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Gamification: Gamified Elements' Impact on Online Trust

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ABSTRACT (MAX. 200 WORDS):
The purpose of this study is to investigate the effects of gamification on online trust, testing the impact through the use of an e-commerce website, Ebay. The objective of the paper is to discover how a certain type of visual design element implemented on websites impacts users' extent of online trust. Specifically, this thesis focuses on the use of gamified elements as a website design tool to increase users' trust in a website, which is analyzed by being broken down into different constructs and dimensions. The empirical part of this study was conducted through survey research and the data were collected through a structured-question survey, which was distributed through several different channels to obtain an optimal number of participants. For the analysis, an online trust model was used, that was created based on a trust model designed by other researchers. On the basis of the results of this research, it can be concluded that the use of gamified elements does have an impact on online trust, in fact, it positively affects it in several ways, according to several dimensions. Therefore, this study indicates that gamified elements implemented on websites have the potential to enhance users' confidence in an online seller.

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1 Introduction

The use of technology and specifically the use of websites has certainly become inevitable and even indispensable for modern society. Since the internet has become extremely fast and the amount of available information online has vastly increased, internet users' expectations have also been transformed. People have become sensitive to aesthetics, ease of use and even the extent of entertainment when using the internet and other digital applications (Seckler, Heinz, Forde, Tuch, & Opwis, 2015). This has given rise to the fields of user interface design and consequently, user experience design, which entails designing online platforms and electronic artifacts in such a way that they are easily usable, accessible and entertaining (Hassan & Galal-Edeen, 2017).

One of the concepts that has gained attention in the field recently is gamification. Gamification is the collection of design elements that are acquired from games and are used in non-game systems (Mekler, Brühlmann, Tuch & Opwis, 2015). In fact, the design elements are often referred to as gamified elements, which are visual representations of feedback, narrative context, reputations, ranks and levels and they include, for example, the opportunity to collect points, badges and reach different levels of achievement (Reeves & Read, 2009; Mekler et al. 2015). As reported by Hamari and Koivisto (2015), gamified services have been shown to be perceived by users as both useful and pleasureful, which has an impact on their use intentions and attitudes towards information systems. Furthermore, based on the psychological and social gains from the traditional form of games, gamification has a positive impact on motivation and promotes the learning and development of individuals (Coronado & Vasquez, 2014).

The concept of gamification has, in a report by Gartner, been hyped up to eventually become an essential part for organizations to create customer loyalty and drive their marketing (Burke, 2012). A more recent survey further emphasizes this point by estimating that the global gamification market will grow from 1.65$ billion in 2015 to 11.10$ billion in 2020 (MarketsandMarkets, 2016). Hence, organizations in several industries will soon implement different gamification solutions to influence their customers. According to Sailer, Hense, Mayr & Mandl (2017), gamification has been applied in work, education, crowdsourcing, data-collection, health, marketing, social networks and environmental protection contexts.

When it comes to trust, it is characterized by multiple definitions and classifications. According to Dimoka (2010, p.375), "trust is defined as a person's (the trustor) willingness to be vulnerable to another person (the trustee) on the basis that the trustee will act according to the trustor's confident expectations". On the other hand, Fogg & Tseng (1999, pp.81) formulate another definition; according to them, "trust indicates a positive belief about the perceived reliability of, dependability of, and confidence in a person, object, or process". Specifically, in an online context, the definition of trust is similarly complex and has been tackled by numerous researchers (Bart, Shankar, Sultan & Urban, 2005; Seckler et al., 2015; Corritore, Kracher & Wiedenbeck, 2003). The description of online trust by Corritore et al. (2003) demonstrates a thin line between traditional trust and trust in an online setting. They state that trust is "an attitude of confident expectation in an online situation or risk that one's vulnerabilities will not

be exploited". Nevertheless, due to the high relevance of online trust in e-commerce circumstances, there is an abundance of interpretations which specify the nature of the actors in an online trust relationship. In fact, when defining trust, Seckler et al. (2015) refer to the trustor being a user that decides to browse a website, typically a buyer, whereas the trustee is the website, or normally the seller that is represented by the website. Yet, with regards to the problem area of this paper, the most applicable online trust definition is the following mentioned by Cugelman, Thelwall and Dawes (2009, pp.461): "online trust is considered a psychological intermediary between a website's physical characteristics and users' behavioral intentions".

1.1 Problem

Statistics show that the number of online users, online scams and investments in gamification by organizations are all increasing (Statista, 2018; Scamwatch, 2018; Scamwatch, 2015; Morgan, 2017; Internet Crime Complaint Center, 2016; MarketsandMarkets, 2016). The increase in online users and scams creates a volatile online environment, which makes the need for online trust between users and other actors even more important than before; this is because users generally stay away from actors whom they do not trust (Liang, Laosethakul, Lloyd & Xue, 2005). Online trust has been proven to be affected by different types of website design elements, such as navigational design, visual design, information design, branding alliances and overall website quality (Lowry, Vance, Moody, Beckman & Read, 2008; Cyr, 2008; Bart et al., 2005; McKnight, Choudhury & Kacmar, 2002).

These terms are not definitive, as other researchers have called them by other names, such as graphic design, structure design and content design (Seckler et al., 2015). Therefore, it is important for organizations to know exactly how the elements they put on their website affect their users. There have been claims that gamification can be used to increase trust (Coronado & Vasquez, 2014; Kumar, 2013; Brito, Vieira & Duran, 2015), but there is a dearth of empirical evidence to support this claim. Furthermore, according to recent literature reviews, not one study has looked into specifically how gamified elements affect users' online trust (Seaborn & Fels, 2015; Hamari, Koivisto & Sarsa, 2014; Liu, Santhanam & Webster, 2017).

General opinion in academia about gamification is polarized. Researchers have found evidence to confirm both ends of the spectrum, meaning that general consensus has not been reached about its ultimate impact on users (Seaborn & Fels, 2015; Hamari et al., 2014; Hyrynsalmi, Smed & Kimppa, 2017). Concerning the scope of this paper, however, the authors choose to side with the advocates of gamification for their analysis, meaning that they only take the positive effects of gamification into consideration and do not consider its negative effects at all. This choice will prepare the ground for the exploration of gamification's positive effects and its relationship with online trust, in particular. Nevertheless, the concept of trust is much more subjective, hence the "debate" in trust research rather concerns the constructs and subconstructs that influence it.

As described by Reeves and Read (2009), gamified elements are visual representations of certain types of information. On the other hand, trust researchers state that online trust is influenced by user interface design elements that display certain types of information (Lowry et al., 2008; Cyr, 2008; Bart et al., 2005; McKnight et al., 2002). Therefore, since research has established that visual and information design elements of a website have a direct influence on users' extent of online trust as well as that gamified elements are used to visually display information, it

seems highly likely that gamified elements influence users' online trust. This relationship, however, has not yet been empirically tested.

1.2 Purpose

As mentioned above, there is no general consensus about gamification's appropriateness, therefore, the purpose of this paper is to contribute to research in favor of its use. Thus, this thesis seeks to study whether there is a link between gamification and online trust, as the field lacks empirical evidence regarding this connection.

1.3 Research Question

What impact does gamification have on online trust?

1.4 Delimitation

This study is limited by five factors. (1) Although culture has been shown to affect users' online trust (Vance, Elie-Dit-Cosaque & Straub, 2008), as culture goes beyond the scope of this paper, it is not considered as an influence. (2) This study only considers applications in which the gamified aspect is voluntary, such as e-commerce websites or online learning platforms. Therefore, the results of this study cannot be applied to IT applications where the gamified aspect of it is mandatory, such as an employee performance tracking system, where employees get points for completing a task, but have no chance to opt out. (3) The survey created for this research was distributed to all the respondents in the same form; if there had been two different versions, potential biases could have been eliminated with a better chance. (4) In addition, this study has a small sample size, which could affect the accuracy of its results. (5) Moreover, this study used an e-commerce website as its platform of study, which limits the transferability of its results to other types of websites - education or health, for example.

2 Theory

In this chapter relevant theory, subjects and constructs are discussed which results in the construction of an online trust model that this study use for its research.

2.1 What is Gamification?

The actual term "gamification" was not coined by academics or researchers, instead, it was originally formulated by computer programmer, Nick Pelling back in 2002, and it started gaining the attention of academics years later, around 2010 (Liu et al., 2017; Kamasheva, Valeev, Yagudin & Maksimova, 2015). However, the concept of learning from game designs and elements, and applying them to other contexts dates back even further. For example, Malone (1982) investigates how features that make computer games captivating can be implemented to make different, non-game interfaces interesting and enjoyable to use. Yet, within the information systems field, gamification refers to drawing elements from game designs in order to make tasks more engaging for end users (Liu et al., 2017).

To this day, there exists no single, universally accepted definition of gamification (Seaborn & Fels, 2015; Liu et al., 2017). One of the older and most popular definitions is the one provided by Deterding, Dixon, Khaled & Nacke (2011), who define gamification as: "the use of game design elements in non-game contexts" (p.1). This definition intentionally leaves out the different purposes that gamification can have as to not limit its goals in an unnecessary way (Sailer et al., 2017). Instead, it focuses on the four components of (1) game, (2) elements, (3) design, and (4) non-game context (Deterding et al, 2011).

Juul (2005, p.36) defines a (1) *game* as "a rule-based system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels emotionally attached to the outcome, and the consequences of the activity are negotiable". Gamification is therefore related to the goal-oriented and rule-based nature of games (Deterding, et al., 2011). The use of (2) *elements*, based on their definition, causes gamification to be easily differentiated from "serious games" (Deterding et al., 2011). "Serious games" are fully developed computer or video games (for example, a flight simulator that trains pilots) that are used for non-entertainment purposes, such as education, management, healthcare or military (Susi, Johannesson & Backlund, 2007). In contrast to "serious games", gamification only takes certain elements from games (i.e. ranks or achievements) and implements them in non-game applications (Deterding et al., 2011). (3) *Design* in the context of gamification refers to the use of game design elements as opposed to game-based technologies (Deterding et al., 2011). While game-based technologies consist of aspects, such as game engines or controls, gamification refers explicitly to a deliberate design process (Sailer et al., 2017; Deterding et al., 2011). The use of (4) "*non-game context*" is there to not limit the areas in which gamification can be used, as there is no clear advantage in doing so (Deterding et al., 2011). The only area that is excluded by "non-game context" is the use of

game design elements to design other games, since that would be considered regular game design and not gamification (Deterding et al., 2011).

2.1.1 Gamified Elements

Gamified elements can be regarded as the building blocks of gamification applications and are visual representations of feedback, narrative context, reputations, ranks and levels amongst others (Deterding et al., 2011; Reeves & Read, 2009). In their book, Werbach and Hunter (2012) identify fifteen components that can be considered as game design elements, which include components, such as avatars, achievements, levels, quests and teams. The most used game design elements are points, badges and leaderboards, which together form what Werbach and Hunter (2012) call "The PBL Triad". Werbach and Hunter (2012) claim that the PBL triad is so commonly used in gamification that it is sometimes even referred to as being gamification itself.

Points are a basic game element, which can be accumulated by users through taking part in certain activities within the gamified environment, and are commonly used as a motivator for users to reach certain goals (Sailer et al., 2013; Werbach & Hunter, 2012). Besides its purpose as a motivator, points have a multitude of other functions as well. Points are an effective element to apply for keeping scores and for acting as an external display of progress (Werbach & Hunter, 2012). This is due to the fact that they are easy to compare to those of other competitors or users (Werbach & Hunter, 2012). Another aspect that points excel in is providing feedback, which is a key element of good game design (Werbach & Hunter, 2012). They are one of the most granular forms of feedback, where each point gives the user a sign of progress (Werbach & Hunter, 2012).

Badges are one of the most researched game design elements, according to Hamari, Koivisto and Sarsa's (2014) empirical literature review, and have been found to both increase user activity (Hamari, 2013) and motivate users to complete a specific task (Wang & Sun, 2011). Werbach and Hunter (2012, pp.74) describe a badge as "a visual representation of an achievement with the gamified process". Badges are closely related to points, as they mark a certain threshold of points (Werbach & Hunter, 2012). Badges can be gained by users if they achieve optional goals that lie outside of the service scope and core activities (Hamari, 2013). In addition, they can act as motivational influencers, status symbols and tribal makers (Werbach & Hunter 2012).

