

Bachelor Thesis

**What Makes You Click? An Analysis of Nudging Factors in E-commerce. Case of Latvia.**

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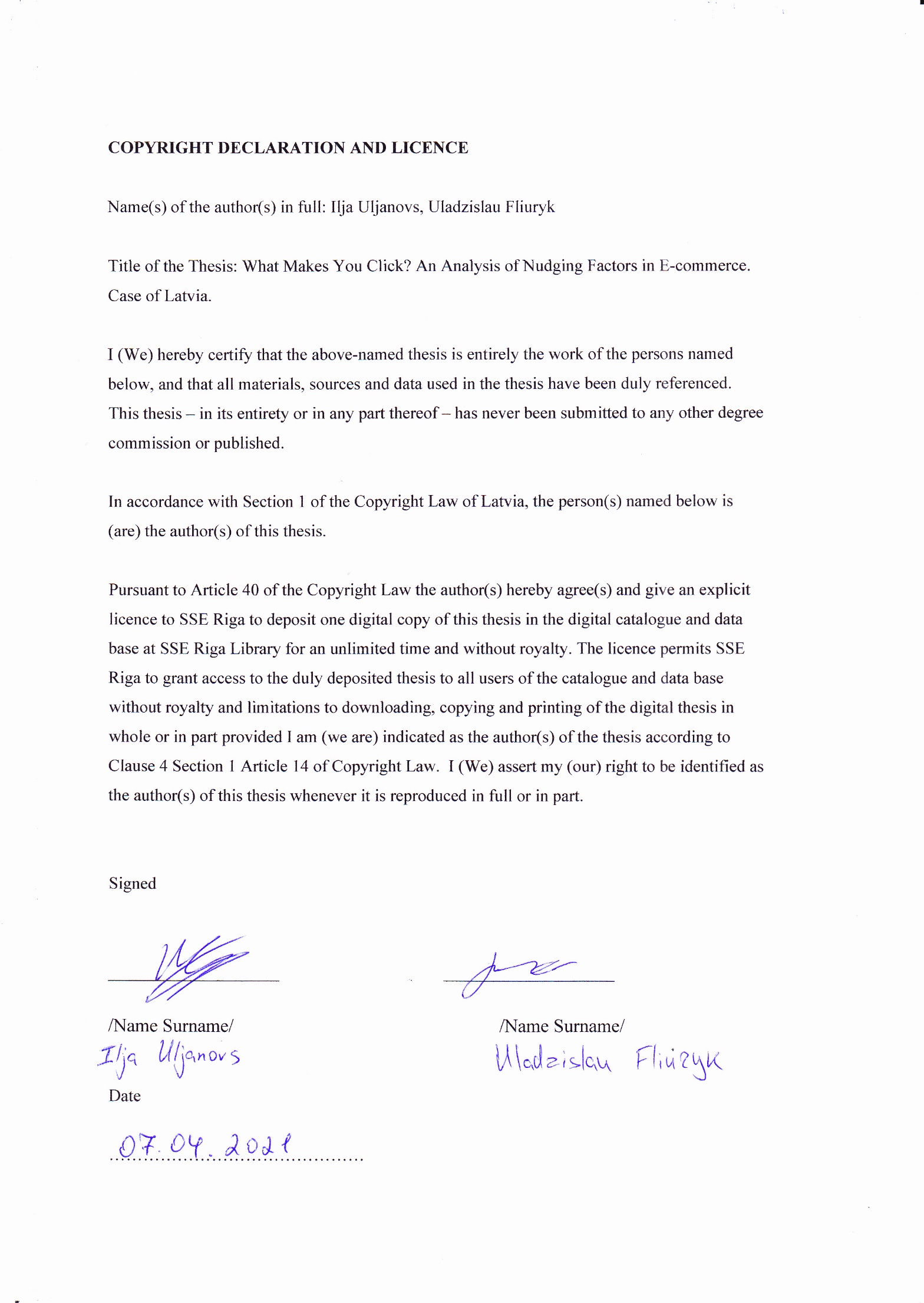
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**Abstract**

This paper begins by describing what a nudge is as well as how the customer choice architecture is structured, as this lays the foundation for the entire research. Later on, the authors move into highlighting the importance of this paper for the current state of e-commerce and online advertisement.

Authors find that the click-through rate is one of the most important factors when it comes to comparing different ad creatives side by side, and, thus, authors chose their dependent variable to be the click-through rate.

The authors also examine the most popular models of how customers make their decisions and which one would apply to the research with the routine problem-solving product.

After establishing the theoretical framework authors move into performing two ANOVA analyses - one-way ANOVA and a three-way ANOVA. The former one includes the nudging factor as the independent variable and in the latter one authors also decided to test whether independent variables such as age or gender have any statistically significant effect on the click-through rate. The authors found that they do not.

The authors finally conclude this research with the nudging factors that do improve the click-through rate, and try to find possible explanations for that or whether research findings can be generalized to other contexts.

This research aims to help Latvian online advertisers find the most appropriate nudging factors to increase the click-through rate of their online ads.

# Introduction

According to Statista (2020), e-commerce sales are growing and taking over the brick and mortar stores – the projection is that by 2023 it will be 6.5 trillion which is almost double that in 2019. Thus, many brick-and-mortar stores are also starting to pursue e-commerce in order to stay in the business.

