

Reasoning processes behind online consumers' decisions to trust a website when making low and high-risk decisions

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Abstract

This paper aims to investigate the reasoning processes behind online consumers' decisions to trust a website when making low and high-risk decisions. Data were collected in an online field experiment that was then analyzed using statistical methods and models such as pivot table, longitudinal and independent logistic regressions, and Wald's chi-square test. This paper argues that people tend to use deliberative reasoning processes in a risk-free environment and rely on intuitive processes in high-risk situations with ambiguity. In addition, this study provided data-driven proof for these assumptions.

Acknowledgement

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Introduction

The most widespread and popular form of e-commerce for private consumers around the world is in the business-to-consumer (B2C) category, which includes online retail or online shopping. This applies to online purchases from both brick-and-mortar retailers like Walmart and online retailers like Amazon.com. Due to the increase in speed and convenience, online shopping is growing so rapidly that in 2019, global e-commerce retail sales totaled \$3.53 trillion US dollars, and to date, revenues are forecast to almost double that, to \$6.54 trillion US dollars in 2022 (Clement, 2020). In addition, up from 1.66 billion global digital shoppers in 2016, more than 2.14 billion people worldwide are expected to purchase goods and services online in 2021 (Clement, 2019).

Although Armenia is not among the top countries in terms of average e-commerce income, e-commerce in Armenia is developing and the number of e-commerce websites is growing thanks to the increased use of the Internet, credit cards, and online banking. Since Armenians are getting used to this type of financial service, it can contribute to even further growth of e-commerce. The increase in the number of local e-commerce startups such as Salesboom.am, Menu.am, Biglemon.am is an excellent indicator of these predictions. As of January 2020, 2.96 million people were living in Armenia, of which 2.1 million were internet users, representing a penetration rate of 71.8 % (Kemp, 2020). With the emergence of logistics companies such as Globbing and Onex, Armenian consumers have begun to buy more from international companies. Moreover, mostly online international products tend to be cheaper, so people buy different types of products, ranging from clothing, shoes, and accessories to

household appliances, books, mobile phones, and computers (Armenian Market: E-commerce, 2020). According to the statistics department of the Central Bank of Armenia, the total volume of overseas e-commerce in Armenia in 2017 amounted to about \$39.1 million, an increase of 39% compared to 2016 (Yezekyan, 2018). Still, e-commerce has not yet reached its potential in Armenia and has not penetrated deep into the country. The topic of this research study was formed based on the current need for e-commerce businesses. Due to the lack of research on online shopping in Armenia, this study focuses on the behavior and decision models of Armenian citizens as online customers. This research addressed the following question:

✓ What are the reasoning processes behind the online consumer's decision to trust a website when making low and high-risk decisions?

Taking into account that in the current situation with the Covid-19 pandemic, many companies in Armenia have begun switching their activities to online platforms and that in order to succeed, they need to understand their customers, this research focused on investigating people's thinking and reasoning processes behind their choices and decisions about buying a product in online stores. This, in turn, can serve as a foundation for companies not only to create the right marketing strategies, but it can also help companies decide what information to include on their website, as well as look at the buying process from the perspective of online customers. Thus, it will help them build their customer trust and increase sales. From a customers' perspective, this study can serve as a guide to understanding possible manipulation by e-commerce businesses and to focus their attention on important factors to look out for when shopping online.

After reviewing the literature and previous research, two hypotheses were put forward regarding the use of deliberative and intuitive thinking processes in assessing the trustworthiness of a website, which were further analyzed and proven. The importance of understanding whether deliberative or intuitive thinking is applied while shopping is that this information can be used by companies as an effective way of guiding and, to some extent, manipulating customers.

This research was based on an online survey experiment, which included a 2x3x2 mixed factorial design. The target audience of the experiment were Armenian young adults aged 19 to 29. During the experiment, participants were randomly assigned to one of six experimental conditions, where they had to make two hypothetical decisions in a risk-free and high-risk settings. It is important to note that they did not know that they were participating in an experiment that was conducted for research purposes. The experiment was designed and presented in such a way that participants think they are dealing with a recently launched online gift shop.

As a result, 210 valid responses were collected, which were subsequently analyzed using statistical models such as the factorial ANOVA factor, logistic regression models, and the Chi-square test, which confirms hypotheses and reveals new explanations for the identified trends in the data. Thus, the main findings of this research are that online consumers rely on deliberative reasoning processes when evaluating whether to trust a website in no-risk condition. While in a high-risk condition, they unintentionally rely on intuitive reasoning processes. Based on the approach of this study, the final results and interpretations can be used by both companies and consumers for their aforementioned purposes.

Literature and relevant experiments' review

Nowadays marketing and more specifically determination of consumer buying behavior can be considered as a vital and integral part of every business. Every day we make choices regarding the products or services that we are going to purchase and use. In their turn, companies do their best to understand the decision pattern and buying behavior of their target audiences and based on the findings offer the best options through the marketing. Moreover, in order to develop the businesses in the future, management and marketing departments help people to choose and implement the right strategies (Strydom, 2005). Thus, consumer behavior theories draw a clear image and describe in detail the consumers' actions in the business environment (Noel, 2009).

Behavioral patterns are similarities in consumers' buying behavior despite the fact that each one of them is unique (Cant, Jooste, Plessis, & Strydom, 2009). Due to these similarities, marketers combine customers with similar decision patterns in specific groups, which in turn make the marketing process easier. Consumer behavior determines target markets and marketing mixes and can be considered as a “key player” in the marketing (Sandhusen, 2000). Thus, if the company wants to come up with the correct marketing strategy that will be beneficial and effective for the business' future it should invest in the understanding and defining behavioral characteristics of its target market. Taking this information into account, it was decided to find out the similarities in the buying behavior of online customers, and to formulate the research question in such a way that these similar patters were integrated into it. Moreover, since the

target audiences of each type of business differ in age, gender, interests, and personal qualities, it was decided to find and use such common features that would suit as many people as possible.

Due to exponential development of technologies and the digital world, buyers can easily access any information, which in turn leads to an increased level of awareness about current pricing strategies. Vijay, Thoppan, Nathan, & Fekete (2018) conducted study using an exploratory factor analysis approach that examined and explored the factors that have an impact on consumer behavior, as well as identified decision patterns of customers' expected online purchases in a dynamic pricing situation. The primary research survey was conducted online in India and had a 178 respondents. As a result, researchers came up with seven factors, to be specific “shopping experience, privacy concerns, awareness about dynamic pricing, buying strategy, fair price perceptions, reprisal intentions and intentions for self-protection” that can be used as an explanation of the customers' behavioral patterns in dynamic pricing context. While the focus of this study was dynamic pricing, it bears similarities to this study in that it examined online customer behavior patterns and identified factors such as previous shopping experiences and privacy concerns that were integrated into this online experiment. The main difference is that this study did not examine how prices affect consumers' decisions to buy a product on a website.