A leaderboard is, at its core, a list of participants in a competition or environment that ranks the users according to a certain variable, such as their number of points (Costa, Wehbe, Robb & Nacke, 2013). It provides context to the users' progression in a way that badges and points cannot, and allows for comparison among users to determine who performs the best in a given activity (Werbach & Hunter 2012). According to Werbach and Hunter (2012), leaderboards are one of the most trouble-inducing gamified elements, since they can be severely demotivating if used in the wrong context. Furthermore, they can reduce the content of the game to just revolving around leaderboard supremacy, which is a state where the amount of obtained points is all that matters, and the actual content of the game becomes neglected (Werbach & Hunter 2012).

2.1.2 How Gamification Motivates

The main aim of gamification is to facilitate engagement and provide a gratifying experience by using different types of gamified elements on different user interfaces (Liu et al., 2017). At its core, gamification is intended to create an emotional connection with users and motivate them to reach their goals (Burke, 2016). To accomplish this, gamification taps into humans' motivational drivers in two ways; through emotions and reinforcements (Robson, Plangger, Kietzman, McCarthy & Pitt, 2015). By creating desired emotional outcomes for users, gamification can also create automatic behavioral processes, commonly known as "habits" (Robson et al., 2015). Habits are behavioral loops, whose execution consequently requires less and less cognitive resources, the longer the desired behavior is reinforced repeatedly (Robson et al., 2015). When it comes to reinforcements, the so-called operant conditioning and the law of effect show that reinforcements encourage repetition of user behaviors (Robson et al., 2015). Reinforcements that encourage behavior change can take multiple different forms, including intrinsic and extrinsic ones (Robson, et al., 2015). Burke (2016) contributes to the literature by connecting these two forms of behavior change to gamification and states that gamification primarily utilizes intrinsic rewards instead of extrinsic rewards. Mekler et al. (2017) describe intrinsic motivation as performing a task because a person finds it interesting or pleasurable, whereas extrinsic motivation as performing a task because it leads to a separable outcome, such as payment for a service.

Concerning gamification, Burke (2016) describes three intrinsic motivational elements that correctly implemented gamification solutions affect in a positive way: autonomy, mastery and purpose. *Autonomy* refers to the notion that people must see their choices and behavior as self-determined, instead of being controlled by some other source or entity (Mekler et al., 2017). In well-executed gamified solutions, users willingly choose to participate and make their own decisions regarding how to reach their goals and overcome the challenges they encounter (Burke, 2016). Burke (2016) explains that granting users the freedom of choice when deciding how to discover and learn through the gamified application is key to an effective application. *Mastery*, sometimes referred to as "competence", concerns the perceived extent of one's own action as the reason for why desirable consequences arise in one's environment (Ryan & Deci, 2000). Burke (2016) states that all people wish to improve in different aspects of life, though often lack the motivation to do so; which is where gamification comes in. Gamification can provide people with the positive feedback required for making them motivated to become better in a chosen area, and help them achieve mastery in the long run (Burke, 2016). It is important to note that feelings of mastery do not increase people's intrinsic motivation on their own, but rather they need to be accompanied by a sense of autonomy (Ryan & Deci, 2000; Mekler et al., 2017). *Purpose* is the longing of individuals to act in service of something larger than them (Burke, 2016). Gamified solutions are used to change users' behavior and develop their skills or drive innovation, but it is necessary that they are centered on achieving meaningful player goals; otherwise, users will not feel a sense of purpose while using them (Burke, 2016).

2.1.3 Debate on Gamification

There is an ongoing discussion in the gamification industry and research community about whether gamification is an appropriate tool or not (Hamari et al., 2014; Hyrynsalmi et al., 2017). Most of the research on gamification has proven its ability to produce positive effects, however, there is also a significant amount of studies that show either mixed or negative results (Seaborn & Fels, 2015; Hamari et al., 2014; Liu et al., 2017; Hyrynsalmi et al., 2017). Some opponents

of gamification regard gamification as "exploitationware", which refers to the fact that gamification induces distorted behavioral economics strategies in order to appear more appealing to potential users (Bogost, 2015; Rey, 2012). Moreover, other authors argue that gamification strains the development of good personal character and human flourishing (Sicart, 2015; Selinger, Sadowski & Seager, 2015). Kim and Werbach (2016), on the other hand, claim that gamification per se is not exploitative, manipulative or harmful to personal character, but rather that it depends on the context in which it is applied. Advocates of gamification counterargue and claim that it is an innovative tool that can be used to enhance users' motivation towards using specific information systems (Thiebes, Lins & Basten, 2014), it is an effective way to engage stakeholders (Robson et al., 2015) and it may increase workers' productivity and quality of work (Dubois & Tamburrelli, 2013).

With respect to its positive effects, there is much less known about the negative effects of gamification (Hyrynsalmi et al., 2017), which could be explained by the fact that success stories are more publicized than failed implementations (Kim & Werbach, 2016). In their literature review on negative gamification effects, Hyrynsalmi et al. (2017) discuss the most common sources of negative effects, which they find to stem from the use of gamified elements that have been placed in a wrong, or ethically questionable context. When placed in the wrong context or used unethically, gamified elements can create addictive tendencies (Cohen, 2011; Sun, Zhao, Jia & Zheng, 2015), and they can make employees feel a loss of control over their work (Mollick & Rothbard, 2014). In addition, they have been found to create desired effects only in the short term because of their novelty effect (Hamari, 2013; Farzan, DiMicco, Millen, Dugan, Geyer & Brownholtz, 2008), and they might act as a demotivator in certain contexts (Werbach & Hunter, 2012). As stated earlier, extensive research does show that gamification has positive effects if used correctly. In fact, generally, gamification has been shown to have the ability to increase user engagement and motivation (Hamari et al., 2014; Seaborn & Fels, 2015). More specifically, the literature review conducted by Hamari et al. (2014) concludes that gamification used in educational settings can increase motivation, engagement and enjoyment of learning tasks for students. Another area that gamification has shown great promise in is health and wellness (Seaborn & Fels, 2015). According to the literature review conducted by Seaborn and Fels (2015), it is a field in which the use of gamification only shows positive effects. By way of illustration, Rose, Koenig & Wiesbauer's (2013) study exhibits an increase in users' frequency of glucose testing thanks to a gamified diabetes app. According to their research, users' blood sugar levels were reduced and their overall quality of life increased as a result of using the app.

2.2 What is Trust?

In existing literature, the person who places their trust in another actor has been called both trustor (Dimoka, 2010) and truster (Cugelman et al., 2009). In this paper, no clear distinction between the two are made and they are perceived to mean the same thing. Through the years, researchers have had difficulties operationalizing what trust is exactly, which has led to the existence of multiple definitions (Seckler et al., 2015). The reason that explains this is the fact that trust is an abstract concept that is often confused or used interchangeably with similar concepts, such as confidence, credibility or reliability (Seckler et al., 2015). The definition of trust that this paper adheres to is the one constructed by Dimoka (2010), as it captures the essence of trust. According to Dimoka (2010, pp.375), "trust is defined as a person's (the trustor) willingness to be vulnerable to another person (the trustee) on the basis that the trustee will act according to the trustor's confident expectations". To explain trust in a simpler way, Deutsch's (1962) trust model, shown in Figure 2.1, is an appropriate tool.

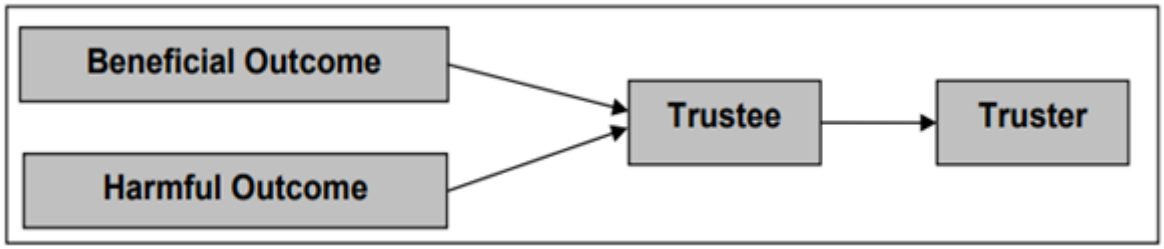

Figure 2:1 Visualization of Deutsch's trust model (Cugelman et al., 2009)

According to the trust model illustrated in Figure 2:1, there are two actors involved in a trusting situation. With reference to this paper's term specification, it is important to note that the authors of this model, Cugelman et al. (2009) refer to a trustor as a truster throughout their paper. Thus, the two actors involved in a trusting situation are such that one of them (truster) relies on the other actor (trustee) to achieve a beneficial outcome (Cugelman et al., 2009). An example of this would be a situation in which students trust their professors to teach them accurate and relevant information that helps them become successful in their upcoming careers. In this case, the students are the trusters, while the professors are the trustees. By placing their trust in their professors and learning the information that they provide, the students could thrive in their future careers, which is a beneficial outcome. However, a situation in which the professors teach the students inaccurate and irrelevant information which could potentially lead to the students becoming unsuccessful in their future careers is considered a harmful outcome. The outcome of the situation is not completely in the truster's hands, as they need to actively depend on another actor (the trustee) to avoid a harmful outcome and achieve a beneficial one (Cugelman et al., 2009). By depending on the trustee to deliver the desired outcome, the truster puts themself in a risky position, where a harmful outcome might occur (Cugelman et al., 2009). When the truster has decided to place their trust in the trustee, the truster has made a trusting choice, which is ultimately based on the truster having enough confidence to predict the behaviour of the trustee (Cugelman et al., 2009).

Trust between people is vital to maintain societies' proper way of functioning (Cugelman et al., 2009). This is because trust allows people to act under the potential risk of negative consequences and uncertainty (Seckler et al., 2015). Trust has been shown to have a direct impact on reducing uncertainty and it has been shown to provide people with a coping mechanism for dealing with uncertain situations (Thatcher, Carter, Li & Rong, 2013; Liang et al., 2005). Trust

is not only important in human-human interactions, but it also plays a significant role in human-computer interactions (Seckler et al., 2015). Human-computer interactions normally involve highly complex and anonymized processes, such as e-commerce and information search, which do not have a clear outcome; similarly to human-human interactions, this uncertainty can be reduced by facilitating trust (Seckler et al., 2015). However, trust is not always needed when people interact with each other or IT artifacts/computers (Liang et al., 2005). If the interaction does not generate any uncertainty, there is no need for trust (Liang, et al., 2005).

2.2.1 Trust Constructs

Researchers within the area of trust agree that trust is complex and multidimensional (Chen & Dhillon, 2003; McKnight et al., 2002; McKnight, Cummings & Chervany, 1998; Seckler et al., 2015). In this study, the trust constructs used are based on the trust concept proposed by McKnight et al. (1998), which can be divided into two different constructs: (1) trusting intentions, which refers to one's willingness to depend on another person in a certain situation, and (2) trusting beliefs, meaning that one believes that another person is benevolent, competent, honest or predictable in a given situation (McKnight et al., 1998). The reason for this study implementing the trust concept conceived by McKnight et al. (1998) is that it has been successfully used in several highly prominent trust studies, and it has also been shown to be applicable in an online context, which is the scope of this research (Lowry et al., 2008; Vance et al., 2008; Lim, Sia, Lee & Benbasat, 2006; McKnight et al., 2002).

In their trust model, benevolence belief, competence belief, honesty belief and predictability belief act as dimensions of trusting beliefs (McKnight et al., 1998). *Benevolence* concerns a user's belief that the other actor is interested in their welfare, which is motivated by the search for a relationship that is mutually beneficial to both parties and is void of opportunistic behavioral intentions (Seckler et al., 2015). *Honesty* is the belief that the other party will uphold their word, fulfill the promises made and be sincere in interactions (Seckler et al., 2015). *Competence* refers to the user's belief that the other party has the required resources (human, technical or financial) and capabilities needed for a transaction to be successfully completed and for the parties' relationship to be continued (Seckler et al., 2015). *Predictability* concerns one's belief that they can accurately predict how the opposing party will behave in a given situation (Mayer, Davis & Schoorman, 1995). The concept has been broken down into these two different constructs in view of the fact that the word "trust" is so confusing and broad that it makes it difficult to create a holistic definition (McKnight et al., 1998). Another argument that supports this division is that one might hold trusting beliefs about another party, although might still not want to make themselves vulnerable to the other party's actions (Stewart, 2003). This means that only possessing one of trusting beliefs or trusting intentions is not enough to create trust.