E-commerce is growing even faster than academic research is catching up. While there have been a plethora of studies done on the many marketing/behavioral aspects in the traditional stores, with the increasing number of e-commerce stores, it is important to explore which digital marketing strategies are the most effective, to stand out from the enormous competition among other brands and attract more clients.

One way of online advertising in e-commerce is through the Facebook platform or to be more precise - Facebook Ads. Facebook ad revenues were almost 40 billion USD in 2017 and it is predicted that by 2021 this number will reach almost 61 billion USD (Semerádová & Weinlich, 2019).

One of the possible strategies, in order to stand out from the competition, is the use of nudging factors in visual ads and ad copies. In this research, the authors will analyse different nudging factors (such as social proof, reciprocity, scarcity, authority, and others) of online ads that influence consumer decision-making. However, each segment of e-commerce is different, and the authors can’t analyse all e-commerce segments at once. Some nudging factors that might be appropriate for one segment of e-commerce online ads could be completely useless in the other segments. That is why the authors decided to focus on online stores selling routine problem-solving products (e.g. hair straightener, pet feeder). The authors found out that this segment of e-commerce was not researched enough, especially Latvian market, where the e-commerce industry started to grow rapidly only in recent years. That’s why this study is primarily going to be focused on Latvia to add more novelty to the paper as well as more value to the Latvian companies who are running or switching to online advertisements. Moreover, people who are purchasing products in online stores are more likely to be affected by various nudging factors; they are already in search of a product that will solve their problem and the only thing they need is a nudge and appropriate ad in order to make that decision.

The authors believe that this research is novel, as the current literature has a lot when it comes to nudging factors of standard brick and mortar stores, however, the e-commerce sector doesn’t have a substantial amount of academic research and mainly comes down to business articles on this topic when it comes to finding information in the public domain. The new online ad strategies have started utilizing nudging factors very recently, so the academic research is yet to catch up. Furthermore, the authors have chosen the region of Latvia, where with more companies embracing e-commerce more and more, particularly post-COVID pandemic, the research would be very helpful for businesses to use these new practices in their online ads.

There are dozens of nudging factors that are used in the advertisement but after analysing other researches that were done on this topic (described and analysed in the literature review section), authors found out that the most effective ones are proven to be the nudging factors in the Reciprocity and Social Proof groups.

However, these nudging factors were proven to work in other countries but there is no information on whether the use of these nudging factors in the online advertisement in the Latvian market will have the same pattern. Therefore, it was decided to check how nudging factors from these groups would work for the products that are sold online in Latvia, therefore, the authors’ research question is **How Social Proof and Reciprocity nudging factors influence the Click-Through Rate of online ads for routine problem-solving products?**

# Literature review

## Nudging

### Definition

Before continuing to describe different types of nudges used in the research – the definition for the term “Nudge”, that the authors will use in this research is the one proposed by Thaler and Sunstein (2008) as it is very similar to the nature of this research and field – behavioral economics. As they describe it – nudge is a feature used by the principal that alters the behavior of agents (in this case viewers of the online store) in a predictable way without prohibiting alternative options or shifting agent’s economic incentives. Simply put Nudging is a way of helping people make decisions without restricting their freedom to choose. A context or environment in which people who are being nudged operate is called choice architecture (which in this case will be the Online Store and the Ad that customers will see). This environment is not neutral, however, and consists of many features that guide an agent towards making a decision that is called nudges. (Thaler & Sunstein, 2008).

As authors are conducting the experiment online – the authors have to define another important concept of Digital Nudging. Weinmann, Schneider, and Brocke (2015) define digital nudging as “the use of user-interface design elements to guide people’s behavior in digital choice environments” (p. 433). This definition is very similar to Thaler’s definition with the only exception that choice architecture is digital.

So, in this case, the digital architecture will be the advertisements shown to potential customers where authors will test different features (E.g., nudges) that will be described further in this section. The goal of these nudges will be to increase the likelihood of a visitor performing the call to action (Schneider and Brocke, 2015).

### Principles of a Good Nudge

Ly, Mažar, Zhao, and Soman (2013) very precisely described the nudging phenomenon. They stated that even if there are many different variations of nudges as well as methods for its implementation, all good nudging factors share common characteristics that should be always implemented.

**Boosting Self-Control vs. Activating a Desired Behaviour**

First, a person needs to look at whether the nudging factor boosts self-control, or it activates the desired behaviour. There are times when a person's words and a person's final actions differ. For example, a person might say that he will start to go to the gym next month but when the time comes, this doesn’t happen. Therefore, nudges with the boost of self-control help to get rid of this and make the chain of activities straightforward, meaning that if the person said something, he will then do it (Ly, Mažar, Zhao & Soman, 2013).

If a nudge is meant to activate the desired behaviour, it influences the decision that the person doesn’t pay much attention to. For example, littering. Many people don’t pay too much attention to whether they pollute nature or not. Therefore, they will not naturally use nudges to influence that type of their behaviour. So, nudge will be used intentionally to make people do what they usually are not doing (Ly, Mažar, Zhao & Soman, 2013).