While talking about changes in customer buying behavior it is important to analyze the behavioral and decision-making patterns of the online buyers. Despite the fact that many buyers are not yet accustomed to shopping via the Internet, online shops are becoming more common and used, especially in the context of the current COVID-19 pandemic. Thus, Rahman, Islam and his co-authors conducted a study, which aims to examine online shoppers buying behavior in Bangladesh (Rahman, Islam, Humyr, Sultana, & Chakravorty, 2018). They conducted a survey with 160 respondents in Dhaka city and found out similar behavioral patterns for both female

and male online shoppers. The results showed that buyers prefer online shopping, because it saves their time, has an opportunity of home delivery, as well as provides more available options of products and services. Most of them get the information from their social media accounts, more particularly from Facebook ads, or from suggestions of their friends and family members – “word-of-mouth” communication. However, there are factors that most of the online shoppers did not like, such as enabling them to touch and feel the products before making the purchase. Another factor that customers dislike is the uncertainty in the security of their payment details (online card number, passwords, etc.). Based on the results, most of the participants indicated that they do not prefer to use their credit or debit card details when shopping online, as they feel that the payment system is usually not secure. Another disadvantage that worried some participants was privacy issue. The main reason customers refused to provide contact information to online sellers was to avoid spam and telemarketing. Given the above findings and the format of my research, it was decided to put the participants in a high risk situation, which was to provide personal information and credit card details in exchange for a monthly subscription and a free gift. Thereby, this allowed me to test whether customer behavior changes depending on the presence of risk.

One of the debatable topics in marketing is the relationship between customers’ personalities and their buying behaviors. Some companies even segmented their customers based on some character traits. Based on this controversial topic, Pelau, Serban, and Chinie (2018) conducted research to inspect if there is any relationship between personality and the buying behavior of customers. It showed that undoubtedly the relationship exists concerning some specific traits. Based on the results, extroverts, people who make decisions based on their feelings and intuition, as well as individuals who are focused on perception are more prone to

impulsive buying behavior. In other words, these people are more willing to buy and try new and even unplanned products. Furthermore, it was found that, compared to customers who used logical reasoning and rationalization in their decision making, consumers who decided to purchase a product based on a first impression were more likely to base their buying decision on their instincts. More importantly, people who make decisions based on simple information using their intuition are more likely to buy new products than people who interpret and analyze the information received in a more judgmental way. This research and its results allowed me to finally formulate the research question and find common patterns of online customer behavior that were subjected to further analysis.

It is equally important to carefully examine the formation of online customer trust in various websites since we all demonstrate the initially formed trust in different platforms by publishing any information about us. Since gaining the trust of your customers is a necessary foundation for every successful business, many researchers have tried to understand the factors that affect users' decision whether to trust the site or not. In the context of online shopping, given the complexity and uncertainty associated with online purchases, customers often seek to reduce these factors by creating mental shortcuts, such as brand trust (Grabner-Kräuter, 2010). In general, trust as a dynamic concept can be divided into three different phases: (1) building (where trust is formed or reformed), (2) stability (where trust already exists), and (3) dissolution (where trust declines) (Rousseau, Sitkin, Burt, & Camerer, 1998). When we look at these phases in the context of building online trust, we understand that in the first stage of building trust, in particular, when the Internet user visits and goes through the website for the first time, the first perceptions of attributes of the website related to trust can serve as the basis for the formation of initial trust. According to McKnight and Chervany (1996) at the initial trust formation phase,

Internet users refer to cognition-based trust, which is based on first impressions, the so-called fast cognitive signals. In other words, a cognitive understanding of web characteristics (privacy and security, popularity level, ease of use, etc.) can play an important role in the process of building trust. Taking this into account, it was decided to test whether web characteristics such as privacy and security conditions, store policies, design, and ease of use of the web pages affect customers' decision to trust the company. Consequently, this research will contribute and add new meaning to this literature.

Despite the aforementioned highly rational deliberative trust formation process, whereby customers evaluate web characteristics, such as terms of services, privacy policies, and reviews, it is equally important to analyze an irrational associative/intuitive reasoning approach. In order to fully comprehend these two alternative reasoning processes: deliberative (rule-based) and associative (intuitive), Steven Sloman (Sloman, 1996) introduced a theory summarized and presented in Table 1.

Characteristics	Deliberative reasoning	Associative reasoning
Principles of operations	Symbol manipulation	Similarity and contiguity
Source of knowledge	Language, culture, and formal systems	Personal experience
Nature of representation		
❑ Basic Units	Concrete, generic, and abstract concepts; abstracted features; compositional symbols	Concrete and generic concepts, images, stereotypes, and feature sets
❑ Relations	(a) Causal, logical, and hierarchical (b) Hard constraints	(a) Association (b) Soft constraints
Nature of processing	(a) Productive and systematic (b) Abstraction of relevant features	(a) Reproductive but capable of similarity-based generalization (b) Overall feature computation and constraint satisfaction

	(c) Strategic	(c) Automatic
Illustrative cognitive functions	<input type="checkbox"/> Deliberation <input type="checkbox"/> Explanation <input type="checkbox"/> Formal analysis <input type="checkbox"/> Verification <input type="checkbox"/> Ascription of purpose <input type="checkbox"/> Strategic memory	<input type="checkbox"/> Intuition <input type="checkbox"/> Fantasy <input type="checkbox"/> Creativity <input type="checkbox"/> Imagination <input type="checkbox"/> Visual recognition <input type="checkbox"/> Associative memory

Table 1: Characteristics of Two Forms of Reasoning (Sloman, 1996)

In his theory, Professor Sloman stated that deliberative reasoning relies on firm rules such as the conjunction rule of probability. This rule states that $\Pr(A) \geq \Pr(A \& B)$, where $\Pr(A)$ denotes the probability of event A. In other words, the probability of two events occurring simultaneously cannot be more than the probability of either one occurring alone. Moreover, this rule is productive, in terms of given new event C, one can infer that $\Pr(A \& B) \geq \Pr(A \& B \& C)$, which is true for any number of events. In contrast, associative reasoning is based on resemblance, temporality, observations, periodicity, as well as correlations between different features of the world in order to set environmental regulations.