Research has shown a strong relationship between trusting beliefs and trusting intentions (Vance et al., 2008). One's trusting beliefs influence their trusting intention, which then results in their trusting behavior (Vance et al., 2008). Trusting behavior is defined as "the act of the truster becoming vulnerable to the trustee in a situation of uncertainty" (Vance et al., 2008, pp.76). According to the theory of reasoned action, a person's beliefs lead to attitudes, attitudes then lead to intentions and ultimately, to behaviors (Vance et al., 2008). Schlosser, White and Lloyd (2006) explain the relationship in a more detailed trust context by stating that trusting intentions involve taking risks; when people have to make decisions that involve exposing themselves to risk concerning another party, they consult their trusting beliefs to determine whether to perform the trusting behavior or not.

Regarding the trust concept conceived by McKnight et al. (1998), external constructs can also affect one's trusting beliefs and trusting intentions and their paper provides three examples: (1) disposition to trust, (2) institution-based trust and (3) cognitive processes. McKnight et al. (2002, pp.339) define *disposition to trust* as "the extent to which a person displays a tendency to be willing to depend on others across a broad spectrum of situations and persons" and is made up of a person's faith in humanity and their trusting stance. A person's *institution-based trust* is their belief that the necessary structural conditions are in place (e.g., in the internet) to strengthen the likelihood of achieving a successful outcome in an endeavor, such as an e-commerce transaction (McKnight et al., 2002). Moreover, institution-based trust consists of two dimensions: (1) structural assurance, which refers to a person's belief that structures like guarantees, regulations, promises or legal recourse are in place to promote success; and (2) situational normality, which concerns one's belief that the environment is in proper order, and since the situation is normal or favorable, success is a likely outcome (McKnight et al., 2002). *Cognitive-based trust* is developed through processes that handle rapid cognitive cues or first impressions (Lim et al., 2006). Two specific cognitive processes that affect trust are: (1) categorization processes and (2) illusion of control processes (McKnight et al., 1998). Categorization processes, such as unit grouping, reputation categorization and stereotyping are used when forming new relationships and creating initial trust, which is trust between two parties that are unfamiliar with each other (McKnight et al., 1998). Illusion of control processes, such as "token control efforts" refer to small actions people take in order to assure their control over situations (McKnight et al., 1998). Token control efforts are made by a person to see whether they are capable of influencing a person, for example, attempting to make them smile (McKnight et al., 1998). These kinds of actions test one's ability to deal with the other person successfully, and to evaluate their trustworthiness (McKnight et al., 1998).

2.2.2 Online Trust

Online trust is a specific type of trust that has been described as "a psychological intermediary between a website's physical characteristics and users' behavioral intentions" (Cugelman et al., 2009, pp.461). Moreover, online trust plays a crucial role in a modern society (Bapna, Gupta, Rice & Sundararajan, 2017). A major decision in IT-enabled exchanges is to determine who to trust, as information systems and the internet facilitate impersonal exchanges among people and organizations across the world (Bapna et al., 2017). Determining whom to trust in these impersonal exchanges is important, since other individuals can have a substantial impact on a person's social and economic behavior (Bapna et al., 2017). This has encouraged IS researchers studying online trust to use various theoretical lenses and different contexts to better understand how online trust affects behaviors (Thatcher et al., 2012). The areas that online trust has been studied in are, for example, e-health (Liang et al., 2005), online social networks (Bapna et al., 2017) and virtual teams (Piccoli & Ives, 2003). Yet, the most commonly examined area in online trust research is e-commerce (Thatcher et al., 2012).

Online trust is a crucial factor in e-commerce, since it has a significant impact on consumers' behavior (Lim et al., 2006; Bapna et al., 2017; Lowry et al., 2008; Liang et al., 2005). Wang and Emurian (2005) argue that online trust research is important for e-commerce, as if online vendors understand and enhance online trust, they could use it to substantially increase the number of people who engage in e-commerce. A detriment of online vendors is their lack of physical presence, where customers can physically interact with them or touch and feel their available products (Verhagen, Meents & Tan, 2006). As a result, customers are compelled to

rely on perceptions of an online vendor to determine if a purchase is worth the risk (Verhagen et al., 2006). Lack of online trust leads to consumers not exhibiting desired behaviors, such as loyalty and confidence in sellers (Cyr, 2008; Clemons, Wilson, Matt, Hess, Ren, Jin & Koh, 2016). This severely hampers online vendors' sales, as people tend to stay away from websites that they do not trust (Lowry et al., 2008).

To study online trust, researchers have used the original trust model theorized by McKnight et al. (1998) as well as the updated version created by McKnight et al. (2002), which is targeted towards e-commerce trust research. The updated model is similar to the original one, although it involves three changes. First and foremost, in the updated model, cognitive processes are completely removed, and changes are made to the trusting beliefs subconstruct by replacing honesty beliefs and predictability beliefs with integrity beliefs (McKnight et al., 2002). Integrity beliefs deal with attributes, such as morality, credibility, dependability and reliability (McKnight et al., 2002). Concisely, integrity beliefs concern one's beliefs that the trustee will keep their promises and be honest (McKnight et al., 2002). The last change in the model is that subjective probability of depending is added as a dimension of the trusting intentions subconstruct (McKnight et al., 2002). Subjective probability of depending refers to the perceived likelihood that one will depend on another actor (McKnight et al., 2002). It is similar to the willingness to depend dimension, however, it is more concrete, as it goes "beyond a stated willingness to rely on another to stated intentions of relying on them in specific ways" (McKnight et al., 2002, pp.337). Willingness to depend concerns more general feelings towards one's intention to trust the trustee, while subjective probability of depending refers to more specific risky behaviors like providing personal information to an online vendor, engage in a purchase transaction or act on an online vendor's information (McKnight et al., 2002). This updated model has been proven to be able to predict a person's intention to use e-commerce websites (McKnight et al., 2002), and more recently, it has been proven to hold true even when an IT artifact (website, software application etc.) is the object of trust instead of a business or organization (Vance et al., 2008). The research conducted by Vance et al. (2008) further proves that the extent to which a user believes that an IT artifact is trustworthy affects their intention to adopt the IT artifact. This is an important finding, as organizations strive to encourage customers to use their application or website.

Further research applying the original trust model constructed by McKnight et al. (1998) has proven that every aspect of it can be applied to online trust. The trust model posits that one's disposition to trust affects one's trusting beliefs, and ultimately, one's trusting behavior (McKnight et al., 1998). Studies have shown that this also applies to online trust, that one's disposition to trust positively affects the trust one places in a website (McKnight, Kacmar & Choudhury., 2004; Gefen, 2000). Gefen's (2000) study even finds that disposition to trust is a key element of trust when one interacts with an online vendor. Furthermore, research has shown that institution-based trust can strongly influence online trust (Vance et al., 2008), in fact, higher trusting beliefs result in the higher likeliness of a visitor considering a purchase from that online vendor (Lim et al., 2006). In addition, dimensions of trusting beliefs (competence, benevolence and honesty) affect online customers' attitudes, purchase intentions and purchase behaviors (McKnight et al., 2002; Gefen, Karahanna & Straub, 2003). Lastly, cognitive-based trust has also been proven to be affected by the interface design of a website (Lim et al., 2006).

A factor that has shown to significantly affect users' extent of online trust is website design, more specifically, the quality of the website's design. Studies have demonstrated that the quality of a website directly affects the extent to which users trust the website by influencing their

trusting beliefs (McKnight et al., 2002; Lowry et al., 2008). McKnight et al. (2002) find that website quality can be a strong predictor of online trust, which highlights the importance for organizations to spend an adequate amount of resources on their website, so that it exhibits a certain level of quality. Perceived website quality reflects users' opinion on how ample they believe a website appears and operates compared to other websites (Lowry et al., 2008). In the available literature, more than thirty different subconstructs of website quality have been identified, where typical ones include graphical style, functionality and navigability (Lowry et al., 2008). However, research has shown that subconstructs of website quality affect users' trust differently depending on the context that they are applied in (Bart et al., 2005). This paper focuses on two website quality subconstructs used in Cyr's (2008) study about website design's relationship with trust, as they have similar characteristics with respect to gamified elements. The subconstructs are: (1) visual design and (2) information design (Cyr, 2008). These two subconstructs have been proven to positively influence both online trust and satisfaction (Cyr, 2008).

Visual Design

Visual design consists of elements that deal with balance, emotional appeal, uniformity and aesthetics, such as a website's layout, pictures, typography, font size and color schemes (Cyr, 2008, Seckler et al., 2015). The mentioned visual design elements can be an important determinant of a website's' "surface credibility", which is how a user believes someone or something, based on a quick inspection (Vance et al., 2008). Research conducted by Cugelman et al. (2009) also demonstrates that a website's credibility positively affects users' online trust, which makes visual design elements important for enhancing it. Additional research using versions of visual design as a construct has found that it influences online trust in several ways. According to Bart et al. (2005), visual presentation is a substantial driver for creating consumer trust in a website, while Vance et al., (2008) reports that visual appeal directly influences users' trust in an IT artifact. On the other hand, unpleasant design has shown signs of decreasing level of trust that a user experiences towards a website (Andrade, Lopes & Novais, 2012). This implies that if organizations are not willing to make an effort to create a high-quality website, users might not trust it.

Information Design

Website elements within the information design subconstruct convey either accurate or inaccurate information about products and services to the website's visitor (Cyr, 2008). Cyr (2008) notes that it is meaningful to differentiate between information architecture and information design elements. Information architecture is more concerned with the location that an element is placed in, while information design elements rather refer to whether that element conveys the right information to a visitor (Cyr, 2008). Information is considered a paramount prerequisite to form trust (Cyr, 2008), and within the context of online trust, information design is considerable because helpful information on a website leads to higher trust (Andrade et al., 2012). Seckler et al. (2015) also conclude that a website's information design elements can positively affect users' online trust, specifically regarding elements that communicate information about the website's security measures, procedures, policies or third-party certificates. Information design elements can, like visual design elements, also affect trust negatively if used incorrectly. Seckler et al. (2015) note that lack of information, which can lead to privacy issues, has been shown to have a negative impact on generating online trust.

2.3 Online Trust Model

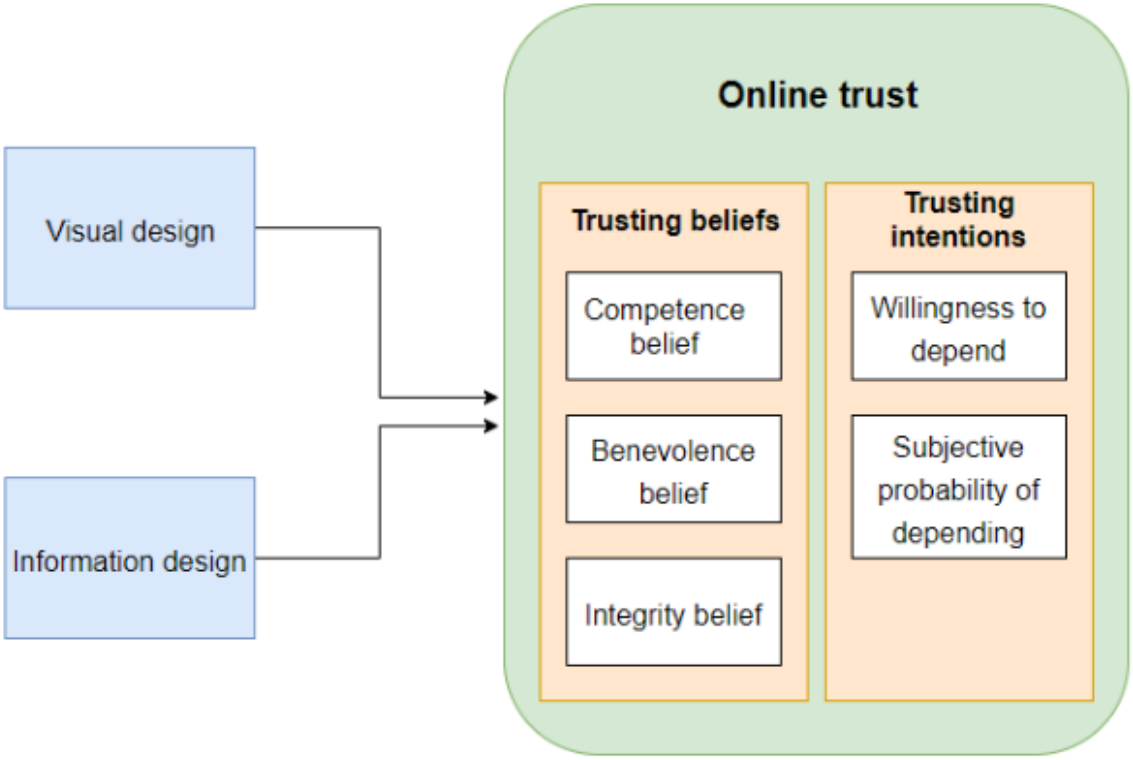

Figure 2:2 Proven online trust relationships

With reference to the literature review above, the relationships in Figure 2:2 have been proven to exist. The literature also shows significant similarities between the characteristics of visual design, information design and gamified elements. Therefore, we posit the following hypotheses, which are shown in Figure 2:3:

H1 - Gamified elements positively affect users' *Benevolence* belief.
H2 - Gamified elements positively affect users' *Integrity* belief.
H3 - Gamified elements positively affect users' *Competence* belief.
H4 - Gamified elements positively affect users' *Willingness to depend*.
H5 - Gamified elements positively affect users' *Subjective probability of depending*.