**Externally-Imposed vs. Self-Imposed**

This characteristic is all about whether nudge will be used voluntarily or not. Self-imposed nudge is adopted by a person's own will and they voluntarily accept it. Ly, Mažar, Zhao, and Soman (2013) show the example of the program called Save More Tomorrow where people can voluntarily choose to save money for their retirement – they will choose it if this topic is close and important to them.

Externally-imposed nudges just passively change people's behaviour and guide them to the specific product or service, without any constraints or personal choices involved.

**Mindful vs Mindless**

Ly, Mažar, Zhao, and Soman (2013) say that in this factor the main difference is how people are guided towards their decision. Mindful nudges are meant to change people's present behaviour, to control it, so it would be more linked to their desired future goals or standards. Authors provide examples of nudges that make people eat healthier, get rid of bad habits (like smoking or drinking).

Mindless nudges are influencing people's emotional state and are passively influencing a person's decisions (meaning that this happens unconsciously).An example of this type of nudges can be the impulsive purchasing of something, after seeing the ad. The mind doesn’t take part in the process, the customer is basing their intention just on emotions (Ly, Mažar, Zhao and Soman, 2013).

**Encourage vs. Discourage**

The last dimension is provided by Ly, Mažar, Zhao, and Soman (2013). Encouraging nudges aimed to support the specific action the person does as well as try to make the person continue to do action/purchases in the same way in the future. Discouraging nudges, on the other hand, are aimed to prevent customers from certain actions and change their focus to something else (for example, to alternative product/ service).

Based on these dimensions, the authors of the research came up with 12 different type variations of nudges. See **Appendix 1** for the full information as well as nudges examples.

### Previous Researches About Nudges

To find out which nudging factor will be the most appropriate and efficient to use in this research, an analysis of previous researches must be done.

Guthrie, Mancino, and Lin (2015) were analysing the ways, how to help society deal with modern problems, which appeared due to unhealthy and low-quality food consumption, such as obesity, heart diseases, diabetes, etc. They stated that spreading the general educational information about this topic, which is one of the most common ways of educating society and product producers nowadays, is not the best option because information often is complex and cannot fully motivate people to change their behaviour. Therefore, they suggested using nudges in order to improve this approach. Authors found out that the most effective nudging factors that have high potential to work and improve informational approach were ***Social Proof*** ( Star-rating of products by its quality, giving each of them a star-rating) of products, ***Default options*** (e.g., if low-fat milk for children is presented to customers as a default option, they often will pick exactly it) and ***Reciprocation*** (e.g. children will most likely select healthy snack if he will receive a small prize with it). However, results were not finalized, and the authors suggest additional research for proving it.

Demarque, Charalambides, Hilton, and Waroquier (2015) were analysing “sustainable consumption in a realistic online shopping environment” (p. 166). They were using ***Social Proof*** as a nudging factor for their experiments to check whether they will be able to present to customers the effective descriptive norms in order to stimulate and enhance their willingness to buy more “green” products. During the experiment, strong social norms descriptions (e.g., 75% purchased at least one “green” product), as well as a weak description (e.g., 7% bought a “green” product), were shown to the experiment participants. Authors found out that the use of Social Norm nudging helps to make customers buy more ecological products.

Research by Berger, Nuske, and Muller (2020) is similar to the previous one – they are also researching the nudging factors which will enhance customer willingness to buy more ecological products. However, they are focusing on online stores. They conducted the field experiment using the three nudging factors which they transferred from the traditional environment to the digital one. These nudging factors were the ***Default*** option, ***Simplification***, and ***Social Norms***. After analysing the collected data, the authors found out that the Default option and Simplification influenced customers' decision to buy more ecological food products online. However, Social Norms didn't have any effect on ecological product promotion in the online grocery store.

Another work by Meske, Amojo, and Mohr (2020) looks at the digital nudging factors that will enhance customer willingness to use charity features more on online business platforms. In their experiment authors used two nudging factors to force people to donate to charity during their online shopping experience: **opt-in checkbox nudge** and **forced-choice nudge** which was presented to the customers using textbox. This factor was the variation of the more common nudge called the ***Default*** option – two different groups of customers were presented with different types of nudge.  
Authors found out that in order to make customers of online shops donate more to charity, **forced-choice nudge** should be used, as the results showed more people donating compared to those who faced opt-in checkbox nudge. That means that the ***Default*** option as a nudge factor can be considered as an effective nudge in the e-commerce industry.

Djurica and Figl (2017) have conducted a research in order to test how different nudging approaches will influence the choice of products that customers choose as well as their attitude towards online shops and their web pages. The nudging factors that authors used were ***Social Proof*** (Star-Ratings of products as well as written reviews), ***Scarcity*** (Limited amount of product left, limited time offer, or countdown timer till the end of a special offer in the e-commerce shop), and ***Default*** option. The authors concluded that all 3 nudging factors are important for the e-commerce store. Moreover, customers are tending to buy more of the specific product, when the e-commerce store owners use at least one of those 3 nudging factors.

