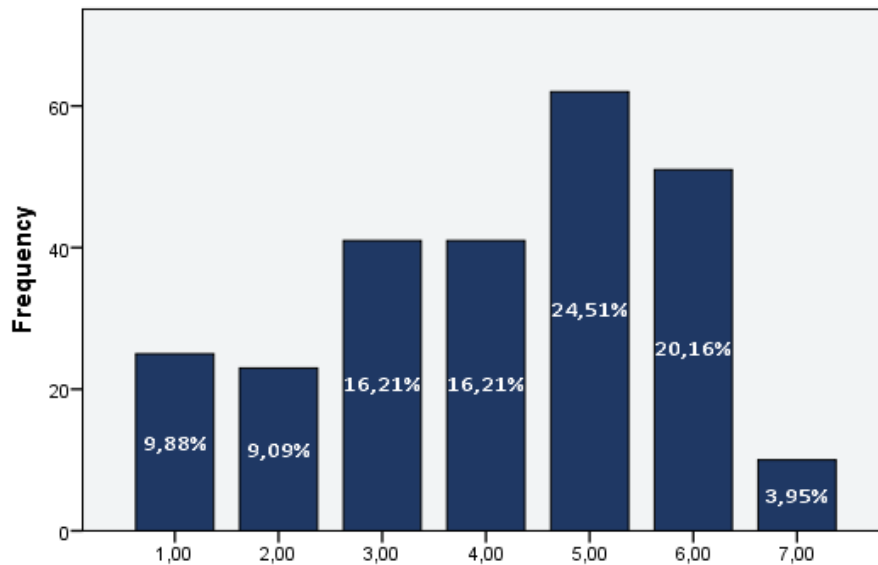
= irrelevant, 7 = very interesting)



	Frequency	Percent	Cumulative Percent
1,00	10	4,0	4,0
2,00	14	5,5	9,5
3,00	21	8,3	17,8
4,00	28	11,1	28,9
5,00	79	31,2	60,1
6,00	68	26,9	87,0
7,00	33	13,0	100,0
Total	253	100,0	

APPENDIX 21: QUESTION 17 RESULTS

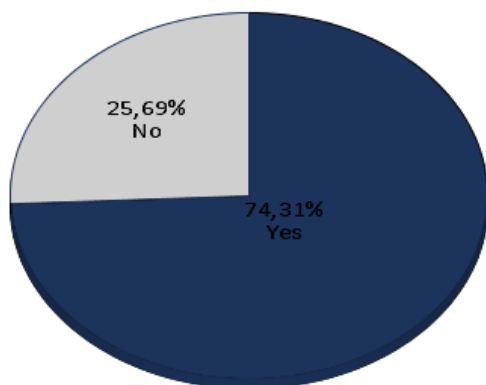
In this context, would you be willing to share your personal information? (1=unwilling, 7=willing)



	Frequency	Percent	Cumulative Percent
1,00	25	9,9	9,9
2,00	23	9,1	19,0
3,00	41	16,2	35,2
4,00	41	16,2	51,4
5,00	62	24,5	75,9
6,00	51	20,2	96,0
7,00	10	4,0	100,0
Total	253	100,0	

APPENDIX 22: QUESTION 18 RESULTS

In the same industry, would you be more likely to choose companies that are introducing this type of strategy instead of others that are not?



	Freq.	%	Cum. %
Yes	188	74,3	74,3
No	65	25,7	100,0
Total	253	100,0	