In the trusting beliefs subconstruct in this paper, the dimensions of benevolence beliefs, competence beliefs and integrity beliefs taken from the newer McKnight et al. (2002) trust model will be implemented, due to their suitability for online trust studies, as opposed to the original McKnight et al. (1998) model, which is not.

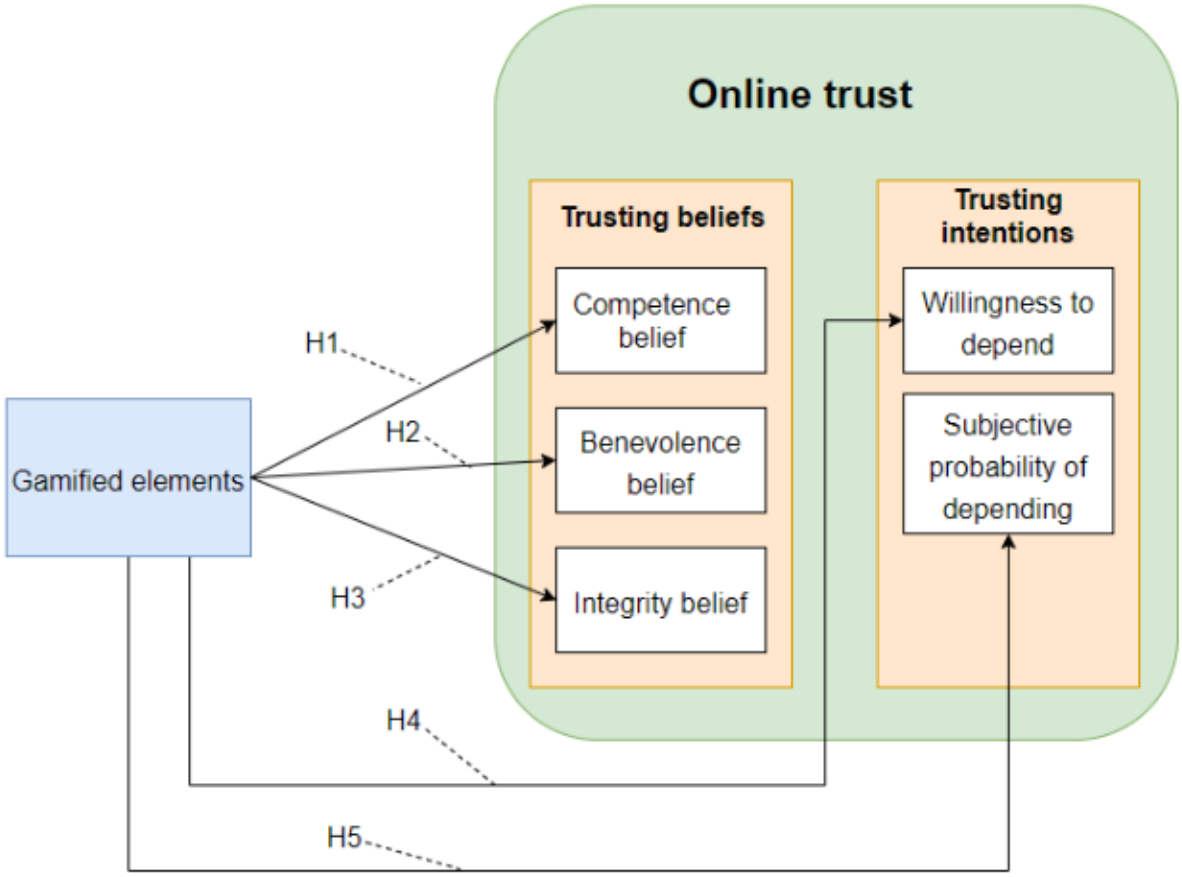

Figure 2:3 Proposed online trust relationships

3 Method

The research process in this paper involved testing certain hypotheses and analyzing a potentially existing relationship between two constructs. Therefore, the research was quantitative and deductive in nature, meaning that already established theories were empirically tested for the purpose of reinforcing them. Quantitative methods specialize in numbers and quantities; hence, the analysis required the collection of numerical data (Recker, 2013). With reference to Recker's (2013) procedural model and linear process model, they were used as an example to create a step-by-step illustration of the research process of this paper. This model was made to demonstrate the different tasks that were performed and the data that was employed throughout the project. Since quantitative research usually follows a linear process, the method model in this study is based on Recker's (2013) models and was simplified and made suitable according to this particular analysis. This model consists of five steps, which are displayed in Figure 3:1 (Recker, 2013). Regarding each step, the particular tasks as well as the techniques that were used to execute these tasks are noted.

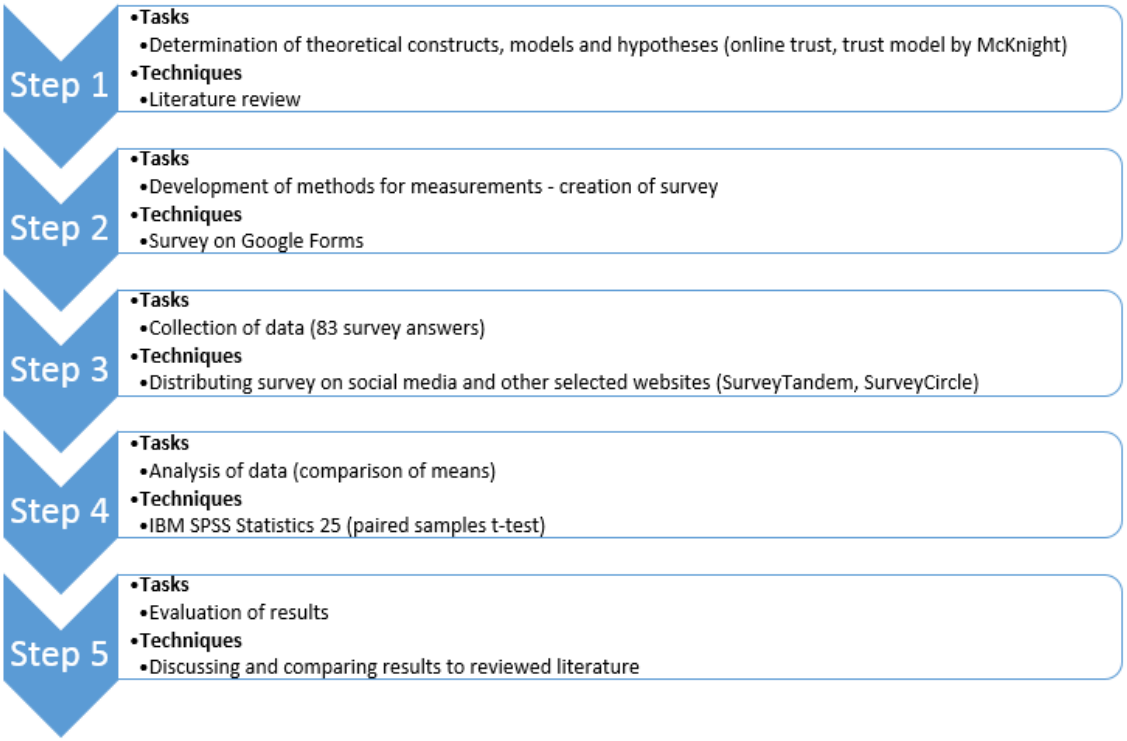

Figure 3:1 Research step model

3.1 Method for Data Collection

As far as the specific method is concerned, the paper is based on empirical survey research, which is optimal in different regards. According to Bhattacherjee (2012), this data collection technique has numerous advantages, including increased ease of participation for the respondents and the ability to remotely collect data. Therefore, for the purpose of this study, questionnaires were used to facilitate the quick and resource-efficient collection of data.

Prior to starting the collection of empirical data, a thorough literature review was conducted within and across the fields of trust, specifically online trust, and gamification. This was done to gain deep understanding of the current debates, established theories and research gaps in these particular research areas. Due to the deductive nature of the analysis in this paper, identifying numerous applicable theories was crucial to proceed with the project. In addition, the literature review was critical when formulating meaningful and relevant questions for the survey questionnaire, so that the responses obtained could be adequately used for testing the applied theories. Although a survey is such an efficient tool to quickly obtain a significant amount of data, the collected data is only valuable and easily usable if the questions are well thought-out and narrowed down.

Regarding the form of the questionnaire, it consisted of structured questions in order to guide respondents and make it easier for them to give simple answers, which describe their feelings. The survey was conducted online, and the respondents were encouraged to participate through social media platforms and other online platforms. When distributing the questionnaire and analyzing its outcome, common biases of survey research were continually considered, and the possibility of low response rates was tackled by securing some respondents that certainly participated. In this study, the units of observation were internet users, which made it fitting to conduct a survey.

3.1.1 Platform of Study

An important step of the research process was deciding which online website to base the study on. To make an appropriate choice, the considered gamification literature was thoroughly searched for commonly studied websites. One particular website, Ebay.com was prominent. Ebay had been used in several gamification research projects as the platform of study and had a clear and simple gamification concept, displaying gamified elements in both the buying and selling processes. Ebay's auction style of purchasing allows its customers to feel like winners when they successfully buy products by placing the highest bids on items. For sellers, a sale process, regardless of its outcome, results in points, which the sellers collect in to gain ranks and badges. Another influencing factor for considering Ebay was that it is an e-commerce website, and as stated in the literature review, e-commerce has been widely studied in the trust research domain.

In order not to limit the analysis to websites that had been previously studied, new websites were searched for. This search resulted in the discovery of Khanacademy.org, a free online learning website that has embraced gamification. Khan Academy allows users to sign up either as a "student" or as a "teacher", depending on how they would like to interact with other users and the website, and gamification elements are implemented for both roles. One of the reasons for considering Khan Academy was that by participating in online learning, student users are required to trust teacher users and the available courses to obtain correct information. Thereby, while using the website, students place themselves in a risky position and are dependent on another actor to reach a beneficial goal, which, in this case, is gaining accurate knowledge and information. Students receive badges and points once they finish courses, ask good questions or provide good answers to questions. These badges then represent students' achievements and how well they have been doing in their studies. Teachers have a similar gamified experience, they get rewarded with points and badges when they help students by answering their questions and guiding them throughout the available courses.

To be able to decide between the two websites, Ebay and Khan Academy, a preliminary questionnaire was created, which Bhattacherjee (2012) suggests as an early step when conducting a survey study. The preliminary questionnaire was built with the same statements for the respondents to answer about each website and was answered by six acquaintances to the authors. It had the purpose of giving feedback from respondents concerning ambiguities, lack of clarity, weirdly formulated statements and facilitating the decision about which website would be the best fit for the study. The preliminary questionnaire included a comment section for respondents to provide feedback. Its respondents were more confused by the gamified elements used on the Khan Academy website, specifically by what the badges displayed in the questionnaire truly represented. Since this was perceived as the main difference in opinions, Ebay was chosen as the platform used for this study.