Eigenbrod and Janson (2018) have conducted research studying the effects of digital nudges in retargeting banners. In their research, they have relied on the SOR (Stimulus-Organism-Response) Model developed by Mehrabian and Russell, which, as the authors see from their research, has been widely applied in e-commerce and online shopping. Authors focused on ***social nudges*** and ***information nudges*** in their work and chose them to be the most appropriate for the research.

Huang, Hong, Chen, and Wu (2018) in their research study the effect of digital nudging on the users sharing the content from online platforms. In particular, they found that monetary incentive, relational capital, and cognitive capital to be the most effective. They develop these nudging factors by relying on the theory of social capital. Their chosen nudging factors are a fall under the ***Reciprocity*** category as well as a non-traditional way of ***social proof*** where it’s the user (customer) that has to “prove” to others and not the other way around as mainly used in e-commerce.

Ingendahl, Hummel, Maedche, and Vogel (2020) examined how effective nudges would be in terms of customer’s need for knowledge and uniqueness. For their experiment, they chose 2 nudging factors as they see as the most prominent ones – ***social influence*** and ***defaults***. In their conclusion, they encouraged practitioners to use these two factors to boost consumer decisions.

Consistent with the previous point, Sunstein (2014) in his paper briefly discussed what nudging is, its effectiveness as well as 10 of the most prominent nudges to use. Out of all the nudges – he commented on ***Defaults*** and ***Social norms*** to be the most effective nudges.

Rothlisberger (2020), conducted the research, whose initial goal was to guide customers through the e-commerce store and nudge towards the more expensive product provided in the store. In his research, he has tested ***Decoy*** and ***Social norms***(***Social Proof***) in the online florist shop. He came to the conclusion that both nudging factors that were tested helped to change customer behavior, however, Decoy nudge was more effective than Social Proof.

Summarized findings of all previous researches can be found in **Appendix 2**. After summarizing the research findings, it is clearly seen that there are 3 dominant nudging factor groups that give statistically significant results and that are used by many authors in the research. These are the Social proof nudging factor group (used in 8 out of 10 researches), Defaults (used in 6 out 10 researches), and Reciprocity (used in 3 out of 10 researches). Therefore, this groups of nudges will be used as basis for nudging factors used in this research.

## E-commerce

### Definition

Kracher and Corritore (2004), stated that even if e-commerce can be defined in the simplest way as doing your business electronically, the one should look at the definition in a more detailed and precise way.

It can’t be considered a new concept because “Businesses have been conducting transactions electronically for over three decades through the use of Electronic Data Interchange (EDI)” (Kracher and Corritore, 2004, p. 72). However, this type of transaction was quite expensive and had a lot of restrictions, for instance, the need for non-standard communication requirements, therefore, it didn’t last long. Therefore, the concept of EDI e-commerce is not new, and made e-commerce popular and helped get rid of many technical and financial problems was its usage on the Web. Therefore, the complete definition of e-commerce, provided by the authors, is “conducting business over the Internet using the World Wide Web” (p. 73).

### E-commerce vs traditional commerce

Kracher and Corritore (2004) stated that e-commerce still stays commerce even though it operates in the online environment. Therefore, the majority of the traditional commerce principles apply to e-commerce as well. For instance, the high quality of the selling product and professional customer support is important for both traditional commerce and e-commerce.

However, there still are some differences between them, and some features of traditional commerce can even contradict the features of e-commerce and be completely useless in an online environment. For instance, in e-commerce, the value of products or services depends on connectivity while in traditional commerce more valuable is scarcity. Also, the aspect of trust is completely different, because it is much more challenging to establish trust for e-commerce than for traditional commerce (Kracher and Corritore, 2004).

### Features of E-commerce

Kracher and Corritore (2004) have also defined 5 main features that are usual for e-commerce and that should be part of each e-commerce business. All these 5 features are influenced by the sphere, where e-commerce exists, basically, the Internet. They are *interconnectedness, simplicity, speed, virtuality,* and *cost*. Authors claim that these 5 features are the most general and they unite all the features that were found by other researchers. The precise description of each of the features can be found below.

*Interconnectedness*

The World Wide Web or Internet is not a single network but the connection of a variety of much smaller processes and actions. As e-commerce is part of the Internet, this provides to e-commerce businesses many ways how they connect customers, suppliers, vendors, or business partners as well as their provided products or services. Interconnectivity opens for the e-commerce customers unlimited possibilities for finding the products and information in any country and at any time. Moreover, customers can also unite themselves to share their thoughts and give feedback on one or another product. Therefore, the more connected the network and e-commerce is, the more value customers and e-commerce owners can receive (Kracher & Corritore, 2004).

*Simplicity*

This feature can be observed from both customer and business perspectives. For businesses, the barriers to entry in this industry are extremely low compared to entering standard commerce. It is inexpensive to create your webpage and start an online business. However, that means that the competition is higher as well.

For customers, simplicity can be seen in using the webpage of the business instead of visiting the real shop/agency. The layout of an online shop is simple and easy to use, therefore, any customer can easily deal with it (Kracher & Corritore, 2004).

*Speed*

This is one of the most urgent features of e-commerce among all mentioned here. For e-commerce businesses, speed is an essential part of the industry. The online environment is super fast, therefore, time there goes differently. The product cycle is extremely short as well as decisions in e-commerce should be made as fast as possible: customers have access to all businesses in the world, they can easily compare competitors with just one click, therefore e-commerce businesses either operate and adapt quickly or they simply die (Kracher & Corritore, 2004).