One of the most renowned experiments of conjunction fallacy was presented in a study by Amos Tversky and Daniel Kahneman (Tversky & Kahneman, 1983). Subsequently, this experiment became known as "Linda problem". In this research, participants were provided with a brief description of fictitious personalities (Linda and Bill), after which they had to rank eight statements about each person from most to least probable. In accordance with the description used in the experiment: "Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in antinuclear demonstrations." As we can see, the description was built in such a way that Linda was a representative of an active feminist, and, conversely, was

not representative of a bank teller. Two of the eight statements on which the experiment was focused were:

(1) “Linda is a bank teller. (T)”

(2) “Linda is a bank teller and is active in the feminist movement. (T & F)”

Based on the results, 85% of participants ranked the probability of the second statement (T & F) higher than the first statement (T), while rationally the probability of the second statement must always be less than or equal to the probability of the first statement (Tversky & Kahneman, 1983). The significance of these results was that most of the participants were graduate students who had to have a deep understanding of the probabilities and decision-making rules.

Based on this, Slovic concluded that the participants did not rely on deliberative rules at their disposal. Instead, they used intuitive reasoning and associated characteristics in the description with a woman who is a feminist (Slovic, 1996). Considering that an individual can use either a deliberative or associative reasoning process to solve a problem, in order to distinguish which decision-making system was used, it is necessary to determine the level of awareness of an individual about his or her decision-making process. More specifically, he/she most likely used an associative reasoning process if he/she cannot express the logic used to find the answer. So, by analyzing the conjunction rule of probability and experiment of conjunction fallacy, as well as understanding their connection with two different reasoning processes, I used all of this to create the design and conduct an experiment. Moreover, it was decided to use the idea and approach described in this literature, thereby separating the participants based on their reasoning approach and checking if this influences their decision to buy a product.

Deliberative and intuitive thinking is also connected with risk and ambiguity. Risk can manifest itself in different ways and different places (Ellsberg, 1961). Games of chances, such as roulette or blackjack, are excellent examples of situations where players know in advance the limited possible outcomes and corresponding probabilities. This allows them to assess and place bets accordingly. Thus, many researchers used this in their experiments on game theory, presenting a range of possible outcomes and asking participants to make hypothetical decisions. At the same time, they did not provide data on the probability of any particular outcome, so they intentionally included “ambiguity” in their experiments (Camerer, 2011). The combination of risk and ambiguity leads people to rely on associative rather than deliberate reasoning processes when making decisions. Butler, Guiso, and Jappelli (2014) conducted research, which stated that there is a positive correlation between risk and ambiguity aversion. The authors argue that aversion to risk and ambiguity is more pronounced in people prone to deliberative thinking, while “intuitive thinking is particularly apt at dealing with complex situations involving substantial uncertainty and many alternatives” (p. 24). This was also implied by researchers Antoine Bechara, Hanna Damasio, Daniel Tranel, and Antonio R. Damasio (1997; 1991). Moreover, based on study 4, published in the article "People's intuitions about intuitive insight and intuitive choice", people who were faced with risky choice formulated in precise terms were more likely to rely on rational processes, whereas those who were faced with risky choices frames in less precise problem terms (ambiguous) were more likely to use their intuition (Inbar, Cone, & Gilovich, 2010).

Returning to the formation of trust, it is important to note the definition of trust, namely, "extent to which one party is willing to depend on the other party in a given situation with a feeling of relative security, even though negative consequences are possible" (Mcknight &

Chervany, 1996, p. 27). Based on this statement we can argue that for the emergence of trust or mistrust, there must be "negative consequences" of risk. More precisely, trust cannot exist without risk. Many researchers agree that consumers feel insecure and risky when making online transactions (Gefen, 2000; Mcknight, Choudhury, & Kacmar, 2002). As past studies have shown, unexpectedly, when users come up with decisions to build trust in risky situations (online purchasing), they became less likely to ask for specific evidence, such as privacy policies (No, 2007), or to set hard constraints, or to deliberate for a long period of time (Lindgaard, Fernandes, Dudek, & Brown, 2006). On the contrary, consumers became inclined to base their decision on an implicit first impression of the website (Wang & Emurian, 2005), which is formed as a result of a combination of intuition, creative and visual receptivity, as well as previous associative experience. My research complements these pieces of literature as I used the results and findings described above, putting participants in a risky situation to test which reasoning processes they rely on and what influences their decision to trust a website or not.

A study by Stefano Grazioli and Sirkka Järvenpää can be considered one of the earliest evidences that seasoned consumers have refused to rely on deliberative reasoning processes (Grazioli & Jarvenpää, 2000). The participants in this experiment were not able to distinguish between the original and the fake website, despite the fact that deceptions used in the fake website could be easily detected with a simple formal analysis, such as thorough examination of the web site's policies, "unrealistically good" warranty, fabricated news clips, etc. As there were no differences in the purchasing intentions of the participants (treatment vs. control groups), we can state that subjects did not rely on their deliberative reasoning processes. Since this study has a lot to do with my research, I relied on it to design my experiment.

A potential source of risk for consumers is the possibility that an online brand hides and does not provide specific information about product quality or brand performance and policies. According to the Japanese social psychologist Toshio Yamagishi and his colleagues, this situation is called "social uncertainty" (Yamagishi, Cook, & Watabe, 1998). It exists when the brand has an incentive/motive for "harming" or imposing costs on the consumer, and when the consumer did not have enough information to verify the brand's credibility. Since users cannot check product quality during online purchases and therefore rely on information provided by the company, the uncertainty of online purchases increases. This further proves the importance of my research as it tests various factors that can influence customers' decision to trust a company, and explains how e-commerce companies can use the results of the experiment to their advantage, which will certainly lead to increased sales and profits.

Following this wide stream of literature based on risk-free and high-risk scenarios, I put forward two hypotheses:

Hypothesis 1: Online customers rely on deliberative (rule-based) thinking processes when deciding whether to trust a website in a no-risk condition.

Hypothesis 2: Online customers rely on intuitive (associative) thinking processes when deciding whether to trust a website in a high-risk condition.

In Armenia, there is a lack of academic and scholarly research articles that define the right strategies and algorithms for determining consumer buying behavior, as well as reasoning processes behind purchasing decisions. Further research needs to be done to be able to fill the current gaps in researches about customer's behavioral patterns in Armenia, to be able to

improve the marketing process and help Armenian based e-commerce companies define correct marketing strategies for their businesses and gain the trust of their potential customers.