3.1.2 Recruitment of Respondents

For the preliminary questionnaire, six people in the age span of 23-56, who were known by the researchers personally, were asked to participate. For the real questionnaire, websites such as Facebook, SurveyTandem and SurveyCircle were used to recruit participants. Direct messages and e-mails were also sent to acquaintances as another part of the recruitment process. On Facebook, the questionnaire was posted on the authors' walls and in different social groups, such as the "Lund University (Masters in Information Systems 2017-18)" group. SurveyTandem and SurveyCircle are similar websites, where people can recruit respondents for their surveys in exchange for answering others' surveys. This was a particularly fruitful recruitment source, where the majority of respondents were captured.

There are some minor differences between the two abovementioned websites. On SurveyTandem, when someone posts a survey, it initially shows its status as "hidden" and it can't be seen by others. The survey does not become "public" until the publisher earns an equal number of points that their own survey would give to the ones who answer it. For example, if the publisher's own survey gives fifty points when answered, he must answer two surveys that each give twenty-five points or gather fifty points in some other way in order to gain respondents. Points are gathered when answering others' surveys and the amount of points received from each answered survey depends on how long the average answering time of that particular survey is.

SurveyCircle takes a different approach. People can post their own surveys without being obliged to answer others' surveys. To encourage people to answer others' surveys, SurveyCircle uses two main incentives, (1) being placed higher on the survey leaderboard, where all surveys are published as well as making it appear more prominent on the website, and (2) offering surveys to fill out, which make the publisher's own survey worth more points when answered. To know when someone has answered a survey, the publisher places a code at the end of their survey, which the respondent then enters on the website to receive their points.

SuveyTandem and SurveyCircle also have similarities, such as a requirement of creating a profile where stating a minimum of age, country, education, job status and gender are required. This ties in with the next similarity where both websites allow publishers to set restrictions regarding who can answer their survey, depending on different attributes from users' profiles. This allows publishers to get answers from their target respondents. In the end, the questionnaire received eighty-three respondents. It is difficult to give a specific questionnaire response

rate as it was made available to the general public and not sent out to a specific set of people. Therefore, a specific response rate cannot be given.

3.2 Questionnaire

Since the measurements for this paper were created based on the work of McKnight et al. (2002), it was found appropriate to also look at how they structured their questionnaire to draw inspiration. McKnight et al (2002) used twenty-seven different statements to measure their respondents' trusting beliefs and trusting intentions, eleven for trusting beliefs and sixteen for trusting intentions. In the questionnaire for this research, fifteen statements were used, nine for measuring trusting beliefs and six for measuring trusting intentions. The statements that McKnight et al. (2002) suggested are attached as an appendix to this paper, to give the reader a chance to compare statements used in this paper to the original ones.

To capture the respondents' answers, a Likert scale was used as exhibited in Figure 3:2, which Bhattacherjee (2012) states is appropriate when respondents are asked to answer statements as opposed to questions. The scale consists of five different values, ranging from strongly agree to strongly disagree, which the respondents can choose from. The five available options allowed for the respondents to answer neutrally if they preferred. Bhattacherjee (2012) argues that it is important for the neutral option to be present, as to not force the respondent to give an answer that does not reflect their actual opinion.

After each statement, there was also a short three-letter abbreviation, as displayed in Figure 3:2. These were used by the authors to group the statements according to their respective construct and dimension. The respondents received no information about what they meant and during the preliminary questionnaire found they had no influence on respondents' thoughts about the statements. This led to them being included in the final questionnaire as well, to give it a clear structure for the authors when the data was analyzed.

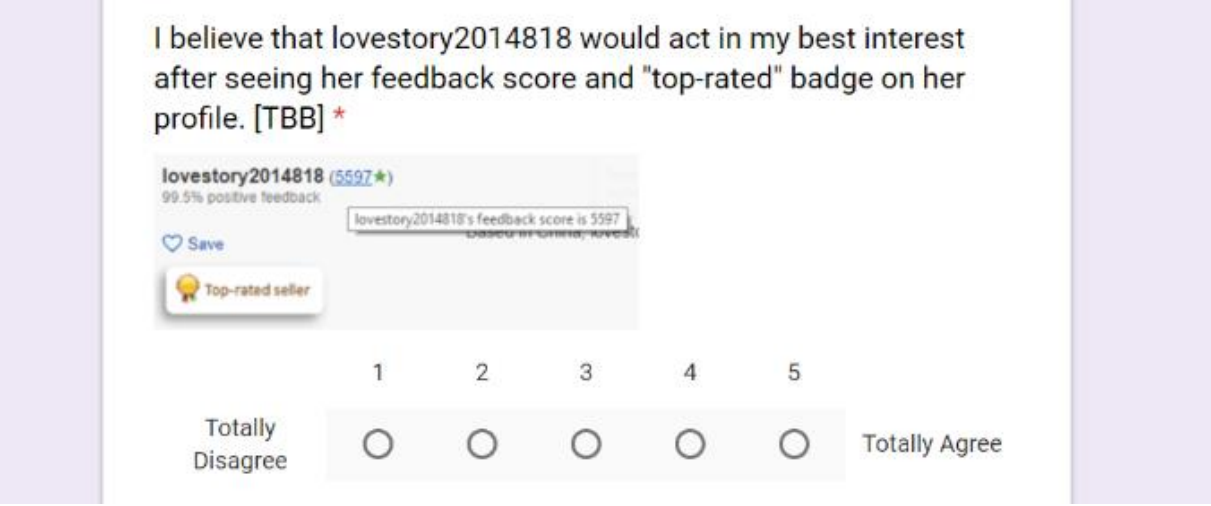

Figure 3:2 Likert scale example

This study's questionnaire was divided into four sections: study information and consent; general questions; seller's profile without gamified elements; and seller's profile with gamified elements.

3.2.1 Study Information and Consent

The questionnaire's first section contained general information about the study, how the questionnaire was structured and a short definition of online trust. There was also a short disclaimer informing the respondents what the collected data would be used for and that they were free to exit the survey at any point in time. After reading the disclaimer, the respondents had to tick the box, which represented their consent, before heading to the next section as seen in Figure 3:3.

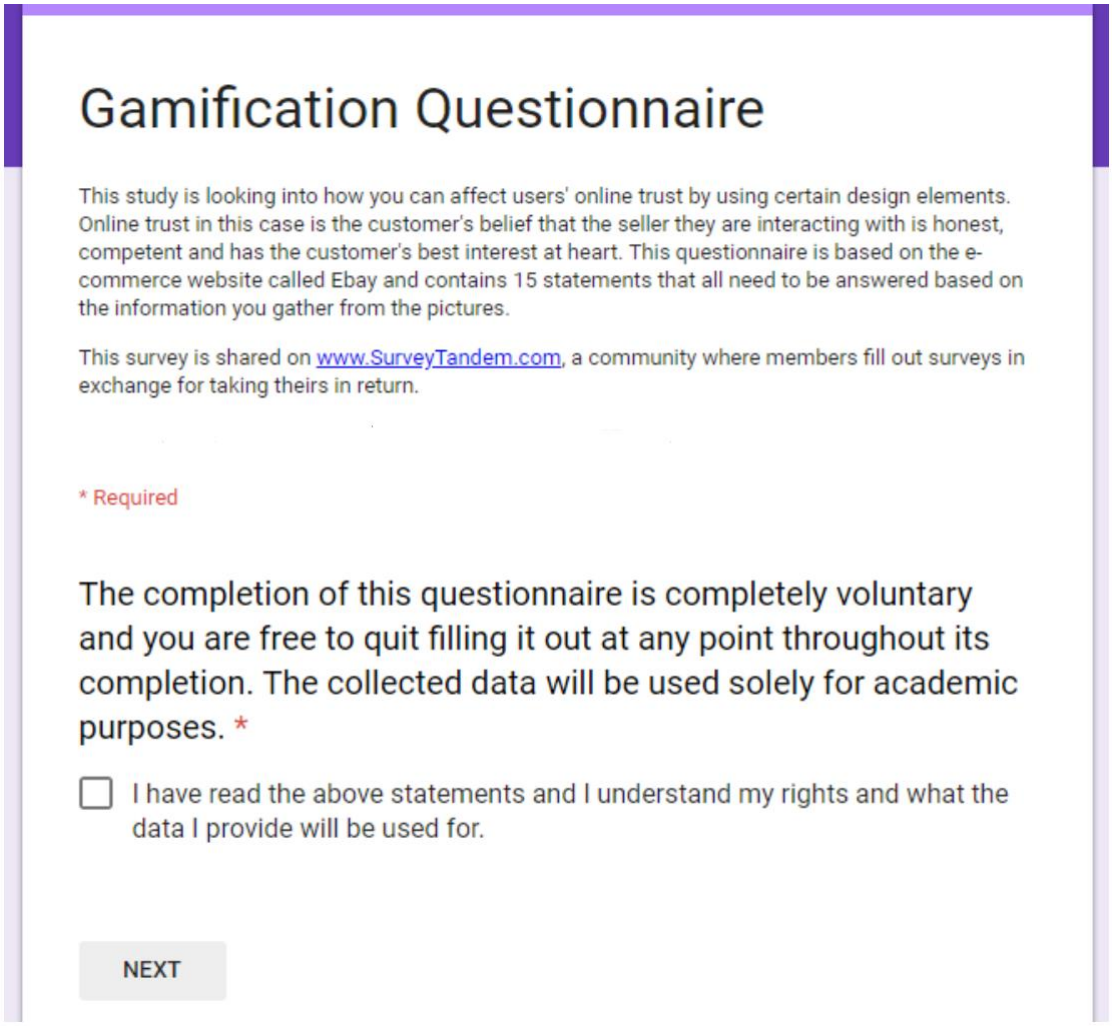

Figure 3:3 Study information and consent

3.2.2 General Questions

The second section of the questionnaire was focused on collecting demographic information about the respondents, as seen in Figure 3:4. The section consisted of three questions that asked for information concerning the respondents' age, gender and education level. The information collected could not be used to identify any individual respondent, thus, it was instead used to describe what type of respondents took part in the survey.

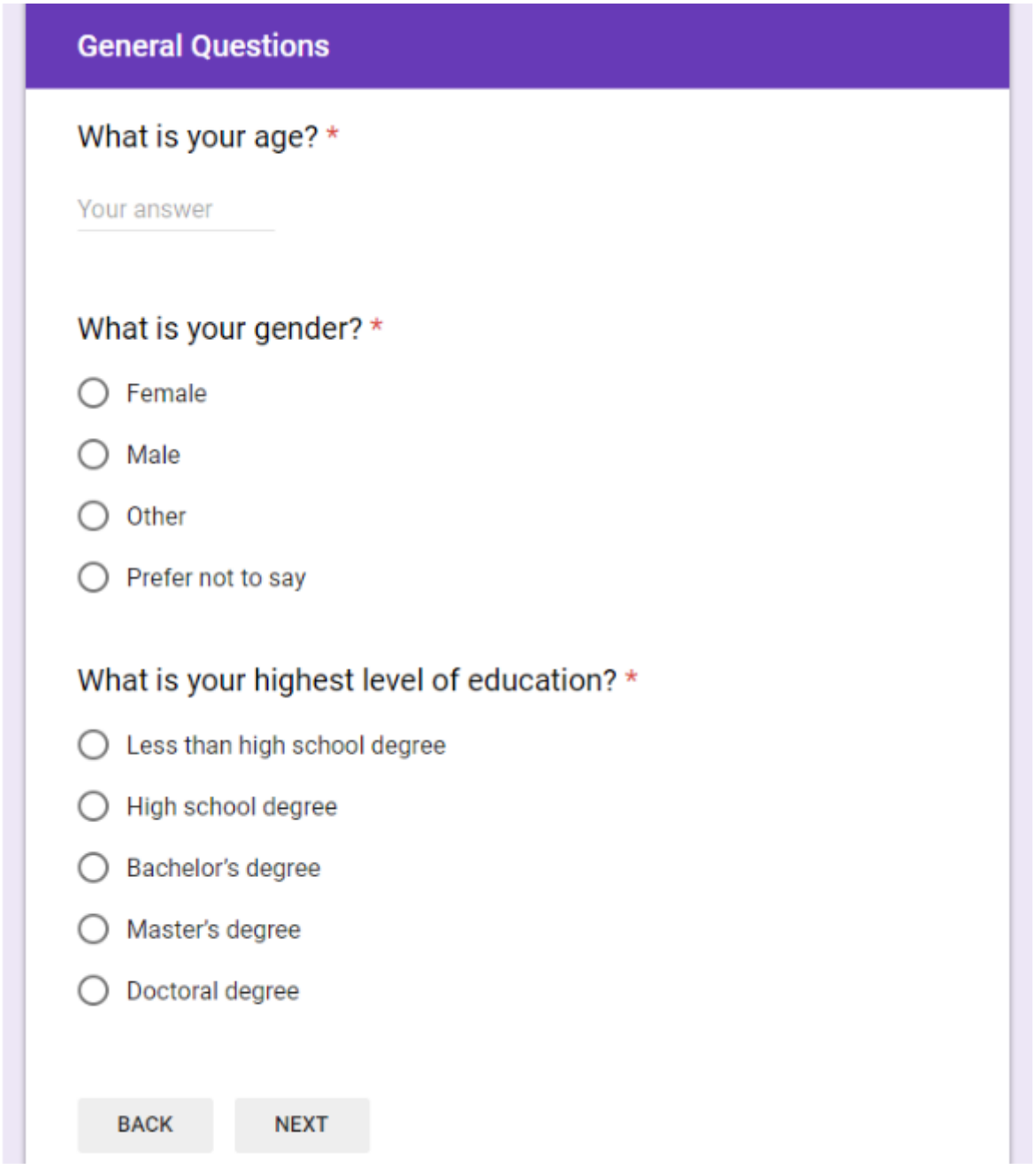

Figure 3:4 General questions

3.2.3 Seller's Profile with and without Gamified Elements

In these two sections, the respondents were asked to answer fifteen statements related to their feelings of trust towards a seller on Ebay. At the start of each section, a picture of a seller's online profile was displayed, which the respondents were asked to base their answers on. In one of the sections, the gamified elements of the seller's profile were edited out. This only left information about previous customer reviews, geographical location of the seller and when they joined Ebay, as shown in Figure 3:5, compared to the profile with the gamified elements, which appear in Figure 3:6.