*Virtuality*

The next important factor, as all the operations in the e-commerce business, are happening virtually, in an online environment. Customers have access to the shop 7 days a week, 24 hours a day, and can do it worldwide. Businesses no longer need to have a standard store, rather they just need to have an office or warehouse to run an online business. As customers are also communicating between themselves virtually and are forming small virtual communities of one or another brand, they are strengthening the connection between themselves and the sellers by giving additional value and benefits to the online shopping experience (Kracher and Corritore, 2004).

*Cost*

Starting an e-commerce business instead of a standard one can result in big financial savings from the business owners’ side. As all processes are automated and are located in a virtual environment, that reduces costs of communications with vendors and suppliers and reduces the time for introducing and developing a new product. Costs of serving the customers are also low as they don’t need to physically be in the store and can access the product and store at any time from all around the world. That is why e-commerce is such an appealing option for those who consider starting their own business (Kracher & Corritore, 2004).

## Consumer behavior

There are dozens of models and theories that analyse consumer behavior. All of them have different assumptions and perspectives of the behaviour that customers are having in the shops or in their decision-making process. Below can be found the models that were the most suitable and appropriate for the research that will be done in this paper.

### Input process output model

The first model is the Input, Process, Output model which takes into account the customer’s family background, environmental factors affecting the purchase, and the product itself (Khan, 2004). Let’s look at each of the 3 variables in more detail.

First are the inputs - the factors that are forcing potential customers to find out their needs and make his/her ultimate decision to purchase. They include marketing efforts such as price, placement, but also environmental forces such as family, income level, reference factors, and other things that could influence the decision-making process (Khan, 2004).

Next is the Process which is similar to the decision-making process in other models. It includes steps such as need recognition, evaluation of alternatives, awareness, and the purchase itself. It also deals with the customers’ post-purchase behavior in the way that if a customer is satisfied - he or she will act as a brand ambassador - promoting and recommending products to his friends and family. A dissatisfied customer, on the other hand, is a negative reference point for marketing (Khan, 2004).

The last variable is Output - which is how the customer responds to the marketing efforts of the company. The responses consist (but are not limited to) of the following: choice of brand, choice of store, choice of a product model, purchase amount, post-purchase behaviour, etc.

### Engel Blackwell Kollat Model

Next consumer behaviour model is called the Engel Blackwell Kollat model. This model utilizes four main variables as the input factors - Information Processing, Central Control Unit, Decision making process, and environmental influences (Prasad & Jha, 2014). More detailed approach is needed to understand all of these factors.

First is Information Processing - it, in turn, consists of the fours variables and works the following way. The first component is Exposure or the message that a consumer is constantly exposed to. The second one is attention - or what makes customers feel involved. Next step is Comprehension of the message that a consumer has been exposed to. And the last one is Retention or how well the person remembers (retains) the message based on the previous factors - how well it grabbed the attention of a consumer, exposure and comprehension.

The second part is the Central Control Unit which describes how consumers process and interpret information. It’s based on the following psychological characteristics - previous experience with the product or how well the consumer knows the product, criteria of the product evaluation, consumer’s changing mindset, consumer’s personality (Prasad & Jha, 2014).

Third is the standard decision-making process which is influenced based on the abovementioned factors and includes problem recognition, evaluation of alternatives, information search, and, finally, the purchase of the product.

The final variable is the Environmental factors which also affect the consumer’s likelihood to make a purchase. They include but are not limited to income level, financial status and societal status, family influence and societal factors (Prasad & Jha, 2014).

### Buyer Behavior Fundamentals (Howard Model)

According to Howard (1994), during the decision making process the consumer is in one of three different stages that he defined - an introductory stage which corresponds to extensive problem solving, growth stage which corresponds to limited problem solving and, finally, the maturity stage which is referred to as routine problem solving.

According to this model, at the initial stage the consumer has not yet formed an opinion about what kind of product category he needs to choose (Howard, 1994). At the next stage, the consumer already understands what product category he/she needs but has not yet familiarized with the brands falling into this product category. The third stage of routine problem solving only applies at the end, once the consumer has formed a perception of both - the product category and the brands falling into that category.

Howard states that the transition from the second stage to the third one (limited problem-solving to routine problem solving) comes with the consumer completely understanding the brand - it’s physical characteristics, strengths and develops an attitude toward a particular brand. This brand recognition, combined with the attitude and confidence of the consumer constitutes a brand image (Howard, 1994).

There are different variables involved in the decision making process of the consumer at these three different stages - Information, Attitude, Purchase, intention, confidence and brand recognition. Price, availability, motives and other variables also play a crucial role in this process (Howard, 1994).

Marketers can use this information in their advantage by introducing new brands to the buyers when they are in the process of complicating their purchasing process.

However, there are some more important factors for marketers. For example, they should account for individual differences of buyers, to be able to divide them into separate homogeneous groups. Also, buyers' stimulus is important in order to know their position in the systematic process of their behavior: two same buyers with different stimulus will result in different reactions to the advertisement. For example, a person who needs the product as soon as possible will react to the ad and immediately buy the product from the brand; another buyer, who does not have this urgency can also react to the ad, however, not buy the product but just save it for later; and the last one can simply ignore the ad and the product (Howard & Sheth, 1969).