Methodology

To be able to understand deliberative versus intuitive reasoning processes behind online consumers' decision to trust a website in Armenia, an online survey experiment was conducted. The target audience of the research was Armenian young adults aged 20 and above because millennials are the key age demographic for online shopping (Smith, 2015). Working with different age segments allowed me to observe the decision patterns of each group and draw conclusions based on some similarities among participants. An online questionnaire was distributed through Facebook. In order to create an impression and make people believe that they were participating in an experiment created by a newly launched brand, the survey was shared through a pre-created "company" account. Participants were randomly assigned to one of six experimental conditions, and each experiment took approximately 8-15 min to complete. The randomized subsets ensured that each randomized question and section was encountered by the pool of respondents the same number of times. The online questionnaire included static content, such as descriptive texts and graphics, as well as multiple-choice, text entry, pick, group, and rank, slider, timing, and open-ended questions. The reason for adding different types of questions was to get more information and a clear vision of people's behavior and reasoning processes. Moreover, since the target audience for a survey was Armenians, the survey was composed of two languages: English and Armenian.

As illustrated Table 2, the experiment involved a 2x3x2 mixed factorial design. Factors included:

- **Website:** original vs. inferior (*randomly assigned between participants*)
- **Decision:** control vs. deliberative vs. intuitive (*randomly assigned between participants*)
- **Risk:** no-risk vs. high-risk (*repeated measure within participants*).

		Decision					
		Control		Deliberative		Intuitive	
Website		(no-risk)	(high-risk)	(no-risk)	(high-risk)	(no-risk)	(high-risk)
	Original						
Inferior							

Table 2: Mixed factorial experimental design.

Research participants were randomly assigned to one version of the created “YourGift” Armenian online gift store websites (original or inferior), and one of three decision-making conditions (control, deliberative or intuitive). The mock websites used in the experiment were created using the Wix.com cloud-based development platform, and the experiment itself was created using the Qualtrics Experience Management Platform. The original version of the website was formed based on an analysis of existing online stores in Armenia, especially gift shops, taking into account the chosen area. As seen in Table 3 (Appendix), it included information, such as payment methods, security and privacy guarantees, store policies, refund and return policies, contact information, terms of service as well as wide delivery methods. The second, inferior version was identical to the first one, but with some additional changes. It lacked

some key information, such as payment details, contact information, and store policies, had limited delivery methods, and bolded texts were used to focus participants' attention on website weaknesses, such as bad terms of return and refund policy.

As already mentioned, participants were randomly assigned to one of three experimental decision groups: control, deliberative, and intuitive.

- I. **Control group:** Participants needed to follow the link to the mock website, navigate through it and make a hypothetical decision - whether they would like to purchase a product from that website. This group represented the behavior of the target population of online customers.
- II. **Deliberative group:** Participants needed to follow the same pattern of action, but they were additionally informed that they will need to justify and describe the reasons for their decision. This was done in order to activate participants' deliberative/logical thinking processes.
- III. **Intuitive group:** To concentrate participants' thinking to intuitive processes, they were asked to participate in the Stroop color-word test (Macleod, 1991), where they needed to name the color of each written word (not what the word says) line by line, and try to get to the end in 45 seconds. Based on previous studies, resources needed for self-regulation activities, such as deliberative decision making, are similar to muscles, and people have limited ability to perform these activities intensively for a short period of time (Muraven & Baumeister, 2000). Consequently, this test was included in order to temporarily disable the processes of deliberative thinking of participants in the intuitive group and, therefore, provoke them to rely on their intuitive processes. Only after completion of the test, they needed to follow the same pattern of action and make a hypothetical decision.

The survey began with several direct questions designed to collect the demographic data, such as age, gender, education, specialty, and place of residence, needed to classify and separate the results. Also, they were asked if they had ever made online purchases, in order to better understand their previous experience. To be sure that the participants studied the website and carefully considered all the details, two questions were developed. One of them asked to carefully study the mentioned sections of the website, such as products, policies, terms of service, and based on what they saw, group them into categories (like, dislike, dislike, dislike, and cannot find). In another question, participants were asked to rate products presented on the site based on their preferences. Moreover, the number of site visits was simultaneously checked and compared with the dates and number of responses.

During the experiment, each participant needed to make two types of decisions: no-risk and high-risk. Above mentioned hypothetical decision about the purchasing willingness was a no-risk decision since participants knew in advance that they would participate in an experiment and there is no personal risk involved. Thereafter, once the participants completed the first part of the experiment, they had to make a high-risk decision, which was mentioned at the beginning of the survey as a small surprise in gratitude for their participation and time. The surprise was designed as an opportunity to subscribe to “YourGift” store and get one of the products presented on the website for free. At the end, participants were asked to provide personal information, such as name, surname, email address and card number, if they trusted the website and felt comfortable. As illustrated in the Screenshot 1 from the questionnaire, it was presented in such a way as to mislead the participants that this offer is not real and created only for an experiment.

Subscribe and start your 30-day free trial

Your credit card will not be charged now. No Commitments: Cancel Anytime! Only 1000 AMD/month after your free trial.



First Name:	<input type="text"/>
Last Name:	<input type="text"/>
Email:	<input type="text"/>
Card Number:	<input type="text"/>
MM / YY	<input type="text"/>
CVC	<input type="text"/>

Submit

Screenshot 1: Representation of high-risk decisions offered to participants.

For the analysis purposes, this study identified measured and classified research elements into variables, namely shopping experience, specialties, gender, age, place of residence, education, website version, decision group, and trust in no-risk and high-risk conditions.

In respect to the 2x3x2 mixed factorial design of the experiment, I used factorial ANOVA, which is Analysis of Variance test with few independent variables (“factor”), to find out if the results are significant. Factors used for the analysis presented in Table 2.

Model: $P(y=1) = F(\beta_0 + \beta_1 * x_1 + \beta_2 * x_2 + \dots + \varepsilon)$, where F is logistic function.

Subsequently, two statistical models, more precisely logistic regression models, were built to reveal the three-way interaction. The first model was built with no-risk data with a dependent variable of Trust under no-risk conditions.

$$\mathbf{Model\ 1:} Y_{Trust_no_risk_condition} = \beta_0 + \beta_1 * X_{Website} + \beta_2 * X_{Deliberative} + \beta_3 * X_{Intuitive} + \beta_4 * X_{Website} * X_{Deliberative} + \beta_5 * X_{Website} * X_{Intuitive}$$

While second model was constructed accordingly with high-risk data with a dependent variable of Trust under high-risk conditions. Independent variables used in both models were the same, namely Website, Deliberative, Intuitive, as well as interactions Website x Deliberative and Website x Intuitive.

$$\mathbf{Model\ 2:} Y_{Trust_high_risk_condition} = \beta_0 + \beta_1 * X_{Website} + \beta_2 * X_{Deliberative} + \beta_3 * X_{Intuitive} + \beta_4 * X_{Website} * X_{Deliberative} + \beta_5 * X_{Website} * X_{Intuitive}$$

It is important to note, that analysis of factorial designs includes the need to use a statistical method in which one level of the independent variable is examined as a reference, and then it is compared with other levels. Taking this into consideration, I used the control group as a reference. Thus, in terms of trusting the original or inferior websites, the regression results are a comparison of the control group with the deliberative group and separately with the intuitive group.