Figure 3:5 Seller's profile without gamified elements

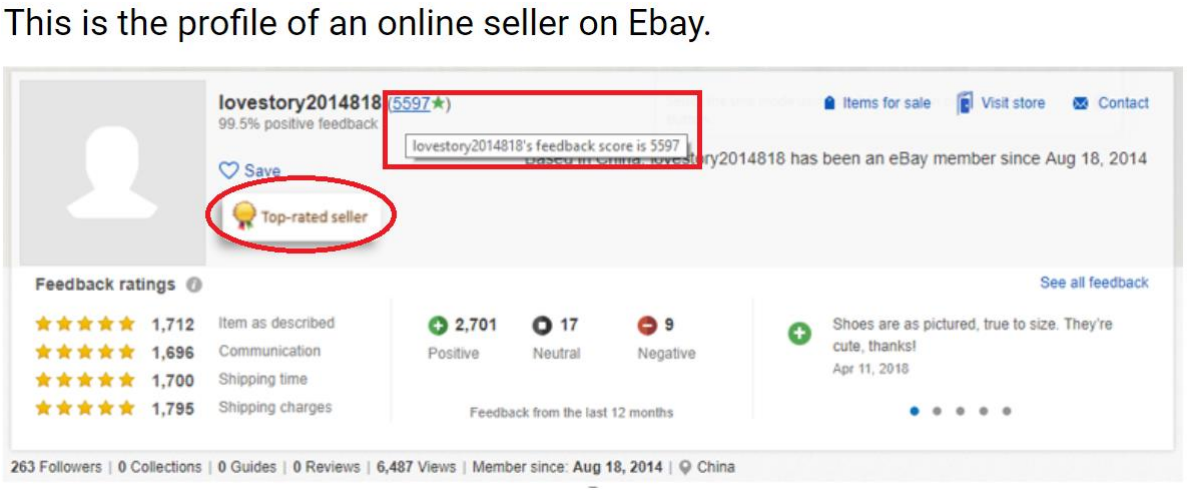

Figure 3:6 Seller's profile with gamified elements

Figure 3:6 shows the profile with gamified elements, which are the seller's feedback score accumulated from previous sales and two badges that represent the seller's feedback score. In Figure 3:6, the gamified elements have been highlighted to help readers easily identify them. In the actual questionnaire, the gamified elements were not highlighted to render the profile as realistic as possible. To make the questionnaire more fluid, a snapshot of the gamified elements of the seller's profile was taken and was added to each statement in the first section of the survey, whereas the whole profile was placed together and was displayed with each statement, including the gamified elements. This was designed to eliminate the need for the respondents to scroll up all the way to the top before answering each question.

3.2.4 Questionnaire Statements

In the following section, each statement in the questionnaire is provided and linked to their respective constructs and sections. As mentioned earlier, each statement was accompanied by a short abbreviation that linked it to a specific construct. Statements with [TBB] measure respondents' *Benevolence* belief. Statements with [TBI] measure respondents' *Integrity* belief.

Statements with [TBC] measure respondents' *Competence* belief. Statements with [GN] measure respondents' *Willingness to depend*. Statements with [MP] measure respondents' *Subjective probability of depending*.

Statements displayed in the section of the survey where the seller's profile lacked gamified elements can be seen in Table 3:1:

Table 3:1 Statements of survey section 1 (seller's profile without gamified elements)

No.	Statement	Measured construct
1	I believe that lovestory2014818 would act in my best interest based on her profile.	[TBB]
2	Lovestory2014818's profile makes me believe that she is interested in my well-being, not just her own.	[TBB]
3	If I required help, lovestory2014818's profile makes me believe that she would do her best to help me.	[TBB]
4	I would characterize lovestory2014818 as honest based on her profile.	[TBI]
5	Lovestory2014818 would keep her commitments based on her profile.	[TBI]
6	Lovestory2014818 is sincere and genuine based on her profile.	[TBI]
7	Lovestory2014818 is competent and effective in selling products based on her profile.	[TBC]
8	Lovestory2014818 performs her role of selling products very well based on her profile.	[TBC]
9	Overall, lovestory2014818 is a capable and proficient Ebay seller based on her profile.	[TBC]
10	I feel that I could count on lovestory2014818 to deliver the product I purchase based on her profile.	[GN]
11	I would feel comfortable purchasing a product from lovestory2014818 based on her profile.	[GN]
12	I can always rely on lovestory2014818 when I need to purchase an important product online based on her profile.	[GN]
13	I would be willing to provide credit card information to Ebay based on lovestory2014818's profile.	[MP]
14	Given a situation in which I would have to purchase something online, I would be willing to pay for a product on Ebay that is sold by lovestory2014818, based on her profile.	[MP]

15	When buying an important product online, I would be willing to pay the price named by lovestory2014818 based on her profile.	[MP]

An example of how the statements were presented in this section can be seen in Figure 3:7.

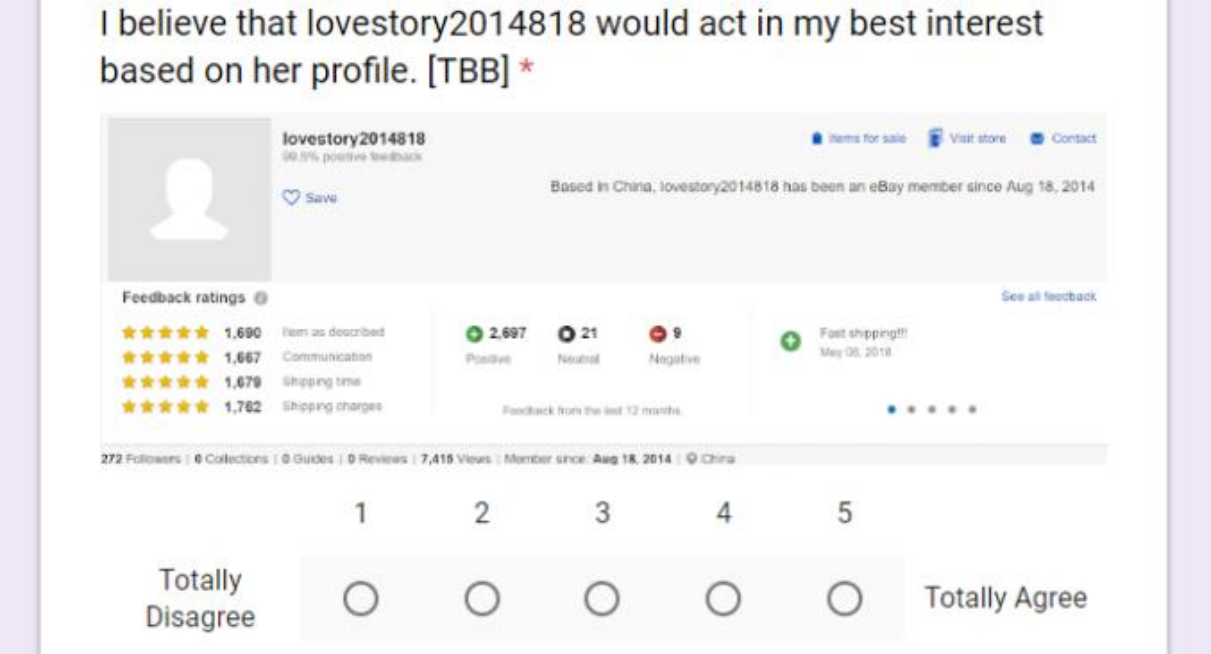

Figure 3:7 Example statement 1

Statements attached to the section where the seller's profile displayed gamified elements can be seen in Table 3.2.

Table 3:2 Statements of survey section 2 (seller's profile with gamified elements)

No.	**Statements**	**Measured construct**
1	I believe that lovestory2014818 would act in my best interest after seeing her feedback score and "top-rated" badge on her profile.	[TBB]
2	Lovestory2014818's feedback score and "top-rated" badge make me believe that she is interested in my well-being, not just her own.	[TBB]
3	If I required help, lovestory2014818's feedback score and "top-rated" badge make me believe that she would do her best to help me.	[TBB]
4	I would characterize lovestory2014818 as honest based on her feedback score and "top-rated" badge.	[TBI]
5	Lovestory2014818 would keep her commitments based on her feedback score and "top-rated" badge.	[TBI]

6	Lovestory2014818 is sincere and genuine based on her feedback score and "top-rated" badge.	[TBI]
7	Lovestory2014818 is competent and effective in selling products based on her feedback score and "top-rated" badge.	[TBC]
8	Lovestory2014818 performs her role of selling products very well based on her feedback score and "top-rated" badge.	[TBC]
9	Overall, lovestory2014818 is a capable and proficient Ebay seller based on her feedback score and "top-rated" badge.	[TBC]
10	I feel that I could count on lovestory2014818 to deliver the product I purchase based on her feedback score and "top-rated" badge.	[GN]
11	I would feel comfortable purchasing a product from lovestory2014818 based on her feedback score and "top-rated" badge.	[GN]
12	I can always rely on lovestory2014818 when I need to purchase an important product online based on her feedback score and "top-rated" badge.	[GN]
13	I would be willing to provide credit card information to Ebay based on lovestory2014818's feedback score and "top-rated" badge.	[MP]
14	Given a situation in which I would have to purchase something online, I would be willing to pay for a product on Ebay that is sold by lovestory2014818, based on her feedback score and "top-rated" badge.	[MP]
15	When buying an important product online, I would be willing to pay the price named by lovestory2014818 based on her feedback score and "top-rated" badge.	[MP]

An example of how the statements were presented in the section where the seller's profile displayed the gamified elements can be seen in Figure 3:8.