## Consumer Behavior Influence

The foundation for this research is described by Prof. Robert Cialdini (2006) in his book where the author describes the main 6 tactics used to influence people into accepting a request that they would ideally say no to. The main idea behind these tactics is recognizing fixed action patterns in human behavior and exploiting them.

The first tactic or rule is **Reciprocation**. As argued by Cialdini (2006) If before asking a person who in this case is going to be a customer to do something for us (which in this case is to buy the authors’ product), we give something to them first - it creates an “uninvented debt” for that person. The author has provided examples where potential customers who are offered a free sample or a gift first are more likely to become actual customers. From this, he builds on another concept called Reciprocal Concession which is making the first request that is likely to be turned down by a counterparty and then making a second one (cheaper offer as a concession). In commerce this can be used as selling down - advertising/selling the more expensive offer first and when it’s turned down - downgrading it to a cheaper option of a product. This makes your customers feel more in charge.

Lewicki (2016) in his research defines two main methods of reciprocation that are most widely used in e-commerce - one through Free Gifts and the other one through Customer Contact. The first section (Free Gifts) includes things such as special (discount) offers, product samples, and other gifts. Amazon (the biggest e-commerce retailer in the world), for example, often offers two prices to its customers - a higher one as an original price (it’s usually crossed) and a “special deal” discounted price as a form of concession. In addition to that they often upsell their Amazon Prime subscription by writing “Yes, I want FREE Two-Day Shipping” or that they will receive not only free shipping but also free access to other Amazon features. Like free movies or Kindle books - a form of offering some bonuses in addition to the main product. The second one (Customer Contact) utilizes tools such as Appreciation cards/notes, point collection programs, email/content marketing newsletters which add value to the customer first. Jawbone.com, for example, used to include a handwritten “thank you” note in a package with their product which customers seemed to like and share on their social media. That created a sense of “feeling special” and the fact that the company cared for them. In most cases, many e-commerce brands use a simple “thank you” email. As argued by Hum (2014), offering exclusive offers to your customers (such as early access to the new product with an extra discount) makes customers feel more special too. Giving gifts to potential customers is another option (Hum, 2020).

The second tactic described by Cialdini is using **Social Proof**. People see their behaviour as more appropriate when other people are doing the same thing and are more likely to do the same. He also finds that the amount of people doing something also matters. The more people do it - the more influenced a person would be to do it as well (Cialdini, 2006).

Curle (n.d.) finds different ways to use social proof to drive e-commerce sales. First of all, by using more customer online reviews. Positive online reviews are more likely to push customers to spend their own money and supplement the word-of-mouth recommendations which make customers more likely to purchase (Big Commerce, n.d.). Second of all, including photos in reviews or case studies of the product, is likely to boost the social proof and the subjective feeling of truth (Newman, Garry, Bernstein, Kantner & Lindsay, 2012). The third way to boost social proof is to tell real-life stories and examples (Santora, 2020). If the story is unique and powerful - people are more likely to remember it more than particular product features or specifications and share the story with their friends. After all, a story about how the new Apple Watch helps people prevent heart attacks is more appealing and is more likely to be shared than how many transistors the Apple Watch processor has.

Other suggested great ways to increase social proof on the online store which would consequently increase conversions - celebrity endorsement, expert proof, customer reviews and ratings, harvesting user-generated content, influencers’ marketing, testimonial, trust badges, popular media logos next to the product, subscriber count, social media shares, and others (Nguyen, 2020).

The third tactic, studied by Cialdini (2006), is **Liking.** Using it to your advantage is proven to increase sales. R. Cialdini breaks it apart into the 5 following aspects that make us more likely to buy the product. Physical attractiveness of one of the agents in the sales process (be it a salesperson or a model) is more likely to make us develop a social bond and consequently make a purchase. The second is similarity - we tend to like people that are like us. And that is a great opportunity for a salesperson to find cues to become more like a customer (e.g., telling a customer they’re also a fan of the same football team). Third is complements - it’s been proven time and again by many (e.g., D. Carnegie, Cialdini, others) that humans respond positively to flattery and positive comments. Fourth is familiarity with a salesperson makes him/her appear more trustworthy. The fifth is conditions and association. The author gives an example of people rating the same model of a car better if there’s a young attractive model next to it. Hum (n.d.) states that the principle of liking can be applied in e-commerce in the following ways. A visually appealing website that is easy to browse with good-looking visuals is a key to using this principle. Another way is to give compliments to the customers or members of the company’s club, like the Dollar Shave brand does when they publicly praise their club members on occasion. OGOship (n.d.), points out that another way is to update the “About Us” page to induce similarities between what a website cares about and a user cares about. For example, if a company contributes to charities that their customers care about - that would make users more attracted to the company. Another way is to use influencer content that would engage customers.