Furthermore, Chi-square tests were conducted to find out what variables affect customers' online trust formation process. The formula for the Chi-square statistic used in the test is:

$$\chi^2_c = \sum \frac{(O_i - E_i)^2}{E_i},$$

where χ^2 is Chi-square result, the subscript c are the degrees of freedom, O_i is observed value, and E_i is expected value.

Constructed models serve as a prove and strong support for two initially formed hypotheses. Moreover, each of the tests and built models considers the results from different perspectives, which, in turn, made it possible to draw objective and unbiased conclusions.

Research Findings and Analysis

By the end of the experiment, a total of 236 individuals took part in the study, of which the answers of 26 respondents were excluded from further analysis, leaving 210 usable responses. The reason was that some of them did not complete the questionnaire, and some reached the end in a few minutes, which is not enough to consciously answer and fully read all the questions and the information provided. As a result, 76.67% of respondents were from Yerevan, 16.67% from regions and the remaining 6.67% of respondents were from the USA and Europe. The main age segment of participants - 82.86% - was in the range from 19 to 29 years old, and 14.29% - from 30 to 39 years old. The gender of the participants was divided into 56.19% women and 43.18% men (Figure 1, 2). Given the main age group, 63.81% of participants received a bachelor's degree, while 30% received a master's degree, and the remaining 6.19% varied between college, school, and PhD degree (Figure 3).

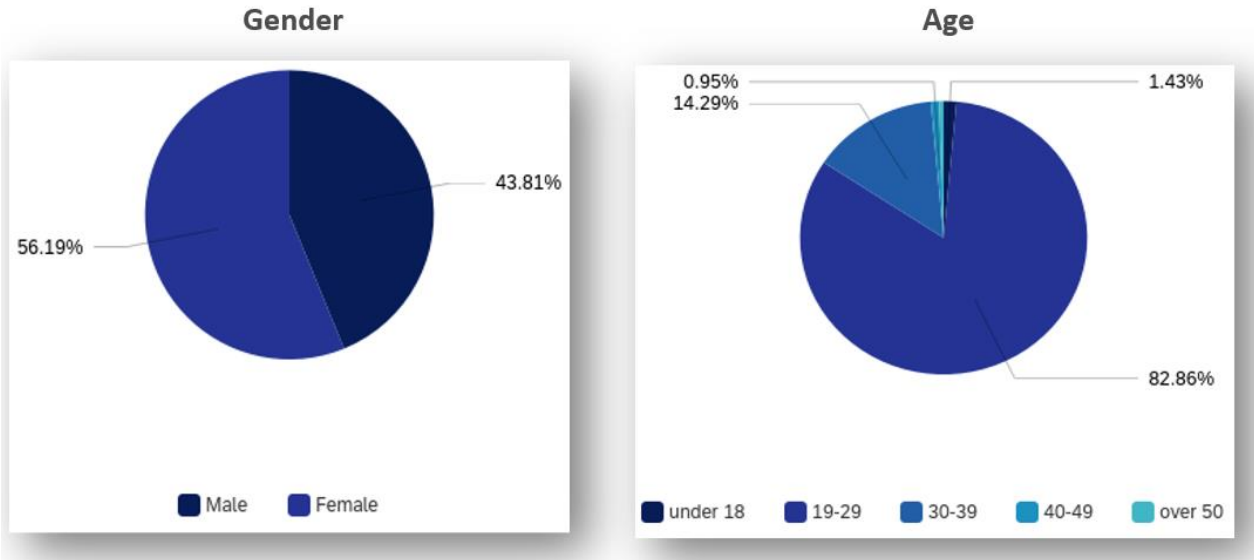


Figure 1, 2: The age and gender distribution of the respondents.

Education

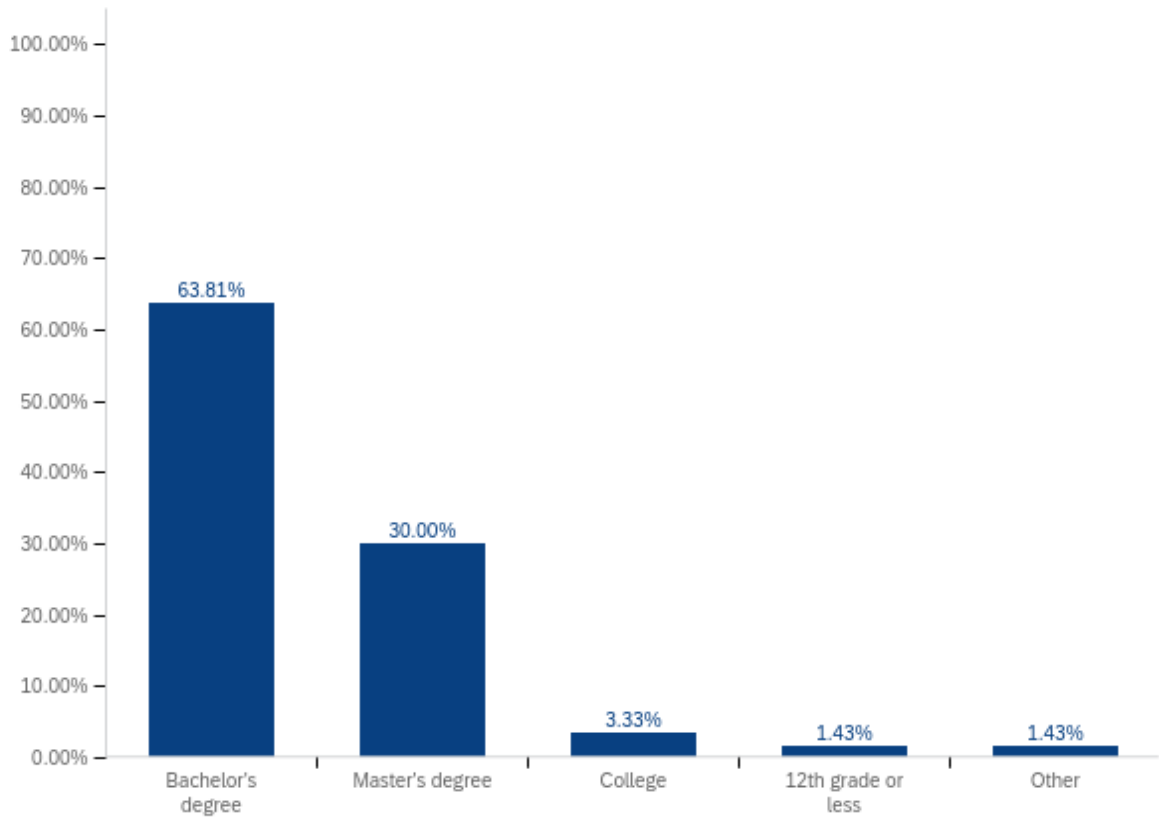


Figure 3: The distribution of the respondents' highest degree completed.