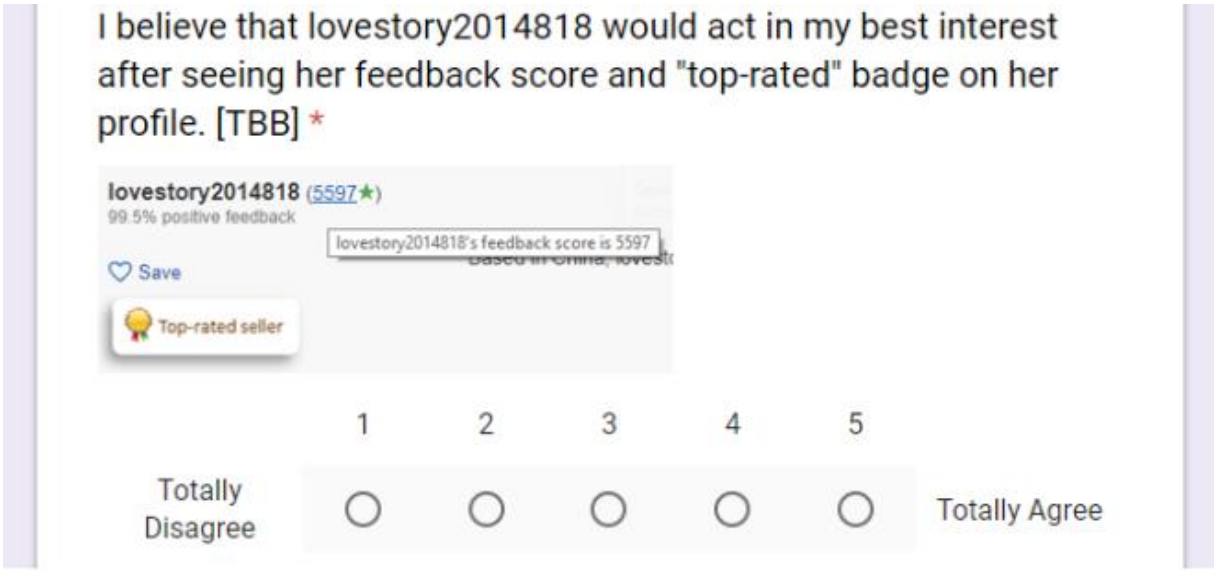

Figure 3:8 Example statement 2

The first construct measured in the survey was trusting beliefs, specifically the subconstruct of *Benevolence* belief which had its statements marked with "[TBB]". Here, the focus was placed on identifying the extent to which respondents believed that the seller would act in their best interest, the extent to which the seller would be interested in their well-being and whether they would do their best to help the respondents. After the statements related to the *Benevolence* belief dimesion had been answered, respondents were presented with the next set of statements, which measured their *Integrity* belief. The statements connected to the *Integrity* belief dimension were marked with "[TBI]" and were focused on measuring the extent to which respondents believed the seller was honest, sincere, genuine and whether they would keep their commitments towards the respondents. Subsequently, the statements that measured respondents' *Competence* belief followed, which had their related statements marked with "[TBC]". The statements that were used to measure the *Competence* belief dimension focused on the extent to which respondents believed that the seller was competent, effective, capable, proficient and the extent to which they performed her role of selling products well. After the three dimensions of the trusting beliefs subconstruct were measured, the next section of the questionnaire moved on to measuring the trusting intentions construct and its two dimensions. The first of the two measured dimensions was *Willingness to depend*, which had its statements marked with "[GN]". The statements used to measure respondents' *Willingness to depend* focused on the extent to which they felt that they could count and rely on the seller in addition to how comfortable they would feel purchasing a product from the seller. The last dimension measured in the questionnaire was *Subjective probability of depending*, which had its statements marked with "[MP]". The *Subjective probability of depending* dimension concerned the extent to which respondents would be willing to trust the seller in more specific risky situations.

3.3 Data Analysis

The analysis for this paper was conducted with IBM's SPPS Statistics 25 software. First and foremost, variables were created from the survey data to match the subconstructs of the online trust model. As far as the first part of the survey is concerned, the responses collected for the first three statements were summarized and were added to compose the variable, "Benevo-

lence". The following statements - three for each variable - were made into "Integrity", "Competence", "Willingness" and "Purchases", respectively. Regarding the second part of the survey, where the statements refer to the shown profile displaying gamified elements, the same process was followed, and the following variables were obtained to make a distinction between the different parts of the survey: "Benevolence1", "Integrity1", "Competence1", "Willingness1" and "Purchases1".

The process continued by determining the adequate statistical analysis to be performed. Taking into consideration the nature of the hypotheses in this paper, a t-test was chosen to compare the means of the two groups of responses, namely the reaction to a profile without gamified elements and one with them. Specifically, a paired sample t-test was conducted, as this type of analysis is suited for comparing measures taken before and after a certain phenomenon is observed. In this study, the "before" situation is the reaction of internet users to an online seller's profile with its usual attributes (star ratings, a preview of reviews written by users). On the other hand, the "after" situation is users' reaction to the same profile, but with additional attributes, the gamified elements (feedback score, badge). According to the paired sample t-test, the difference in means is tested through setting up a null, and an alternative hypothesis. Specifically, the null hypothesis proposes that the means of the two sets of observations are equal and the alternative hypothesis proposes that the means are different.

3.4 Validity and Reliability

To ensure that the study's results are scientifically acceptable, questions of validity and reliability must be answered. Validity concerns whether the collected data really measure what they were collected to measure, and reliability describes how consistent variables are in what they attempt to measure (Recker, 2012). This study attempts to measure changes in respondents' level of trust, which is an ambiguous construct that is hard to define. Therefore, to make sure that it is trust that is measured and not similar concepts, such as faith, constructs created and validated by McKnight et al. (2002) were used. Since these constructs were created, they have been used in multiple trust studies, such as Vance et al. (2008), Thatcher et al. (2012) and Lowry et al. (2008), to mention a few. This increases the belief that the intended constructs were indeed measured and ensures the constructs' validity. When it comes to reliability, Bhattacherjee (2012) states that asking imprecise or ambiguous questions is a source of unreliable observations. Therefore, to make sure that the statements in the questionnaire used in this study are easy to understand and no misinterpretations occurs, a prototype was sent out to a small sample of participants who were then specifically asked for feedback regarding ambiguous or unclear wording of the statements. The final questionnaire was created using the feedback received, which decreases the chance of respondents' failure to understand the statements of the final questionnaire. Using a questionnaire as a data collection tool also reduces the chance of the authors' subjectivity affecting the end results, which also increases the results' reliability.

3.5 Ethical Considerations

Since science has been the subject of manipulation by researchers and organizations pursuing a personal agenda throughout history, ethics has become an important factor to take into consideration (Bhattacherjee, 2012). To assure the ethical appropriateness of this study, the code

of research conduct put forward by the Association for Information Systems (AIS) was followed. The code of conduct is divided into three groups: category one, category two and advice (Association for Information Systems, 2014).

Codes found in category one must always be followed while conducting research (Association for Information Systems, 2014). The four codes in category one are straightforward and state that plagiarism, fabrication or falsification of data, research procedures or data analysis, use of other people's unpublished writings, information, ideas, concepts or data without their permission and misrepresenting the originality of your research to editors are all unacceptable (Association for Information Systems, 2014). To make sure these codes were followed, each claim and statement made in this paper was referenced to appropriate sources, so that they may be double-checked for plagiarism. Empirical data were collected by the authors themselves and they were not taken from any other source. A detailed plan of data collection for this paper is provided, so that other researchers can reproduce the study and prove that no fabrication or falsifying of data occurred.

Codes found in category two recommend ethical behavior, which might not always apply in different circumstances (Association for Information Systems, 2014). The two codes focused on from this category were: respecting the rights of research subjects and not taking or using published data of others without acknowledgment. Concerning respect for research subjects' rights, respondents who answered the questionnaire were provided with information about the nature of the study, what the data would be used for and they were also informed that they can quit the questionnaire whenever they desire. Before the respondents started answering the questionnaire's statements, they also had to manually give their consent to their data being used by ticking in a checkbox, which gave them further control over the situation. The second code from category two refers to not taking or using published data of other without their acknowledgement. This code was approached in a similar manner to plagiarism concerns, by providing references to sources when something was claimed or stated.

4 Empirical Results

4.1 Demographic Data

The data obtained with the online questionnaire consists of eighty-three responses given by internet users from various websites mentioned in the previous chapter. The demographic data collected shows that forty-eight (57,8%) respondents were female and thirty-five (42,2%) of them were male. Furthermore, respondents were asked to state their highest level of education completed; this data shows that forty-four (53%) of the respondents had a bachelor's degree, twenty-eight (33,7%) had a master's degree, ten (12%) had a high school degree and a single respondent (1,2%) had a doctoral degree. The last type of demographic data collected was the respondents' age. The respondents' age ranged from seventeen as the youngest respondent, to forty-six, which was the age of the oldest respondent. The mean age of the respondents was 24.5 and the single most common age of the respondents was twenty-two, which amounted to twenty-two percent (22%) of the sample size. This means that, theoretically, the average respondent of the survey was a 24.5 year-old female, holding a bachelor's degree.

4.2 Statistical Analysis

The paired sample t-test yielded the results shown in Table 4:1. When it comes to t-tests, means of two groups of data sets are compared, and a null hypothesis as well as an alternative hypothesis are proposed. The null hypothesis assumes that there is no difference between the compared means, which indicates that there is no difference in the extent of online trust when a user buys from a seller's profile displaying gamified elements with respect to when a user sees a seller's profile displaying them. In order for the results to be reliable for researchers interested in the study's outcome, the t-test has to be interpreted according to the statistical significance of the obtained figures. Statistical significance manifests that the difference between the means is large enough for it to be significant, and that it is not measured incidentally.

To evaluate the statistical significance, the p-values are crucial to look at. This value corresponds with a measure of probability, in fact, the p-value has to do with the probability of observing results that are in agreement with the assumption of the null hypothesis. Specifically, the higher the p-value, the higher the probability that the null hypothesis is applied, and the alternative hypothesis is rejected. In other words, the higher the p-value, the higher the probability that there is no difference between the compared means. Therefore, a cutoff value is determined by the researcher's chosen confidence level, and the p-value is compared to it in order to define the appropriateness of the hypotheses. When a p-value is lower than the cutoff value, the probability that the results observed will fall under the assumption of the null hypothesis is extremely low, hence, the null hypothesis is rejected.

In this study, the confidence level chosen by the researchers - the most commonly used confidence level - is 95%, therefore, the cutoff interval is 5% or 0.05. The obtained p-values are displayed in the column on the right in Table 4:1, which is a table produced by the researchers based on the values obtained from SPSS. Some of the p-values are too high, thus, not statistically significant for the outcome of this paper's objective. The p-value calculated for the first

pair of variables, "Benevolence" and "Benevolence1", is 0.000, which is less than 0.05, which makes it statistically significant. For the second pair of variables, "Integrity" and Integrity1", the calculated p-value is 0.003, which is once again lower than 0.05 and therefore it is statistically significant. The third pair of variables, "Competence" and "Competence1", yielded a p-value of 0.589, which exceeds the cutoff value and hence, it is not statistically significant. The fourth variable pair, "Willingness" and Willingness1" also gave rise to a p-value lower than the cutoff value, 0.39, which makes this comparison statistically significant as well. Lastly, the fifth pair of variables, "Purchases" and "Purchases1", show 0.003 as the p-value, thus, this result is statistically significant.

Table 4:1 Paired samples test results

Pair number	Variable Pairs	Sig. (2-tailed): *p-value*
1	Benevolence - Benevolence1	,000
2	Integrity - Integrity1	,003
3	Competence - Competence1	,589
4	Willingness - Willingness1	,039
5	Purchases - Purchases1	,003

Each hypothesis requires adequate interpretation using the statistical values displayed above. In order to make a decision about their accuracy, the described p-values and whether they are statistically significant are used. As mentioned above, the t-test assumes two hypotheses for each case. There is a null hypothesis, which means the compared means are exactly the same, whereas under the assumption of the alternative hypothesis, the means are different. Whether the difference between the compared means is lower or higher than zero can be determined by looking at another table, which displays data compiled from SPSS through the conducted t-test (Table 4:2). Hence, in order to determine how the means change between the variables of each variable pair, whether the difference is lower or higher than zero, the respective means of the statistically significant variable pairs have to be analyzed. The following table, Table 4:2, exhibits each variable's calculated mean.

The results concerning the variable pair "Competence" and "Competence1" were not found statistically significant, thus, they will be disregarded in the following section of the analysis. Therefore, the statistically significant variables pairs are "Benevolence" and "Benevolence1", "Integrity" and "Integrity1", "Willingness" and "Willingness1" and lastly, "Purchases" and "Purchases1". In addition, the difference between the two variables of each pair seems to be less than zero, meaning that the mean of each second variable of each pair is larger than the mean of each first variable of each pair, according to the analysis in Table 4.2. Specifically, the differences are: -0.8313 between the means of "Benevolence" and "Benevolence1"; -0.6626 between the means of "Integrity" and "Integrity1"; -0.4217 between the means of "Willingness" and "Willingness1"; and -0.7832 between the means of "Purchases" and "Purchases1".