Rule number 4 is **Authority**. Cialdini (2006) finds that people see requests made by someone in authority in isolation from the context or a situation as a whole. An experiment conducted showed that students perceived someone titled “professor” to be taller than a person who’s titled “graduate student”. In e-commerce, this concept is widely applied - such as whenever a person sees someone claiming to be an expert endorsing or giving positive feedback to promote products (Kaptein, 2011).

Tactic number 5 is **Scarcity**. Experiments showed that people believe that things that are more complex to acquire are usually perceived as more valuable than things that are easy to hold. Or as argued by D. Kahneman (2011) in Thinking, Fast and Slow - losing something has a bigger impact on us than gaining something of a similar value. This is why scarcity could be used as an important tool to force us into buying something. Another experiment showed that people value banned information more than the publicly available one. And to popularize a certain view, it’s more effective to censor it first and then publish the censorship. E-commerce experts found many applications to this concept. Xueming, Xianghua, and Jing (2019), for example, found that a scarcity message increases purchase responses to targeting without carts and, in the early shopping stage without carts, is about 2.3 times more effective than the price incentives provided to the consumer that is also costly. Scarcity tactics can be used in many places on the e-commerce website - starting with the ads that would hook the prospective customers to different scarcity elements within the website (before entering the checkout process and during the checkout process) to email markets campaigns heavily utilizing scarcity tactics.

Neil Patel, a famous internet marketer, in his article lists the following ways to use scarcity to boost online conversions (Patel, 2015). One of them is intentionally limiting the number of items to deliver and saying “Only 5 Left” next to the product will increase sales due to the item running out quickly. Another trick is to use a clock or a countdown timer to create a sense of urgency in customers - something Amazon uses heavily: “Sale ends in 00h 05m 14s”. Using time-related words such as “Now”, “Hurry”, “Quick”, “Never”, “Act Now” in the sales copy is another way to increase urgency. Another popular tactic is threatening to take the offer away from the customer by using phrases such as “this product is offered for the last time” or “There will be no recording of the webinar. Use your chance to sign up now”. As the author also claims, People usually have a hard time rationally reacting to urgency or scarcity (Patel, 2015).

Rule number 6 is **Commitment and consistency**. Even Aristotle said, “We are what we repeatedly do”. And this concept is widely applied in many places by marketers and salespeople. People are more likely to keep doing what they have been for many years or what they consider themselves to be. They try to be consistent with their previous behavior, and if an offer conforms to their previous behaviour - people would be more likely to accept it. As claimed by Kaptein (2011), online stores usually try to increase their customer’s commitment by making them acknowledge a product preference through, for example, the “Add to Wish List” button.

## Social Media Influence

In the research done by The Bucharest University of Economic Studies, authors were analysing 236 students who were social media users to understand their reaction and their interaction with social media advertisement, whether they are clicking and engaging with it or not. (Vinerean, Cetina, Dumitrescu & Tichindelean, 2013).

All analysed people were forming 4 factors which defined their activity in social media: *Expressers and Informers* - people who are taking part in social media but are more focusing on providing information about themselves through blog posts; *Engagers* - people who are taking part in social media community and try to interact with other people, write comments, reviews, etc.; *Networkers or Socializers* - people that care about their profile, regularly update personal info, write comments to their friends; and *Watchers and Listeners* - social media users with least activity on social media, take parts only in entertainment activities - like watching a video or listening to podcasts, music, etc (Vinerean, Cetina, Dumitrescu & Tichindelean, 2013).

All these groups of people were tested on whether they will be interacting with online ads on social media or not. As a result, the majority of students in all divided groups were interacting with ads and had a positive reaction to them. The biggest disagreement with online advertising was seen in the N*etworkers or Socializers* group - 32,2 % were not appreciating ads, however, the majority of them were clicking and interacting with the profile targeted ads.

The main results which can be taken from this research were that companies using social media advertising should try to target a group of people which corresponds to their segment of business - then even the people who are not liking an online advertisement (like students in *Networkers or Socializers* group) will engage with the targeted ads. The marketing strategy should always be in the process of development and companies should understand which product goes best for each group of the audience - in this way they will be able to achieve success and attract new customers through online advertising (Vinerean, Cetina, Dumitrescu and Tichindelean, 2013).

# Our Model

For this particular paper, the authors decided to choose the combination of the Input Process Output model and the Howard’s model as it is the most appropriate, and there are a few reasons for that. First of all - one of its main three dimensions - input focuses on the marketing part which nudging factors are a part of and is the one the authors want to study (which makes it a better fit than the Haworth Sheth model). Despite the model being simpler than, for example, the Engel Blackwell Kollat model - it’s comprehensive enough to cover most of the buyer’s decision-making processes and factors that affect it.

From the Howard’s model - the nudging factors such as social proof and reciprocity help the customer move from the second stage (limited problem solving) where the customer is familiar with the product category but is not familiar with the brand to the third stage (routine problem solving) where the customer recognizes the benefits and uses of the particular brand. We believe that nudging factors used by brands can influence the consumer’s decision making when it comes to choosing a particular brand. For example, when the customer sees the social proof nudging factor - he understands that because a lot of people already use that product or because it was endorsed by an expert - it may be indeed a good choice for him as well.

The model and its exact variables will be further developed in the research section of this paper as more information and data becomes available to the researchers.