Specializations ranged from professions such as taxi driver and tattoo artist to surgeons, scientists, and economists. To use these data in further analysis and to check their relationship with other variables, they were divided into different groups. As illustrated in Figure 4, 28.8% of the respondents held professions such as accountant, auditor, banker, business administrator, economist, financial analyst, HR specialist, entrepreneur, manager, and rigger. 17.2% of respondents had professions in copywriting, English literature and studies, linguistics, journalism, tutoring, translation, and writing. Whereas the respondents from the Art/Music/Entertainment group had professions of an artist, singer, musician, blogger, film director, craftsman, etc.

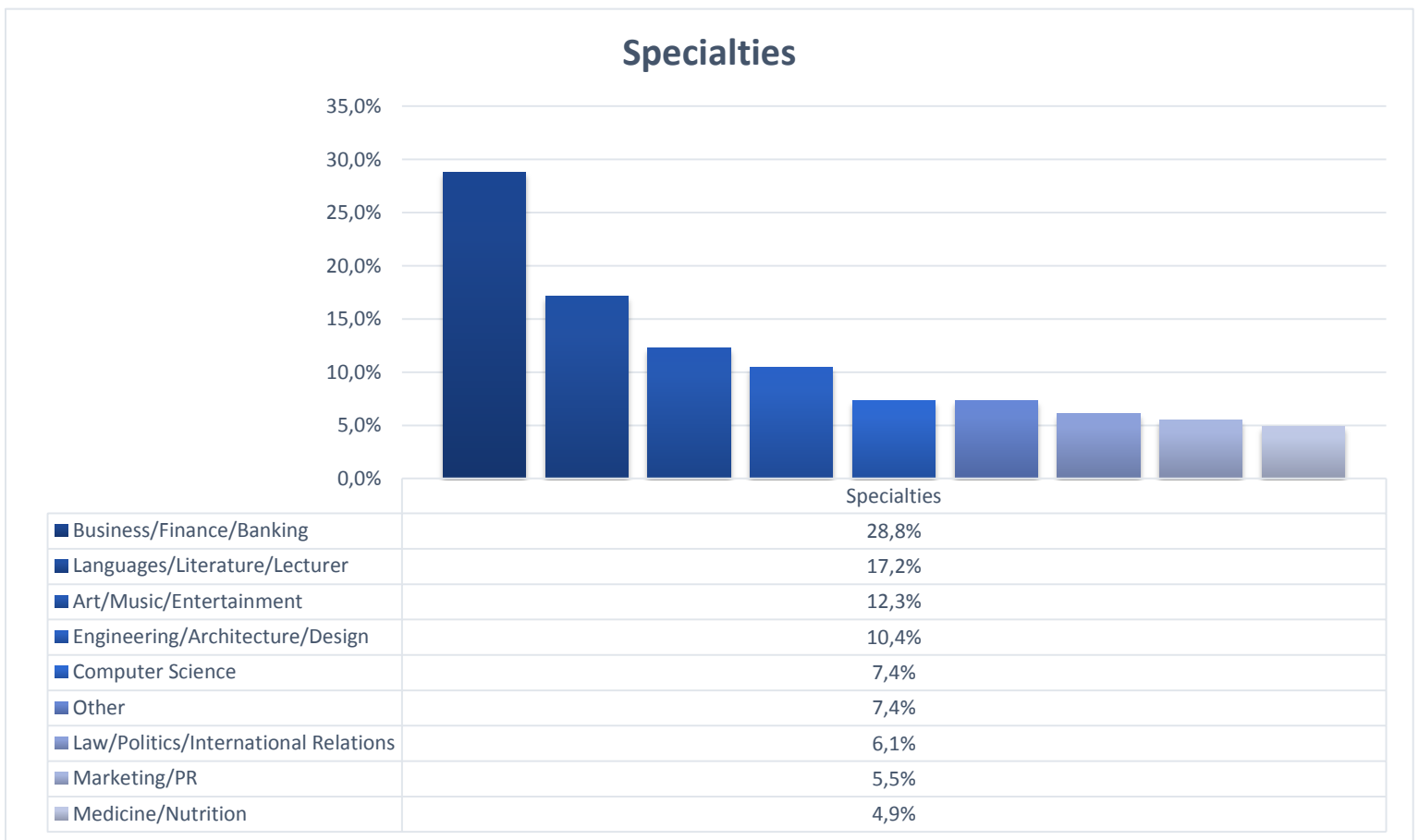


Figure 4: Grouped distribution of participants by specialties.

Of all the participants, 89.05% answered that they had already made purchases on the Internet, and 10.95% did not have the opportunity to use the Internet for shopping. This has been further tested to determine if it influences people's decision to purchase online.

As stated in the methodology section, all participants were evenly divided into three decision-making groups (70 respondents in each group). At the same time, out of 210 respondents, 49.5% were presented with an original site, and 50.5% with inferior one. Based on preliminary analysis of the data, I filled out Table 2 and looked at the trust decisions of the participants in each group individually. In other words, Table 4 separately presents the number of participants from each group (control, deliberative, intuitive) who responded positively to the risk-free and separately to the high-risk decisions (the percentage of negative answers is indicated in brackets).

Decision						
Control (%)		Deliberative (%)		Intuitive (%)		
Website	Buy gift (no-risk)	Subscribe (high-risk)	Buy gift (no-risk)	Subscribe (high-risk)	Buy gift (no-risk)	Subscribe (high-risk)
Original	37.1 (12.9)	17.1 (32.9)	40.0 (8.6)	14.3 (34.3)	38.6 (11.4)	30.0 (20.0)
Inferior	27.1 (22.9)	7.1 (42.9)	14.3 (37.1)	5.7 (45.7)	24.3 (25.7)	12.9 (37.1)
<i>Total:</i>	64.2 (35.8)	24.2 (75.8)	54.3 (45.7)	20.0 (80.0)	62.9 (37.1)	42.9 (57.1)

Table 4: Percentages of participants' trust decisions.