Table 4:2 Mean table of variable pairs

Pair number	Variables	Mean	Difference of Means
1	Benevolence	11,6145	-0,8313
	Benevolence 1	12,4458	
2	Integrity	11,7952	-0,6626
	Integrity1	12,4578	
3	Competence	13,1928	Not statistically significant
	Competence1	13,2771	
4	Willigness	12,2289	-0,4217
	Willingness1	12,6506	
5	Purchases	11,0361	-0,7832
	Purchases1	11,8193	

In this regard, the hypotheses proposed by the authors of this research paper are the following:

H1 - Gamified elements positively affect the users' *Benevolence* belief.
H2 - Gamified elements positively affect the users' *Integrity* belief.
H3 - Gamified elements positively affect the users' *Competence* belief.
H4 - Gamified elements positively affect the users' *Willingness to depend*.
H5 - Gamified elements positively affect the users' *Subjective probability of depending*.

Based on the analysis, four out of five hypotheses are true. These are H1, H2, H4 and H5, the hypotheses containing the "Benevolence", "Integrity", "Willingness" and "Purchases" variable pairs. Accordingly, the *Benevolence*, *Integrity*, *Willingness to depend* and *Subjective probability of depending* dimensions of the proposed model are positively affected by gamified elements. On the other hand, the *Competence* dimension remained unaffected by the influence of gamified elements, therefore, causing H3 to be inapplicable.

4.3 Summary of Results

Table 4:3 Summary table

Hypothesis	p-value	Difference of Means	Validity
H1	,000	-0,8313	Supported
H2	,003	-0,6626	Supported
H3	,589	Not statistically significant	Not supported
H4	,039	-0,4217	Supported
H5	,003	-0,7832	Supported

Table 4:3 above shows a summarized version of the obtained results. It displays the two most important values of the statistical analysis - p-value and difference of means - and whether the hypotheses are supported by the results or not. The table clearly presents that hypotheses H1, H2, H4 and H5 are true, while H3 is not applicable. Based on these results, it can be stated that gamification positively affects the *Benevolence*, *Integrity* dimensions of the trusting beliefs subconstruct, while it also positively affects the *Willingness to depend* and *Subjective probability of depending* dimensions of the trusting intentions subconstruct.

5 Discussion

As shown in the results, gamified elements were proven to have a positive impact on generating online trust, as hypothesis H1, H2, H4 and H5 were proven to be true. More specifically, gamified elements were shown to positively impact a potential customer's trusting intentions and trusting beliefs. Stewart (2003) reports how one might hold trusting beliefs about another party, but might still not want to make themselves vulnerable to the other party's actions (Stewart, 2003). This means that only possessing one of trusting beliefs or trusting intentions is not enough to create trust. Therefore, if the results of this study had been found to only positively affect one of the subconstructs, the overlying hypothesis that gamified elements positively affect online trust would fall through.

5.1 Trusting Beliefs

The gamified elements used in this study were points and badges, which typically serve the function of displaying progress and achievements (Werbach & Hunter, 2012). On Ebay's website, the sellers receive points when conducting a sale depending on certain criteria, such as if the delivery was made on time or whether the product delivered was damaged. In addition they also have the chance to collect points based on customers' reviews. It is therefore intriguing that the results connected to respondents' trusting beliefs exhibit that gamified elements positively affect their *Benevolence* and *Integrity* beliefs, while the *Competence* belief dimension shows no significant change. Hence, these results are compelling due to the fact that one could argue; the points and badges obtained by sellers on Ebay are rewards for their competence rather than their integrity or benevolence. In the case of Ebay, this conveys the impression that there are other design elements on the website that display sellers' competence as well, or even better than the gamified elements that are currently being used. Thus, these remaining elements might not be able to manifest more intangible attributes of integrity and benevolence, which gamified elements appear to succeed in. This is a possible explanation for why the use of gamified elements indicates a significant positive impact on those two dimensions as opposed to the competence dimension.

Gamified elements positively influence respondents' trusting beliefs. A higher level of trusting beliefs have shown to increase the likelihood of a visitor to consider purchasing from that online vendor, it has been shown to affect online consumers' attitudes, purchase intentions and purchase behaviors as well (McKnight et al., 2002; Gefen et al., 2003; Lim et al., 2006). This means that gamified elements directly increase the chance of a potential customer following through with a purchase with a seller online. This creates an opportunity for using gamified elements as an element of marketing strategy by companies to recruit more sellers. This is due to the fact that by selling through a company's gamified e-commerce platform, sellers may generate a higher income with respect to competitor's e-commerce platform that lacks the implementation of gamified elements.

Research has shown that trusting beliefs and trusting intentions have a strong connection (Vance et al., 2008). Schlosser et al. (2006) explain the underlying theory in more detail and claim that trusting intentions involve taking risks; when people are required to make decisions that involve exposing themselves to risk concerning another party, they consult their trusting

beliefs to determine whether to perform the trusting behavior. The results from this study illustrate that gamified elements have a largely positive impact on respondents' trusting beliefs. In fact, they probably play a role in the similarly positive impact on respondents' level of trusting intentions as well. The word "probably" refers to this study's disregard for the further exploration of this aspect, although it can be referred from the results.

5.2 Trusting Intentions

Trusting intentions refer to one's willingness to depend on another person in a certain situation (McKnight et al., 1998). In the context of this study, the situation the respondents were placed in appears, from the results, to be important in determining how effective gamified elements are in generating online trust. The results related to H5, which measure the respondents' subjective probability of depending, exhibit a more significant positive change both in terms of its p-value and mean compared to the results of H4, which measure respondents willingness to depend. Subjective probability of depending refers to specific risky behaviors, such as providing personal information to an online vendor, engaging in a purchase transaction or acting on an online vendor's information (McKnight et al., 2002). These specific risky behaviors vary depending on the situation, which suggests that the context that gamified elements are deployed in are decisive in determining how they affect users' trusting intentions. The situation utilized in this study involved respondents pretending to engage in a transaction with a seller on an online e-commerce platform. Trust has been established to be a significant factor affecting customers' behavior in e-commerce context (Liang et al., 2005; Gefen et al., 2003). Therefore, conducting a similar study employing a different situation disregarding e-commerce could prove useful to examine whether trust is still such an important factor in in users' behavior.

In an early stage of this study, a decision had to be made regarding what context the study would be performed in. This decision entailed selecting an e-commerce website, Ebay, which was finally used as the platform. Khan Academy was an alternative option, which would have altered the context of research. When it comes to education, students always have the ability to double-check the information they are given and compare it to other sources, which causes trust between teachers and students become more negligible. Gamified elements rather represent teachers' competence and teaching skills, whether they give clear and easy-to-understand answers. Thus, the authors of this study believe that the results using the website, Khan Academy, would have differed. This gives rise to a compelling area to research in the future.

5.3 Contribution to the Debate about Gamification

As described in the literature review, there are differing opinions regarding the relevance and impact of gamification. Some researchers go as far as calling gamification "exploitationware" (Bogost, 2015; Rey, 2012), while others academics have found mostly positive effects (Hamari et al., 2014; Liu et al., 2017). The results of this study support the view that gamification is a positive tool, especially if used properly. Kim and Werbach (2016) share this notion and argue that gamification per se is not inadequate, but rather it depends on how it is deployed. Negative side effects of gamification can always be found with in-depth analysis and it is – without doubt - important to acknowledge them and take them into consideration. At times, this negative influence is the result of unethical business strategies, such as those of betting companies who

actively attempt to get their customers to place more bets, potentially resulting in gambling addiction (Hyrynsalmi et al., 2017). This is a distinct issue and cannot be used to justify the use of gamification. Even though gamification can be a tool to induce unethical or unwanted decisions, it is not inherently bad. A modern analogy would be that cars cannot be deemed to be harmful as a result of terrorists' tendency to use them as weapons and run them into crowds of people. Instead, the authors of this study believe that the question should change from the usefulness of gamification to how and where it should be applied in order for it to have desired effects.

This study shows that gamification has a legitimate place on e-commerce platforms, and can contribute to increasing sellers' sales numbers by increasing the level of trust that their customers experience towards them. Hence, gamification on e-commerce platform still has the potential to be used in unethical ways, such as inflating points and achievements sellers earn, in order to make them appear more trustworthy. This is where clear rules and legislations come in to control the truthfulness of information provided on websites and to regulate the way companies market products, services and sellers. Therefore, the authors of this paper believe that a large portion of reported negative side effects can be overcome by strict legislations, which in some countries are already in place, regarding how companies are allowed to present information to potential customers. This would lead to the positive effects of gamification entering the forefront, it would manifest as the useful tool that research have proven it has the potential to be.

6 Conclusion

The present study was designed to determine the effect of gamification on online trust. The study has identified different views on gamification's appropriateness in relation to its impact on individuals and companies. The results to emerge from this study are in support of the use of gamified elements on e-commerce websites, in fact, they enhance users' overall confidence in its sellers. Four out of five hypotheses were found to be true, specifically, two out of three within trusting beliefs and two out of two within trusting intentions. This implies that gamification indeed has a significant positive impact on generating online trust. However, the outcome does refer to the results' applicability to other contexts as well, only to different degrees. The findings from this study make both theoretical and practical contributions. Overall, this study strengthens the empirical evidence in favor of the gamification advocates' beliefs that it is indeed useful. Moreover, the findings of this research provide insights for companies that are interested in adopting gamification on their websites as well as for researchers who wish to study the impact of gamification more in depth. One source of weakness in this study which could have affected the measurements of gamification's impact on online trust is that it is only conducted in only one setting, namely e-commerce. As a result, a greater focus on duplicating this research in different settings could produce interesting findings regarding gamification's suitability.

7 Appendix

Questionnaire Statements from McKnight et al. (2002)

	Trusting Beliefs
Benevolence (TBB)	1. I believe that LegalAdvice.com would act in my best interest. 2. If I required help, LegalAdvice.com would do its best to help me. 3. LegalAdvice.com is interested in my well-being, not just its own.
Integrity (TBI)	1. LegalAdvice.com is truthful in its dealings with me. 2. I would characterize LegalAdvice.com as honest. 3. LegalAdvice.com would keep its commitments. 4. LegalAdvice.com is sincere and genuine.
Competence (TBC)	1. LegalAdvice.com is competent and effective in providing legal advice. 2. LegalAdvice.com performs its role of giving legal advice very well. 3. Overall, LegalAdvice.com is a capable and proficient Internet legal advice provider. 4. In general, LegalAdvice.com is very knowledgeable about the law.
	Trusting Intentions
Willingness to Depend (GN)	1. When an important legal issue or problem arises, I would feel comfortable depending on the information provided by LegalAdvice.com. 2. I can always rely on LegalAdvice.com in a tough legal situation. 3. I feel that I could count on LegalAdvice.com to help with a crucial legal problem. 4. Faced with a difficult legal situation that required me to hire a lawyer *(for a fee)*, I would use the firm backing LegalAdvice.com.
Subjective Probability of Depending—Follow Advice (FA)	1. If I had a challenging legal problem, I would want to use LegalAdvice.com again.* 2. iI would feel comfortable acting on the landlord/tenant information given to me by LegalAdvice.com. 3. I would not hesitate to use the landlord/tenant information LegalAdvice.com supplied me. 4. I would confidently act on the legal advice I was given by LegalAdvice.com. 5. I would feel secure in using the landlord/tenant information from LegalAdvice.com. 6. Based on the advice I just read, I would serve notice, wait, go ahead and get the repair done, and then deduct the cost of the repair from my rent.
Subjective Probability of Depending—Give Information (GI)	Suppose you wanted more specific information about landlord/tenant relationships and you could consult (one time only) by telephone with one of the LegalAdvice.com lawyers for 15–30 minutes *(free of charge)*. For this service, please answer the following: 1. I would be willing to provide information like my name, address, and phone number to LegalAdvice.com. 2. I would be willing to provide my social security number to LegalAdvice.com. 3. I would be willing to share the specifics of my legal issue with LegalAdvice.com.
Subjective Probability of Depending—Make Purchases (MP)	Suppose the LegalAdvice.com site was *not* free, but charged to access information on the site. Answer the following questions: 1. Faced with a difficult legal situation, I would be willing to pay to access information on the LegalAdvice.com Web site. 2. I would be willing to provide credit card information on the LegalAdvice.com Web site. 3. Given a tough legal issue, I would be willing to pay for a 30-minute phone consultation with a LegalAdvice.com lawyer.

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