In more detail, the repeated “Buy gift” columns represent the percentage of participants (in each group separately) who trusted the company and indicated that they would purchase the gift from the website as part of a hypothetical no-risk decision. The repeated “Subscribe” columns represent the percentage of participants who risked sharing their personal information with the website in exchange for a free gift and the opportunity to enjoy future subscription benefits. More precisely, these columns reflect the participants' actual trusting behaviors demonstrated as part of the high-risk manipulation. The rows show the two versions of the website: original and inferior. As you can see, out of 70 respondents from the control group who were presented with the original version of the site, 37.1% said they would buy a gift on the site. However, only 17.1% of them agreed to share their personal information in exchange for a free gift.

The identified trust in a no-risk situation exceeded the actual trust in a high-risk environment in all groups. Moreover, more credibility was generated by an original version of the website compared to the inferior one. However, we can observe that the percentage of participants who responded positively to both decisions are close to each other in the intuitive group compared to others. This small difference was further analyzed to understand the reasons.

To analyze this three-way interaction between website versions and decision groups, the no-risk and high-risk data was analyzed together, which is represented in a pivot table (Table 5). The variables Website and Decision are shown in the columns, while the no-risk and high-risk decisions were selected as a key variables and are shown in the rows. Green and red dashes

displayed in some cells represent the degree of significance of the results (up to three dashes, depending on the p-value) and are determined by the adjusted residual of each cell. Since the confidence interval was set to 95%, one dash is shown in the cells where p-value is ≤ 0.05 (α), two dashes in the cells where p-value is ≤ 0.01 ($\alpha/5$), and three dashes in the cells where p-value is ≤ 0.001 ($\alpha/50$), where $\alpha = (1 - \text{Confidence Level})$.

		Control		Deliberative		Intuitive		
No-risk decision	High-risk decision	Original	Inferior	Original	Inferior	Original	Inferior	Total
Would buy	Subscribe	- 5.7%	2.4%	4.8%	- 1.4%	≡ 7.1%	≡ 0.0%	21.4%
Wouldn't buy	Subscribe	0.0%	0.0%	0.0%	0.5%	- 2.9%	≡ 4.3%	7.6 %
Would buy	Didn't subscribe	6.7%	6.7%	8.6%	= 3.3%	5.7%	8.1%	39.0%
Wouldn't buy	Didn't subscribe	4.3%	7.6%	2.9%	≡ 11.9%	≡ 1.0%	4.3%	31.9%

Table 5: Pivot table for analyzing three-way interaction.

The results in this table show the percentage of respondents who answered questions about risk-free and high-risk decision making in any sequence and in any combination. So, as we can see, 5.7% of all participants who saw the original website in the control group decided to buy a gift and then subscribe to the company. All the percentages in the table summed up to 100% (210 responses). Moreover, the participants were not aware of the existence of two versions of the website, and therefore did not know which version was presented to them. However, in order to interpret the results, it was decided to treat participants who showed trust in the original

website, or, conversely, showed distrust of the inferior website, as people who were able to correctly identify the version. In this way, participants in the deliberative group who identified an inferior version of the website reported that they wouldn't buy a gift or subscribe to the website (11.9%), which has a very clearly significant higher value than other variables. This supports my first initial hypothesis that people rely on deliberative thinking processes when making no-risk decisions. Likewise, the results in cells that represent the percentage of intuitive group participants who identified the original version of the website indicating that they would buy the gift (7.1%) and who identified an inferior version indicating that they would not buy a gift (4.3%), shared their personal information and subscribed to the site. As indicated by the three green dashes in that cells, these results also have very clearly significant higher value than typical. It is also important to note that the intuitive group is the only group in which 7.2% of all participants showed distrust of the website (irrespective of the version) in the absence of risk, but still showed real trust in the high-risk situation. Moreover, we can see that these results have significant statistical value, which may explain the small difference in the results indicated in Table 4. So, this supports my second hypothesis that in a high-risk situation, online consumers unintentionally rely on intuitive processes when assessing the trustworthiness of a website.

As stated in the methodology section, to fully test and validate my hypotheses, the full model was primarily analyzed using factorial ANOVA test. As expected, for the full 2x3x2 model we got results of $\beta = 1.454$, Wald $\chi^2 = 4.798$ and p-value = 0.025 for variables Website by Decision by Risk, which proves that there was a significant second-order interaction effect. For further analysis no-risk and high-risk data were used separately to construct logistic regression binary choice models. The logistic regression results for the hypothetical no-risk decision are presented in the first numeric column of Table 6.

Due to simultaneous interaction analysis, I found that the ability to discriminate between the original and the inferior websites was nearly indistinguishable between control and deliberative participants ($\beta = 0.915$, $p = 0.107$). Despite this, the ability of intuitive participants to identify the inferior website was significantly different from the control group ($\beta = 1.722$, $p = 0.003$). These results provide strong evidence, which proves my first hypothesis that online customers unintentionally rely on deliberative thinking processes when making no-risk decisions.

VARIABLES	(1) Trust_no_risk_condition	(2) Trust_high_risk_condition
Original website	-0.575* (0.326)	-0.932*** (0.353)
Deliberative	-0.338 (0.338)	-1.824*** (0.546)
Intuitive	-1.002*** (0.344)	-1.416*** (0.424)
Website*Deliberative	0.915 (0.565)	1.403** (0.715)
Website*Intuitive	1.722*** (0.573)	0.992 (0.642)
Intercept	0.2097*** (0.057)	2.0361** (0.984)
Chi-square	13.508	75.822
Significance	0.017	<0.001
Pseudo-R ²	0.072	0.361
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1		

Table 6: Logistic regression results for two models.

In a like manner, the results of logistic regression for the high-risk decision are presented in the second numeric column of Table 6. This time, there is a significant interaction effect between the original and inferior websites for the deliberative group participants ($\beta = 1.403$, $p = 0.051$), while this is not the case for the intuitive group participants ($\beta = 0.992$, $p = 0.124$). Consequently, these results can be considered, as a credible evidence for the second hypothesis,

which proves that in a high-risk condition, online customers unintentionally rely on intuitive thinking processes.

To test what influences the decision of online customers to trust a website or not, all variables were tested for statistical significance. As a result, I found that there is a strong statistically significant relationship between the no-risk variable, which indicates participants' perception of the trustworthiness of the website, and the variables Store Policy, Terms of Service, Delivery Methods, and Returns and Returns Policy (Tables 8-11). The results of Chi-Squared statistical tests of these analyses are presented in Table 12.

		Store Policy Satisfaction			
No-risk		Like	Neither like nor dislike	Dislike	Can't find
Would buy	≡	32.9%	20.5%	- 0.5%	≡ 6.7%
Wouldn't buy	≡	0.5%	14.3%	- 2.4%	≡ 22.4%

Tables 8: Relationship between No-risk variable and Store Policy Satisfaction.

		Terms of Service Satisfaction			
No-risk		Like	Neither like nor dislike	Dislike	Can't find
Would buy	≡	31.9%	23.8%	0.5%	≡ 4.3%
Wouldn't buy	≡	1.4%	12.9%	1.9%	≡ 23.3%

Tables 9: Relationship between No-risk variable and Terms of Service Satisfaction.

Delivery Methods Satisfaction				
No-risk	Like	Neither like nor dislike	Dislike	Can't find
Would buy	≡ 52.4%	= 6.2%	≡ 1.0%	1.0%
Wouldn't buy	≡ 7.6%	= 11.0%	≡ 18.6%	2.4%

Tables 10: Relationship between No-risk variable and Delivery Methods Satisfaction.

Return & Refund Policy Satisfaction				
No-risk	Like	Neither like nor dislike	Dislike	Can't find
Would buy	≡ 32.4%	- 7.1%	≡ 4.8%	16.2%
Wouldn't buy	≡ 1.4%	- 1.0%	≡ 24.8%	12.4%

Tables 11: Relationship between No-risk variable and Return and Refund Policy Satisfaction.

	Store Policy	Terms of Service	Return & Refund Policy	Delivery Methods
P-value	<0.00001	<0.00001	<0.00001	<0.00001
Effect Size (Cramer's V)	0.630	0.653	0.669	0.700
Chi Square	83.3	89.5	93.9	103
Degrees of Freedom	3	3	3	3

Tables 12: Chi-Squared Test Results

These findings were also supported by the deliberative group participants, who were asked to justify their decision to trust or not trust the company. The most common responses were those that mentioned the importance of having store policy, security guarantees, and terms of service sections on a company's website and offering good returns and refunds conditions to customers.

Recommendations & Conclusion

Collecting and analyzing all the data gathered from research, helped to answer the research question asked initially:

- ✓ *What are the reasoning processes behind the online consumer's decision to trust a website when making low and high-risk decisions?*

Having considered all the prior researches and experiment findings, it becomes evident that in general people rely either on deliberative reasoning processes or on intuitive ones. Understanding what processes online customers typically use in certain conditions is useful not only for research purposes but also for companies that can integrate this knowledge to increase their sales and customer loyalty. The experimental results in this study led to two hypotheses that were confirmed and substantiated by statistical tests. One hypothesis proved that in risk-free situations, people tend to rely on deliberative reasoning processes, which means that they are more attentive to detail and use logic when making decisions. Another hypothesis has shown that in situations of uncertainty/ambiguity and risk, online consumers naturally tend to rely on intuitive thinking instead. This can be used by e-commerce businesses to manipulate their

customers' decisions to buy a product on their website in any way or to build trust with their brand by intentionally employing the required types of reasoning processes.









Moreover, when creating a website, it is important to pay attention to several details that can significantly change the customer's perception of the company. Surprisingly, one of the main details affecting the process of building customer trust is website design. Many participants in the experiment noted that they would buy a gift on the site because it had a beautiful design. Likewise, people noted that having sections describing policies and terms of service is an essential part of a successful company. Of course, in most cases, customers do not read all the documents before purchasing a product, unless we are talking about a very expensive purchase. However, having them on the website instills more trust in a company that you did not know before. In addition, it is very important to present all important information such as shipping method and prices, return and refund policies, so that it can be easily found by every customer. Otherwise, if customers cannot find the information they are looking for or it does not meet the standards, they will choose to shop from other companies, which is a failure in today's highly competitive environment.

As a developing country, Armenia is trying to create more favorable conditions for local companies, as well as to increase the presence of various types of business. Moreover, taking into account the current quarantine conditions associated with the Covid-19 pandemic, all companies began to look for the possibility of presenting their activities on online platforms. This not only increased the number of competing companies but also opened the competition with the whole world. In such conditions, it is very important to know the intricacies of online work and the details of communication with customers through the screen. I believe that this type

of project, backed up by experimentation and statistical analysis, can be a useful guide for these companies to stand out from the crowd and gain the trust of online customers.

Appendix

	“Original” version	“Inferior” version
Bilingual Version <i>-the website is available in English and Armenian</i>		
Security Confirmation <i>-shown at the bottom of all pages</i>	 “©2020 by YourGift. All rights	 Removed

	reserved.”	
<p>Terms of Service -listed on the menu bar</p>	<p style="text-align: center;"></p> <p>Detailed information with the possibility to learn more in the attached 11 pages of terms and conditions, which include <i>public agreement, general regulations, company's and user's rights and responsibilities, intellectual property rights, dispute resolution procedure</i>, etc.</p>	<p style="text-align: center;"> Removed</p>
<p>Store Policies -listed on the menu bar</p>	<p style="text-align: center;"></p> <p>Detailed information with the possibility to learn more in the attached 7 pages of privacy policies, which include <i>consent and information collection and use, cookies and other information-gathering technologies, security, sharing, links</i>, etc.</p>	<p style="text-align: center;"> Removed</p>
<p>Delivery Methods - listed on the menu bar as well as on each product page labeled “Shipping info”</p>	<p style="text-align: center;"></p> <p>Wide options of delivery with attached description of <i>shipping methods, dates, pricing policies as well as delivery terms</i>.</p>	<p style="text-align: center;"> Only one delivery option described with limited information.</p>
<p>Return and Refund Policy</p>	<p style="text-align: center;"></p> <p>Returns: “<i>You have 10 calendar days to return an item from the date you received it. To be eligible for a return, your item must be unused and in the same condition that you received it. Your item must be in the original packaging. Your item needs to have the receipt or proof of purchase</i>”.</p> <p>Refunds: “<i>Once we receive your item,</i></p>	<p style="text-align: center;"> “<i>YourGift has no control and makes no warranty related to the malfunction or breakdown of products on the way to you. We do not return products and do not refund for your order.</i>”</p>





	<p><i>we will inspect it and notify you that we have received your returned item. We will immediately notify you on the status of your refund after inspecting the item. If your return is approved, we will initiate a refund to your credit card (or original method of payment). You will receive the credit within a certain amount of days, depending on your card issuer's policies”.</i></p>	
<p>Contact Information</p>	<p style="text-align: center;"></p> <p>Information provided: <i>address (also shown on the map), e-mail address, as well as phone number.</i></p>	<p style="text-align: center;"></p> <p>Information provided: <i>city and country (also shown on the map)</i></p>
<p>Blog</p> <p><i>Articles:</i></p> <ol style="list-style-type: none"> 1. <i>“The best gift ideas for kids ages 1-5”</i> 2. <i>“5 rules for successful gift giving ”</i> 	<p style="text-align: center;"></p>	<p style="text-align: center;"></p>

Table 3: Description and comparison of website versions.

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