# Methodology

## Experimental design

In this paper, the authors will be doing the quantitative type of research. Therefore, the authors decided to use experimental design as a research method for this paper. According to Patzer (1996), an experiment is the most appropriate method for the research connected with the marketing field as well as good for the quantitative type of research. He states that marketers most of the time have doubts about whether one factor resulted in the changes of another one and vice versa. However, the experiment is the most appropriate research solution for making such observations. Patzer claims that compared to other research methods, like observations or surveys, experiments can show mostly certain results of the relationships between two variables connected with the marketing sphere (Patzer, 1996).

As in this research authors are analysing how different nudging factors affect click-through rate on the advertisements of routine problem-solving products, we will need to receive as certain results about connections of one variable to another (more specifically, the connection of one nudging factor to the ads click-through rate) as possible. Therefore, the authors decided that the experiment will be the most appropriate research design for the paper and decided to stick to it.

Patzer (1996) also claims that “experiment is a test of a hypothesis that a causal relationship exists between two or more variables. This test focuses on the effect of change that one variable is believed to cause in another variable.” (p. 3).

The experiment method is widely used in the researches that are analysing nudging factors. For example, from 10 previous researches about nudging factors (**Appendix 2**), experiment as a method was used by Demarque, Charalambides, Hilton and Waroquier (2015), Berger, Nüske and Müller (2020), Meske, Amojo and Mohr (2020), Eigenbrod and Jason (2018), Huang, Hong, Chen and Wu (2018), Ingendahl, Hummel, Maedche and Vogel (2020) and Röthlisberger (2020). Overall, 7 out of 10 researchers have implemented experimental design for their research. Moreover, Sunstein (2014) in his guide to nudging is saying that experiments are widely used for analysing the effectiveness of nudges and what is more important, experiments for nudges are low cost and very effective.

Therefore, the authors think that experiment design is the most appropriate method for this type of research and decided to stick to it as it has proven to show the most reliable results.

## Interviews

Interviews are the primary research method as they will be used to collect additional information about nudging factors used in the chosen product field and will give additional insights into the data that was received during the experiment.

The initial goal of the interviews in this paper is to find companies that are already selling online routine problem-solving products. The authors have chosen to conduct two interviews with Rimi and Maxima representatives as these companies are selling products that are in the field the authors have chosen (routine problem-solving products) as well as they are advertising their products online. Using interviews, authors wanted to find out whether Latvian companies like Rimi and Maxima are using the online ads for their products as well as to find out how they are “nudging” people to click on the ad, in other words, which nudging factors are already used by them. These interviews will help to find out additional or new nudging factors which are used by online store owners in real life, and which possibly were not found by authors in the literature review section.

## Variables

**Choice of nudging factors**

After summarizing results of more than 10 previous researches (**Appendix 2**) the authors found out that the most efficient and valuable nudges in the online environment are **Social Proof** (namely, Star-ratings, fact statement), **Reciprocity** (namely, discount incentive, free gifts) and **Defaults** nudges. However, Defaults cannot be used in this research because it is planned to create only one product store while the Default nudging factor requires having a choice between two or more product options. Moreover, there is no appropriate way to show the Default option in the image advertisement. Therefore, defaults will not be used in this research.

In this research, the authors will focus on nudging factors related to reciprocity and social proof which are listed below as the independent variables. Moreover, the authors’ chosen nudges correspond to one group of the principles of a good nudge (Ly, Mažar, Zhao & Soman, 2013). Nudging factors that are used in the research *Activate the Desired Behaviour* (it is used intentionally to make people buy the product they are usually not buying), are *Externally Imposed*, *Mindless* (unconsciously influence customers’ emotions), and *Encouraging* (**Appendix 1**). They are also consistent with the consumer behavior influence proposed by Cialdini (2006).

The **dependent** variable is the unique click-through rate (Unique CTR) which is measured in % and is calculated as the total number of unique ad clicks divided by the total number of impressions of the ads. The authors chose the unique CTR (not the CTR) for the experiment because it is conducted for prospecting and not retargeting and that way, the authors would capture only Unique people that clicked on the ad.

The **independent** variables in this factorial analysis will be the following:

1. The categorical variable of a nudge:

* Star-rating: used in the ad or not
* Fact statement: used in the ad or not
* Free gift: used in the ad or not
* Discount incentive: used in the ad or not

1. Age (Test whether this is an important factor)
2. Gender (Test whether this is an important factor)

## Hypothesis development

To come up with the hypotheses, the authors have looked and analysed researches about nudging factors that were done in the past years. All previous researches that were analysing Social Proof and Reciprocity nudging factors in the field of e-commerce, concluded that these two groups of nudging factors influence customer decision process. Authors think that the same tendency will be seen in the use of Social Proof and Reciprocity nudging factors in the advertisement, therefore, the hypotheses are:

**H1:** Star-rating as a nudging factor will increase the Click-Through Rate of online ads of routine problem-solving products.

**H2:** Fact Statement as a nudging factor will increase the Click-Through Rate of online ads of routine problem-solving products.

**H3:** Free Gift as a nudging factor will increase the Click-Through Rate of online ads of routine problem-solving products.

**H4:** Discount Incentive as a nudging factor will increase the Click-Through Rate of online ads of the routine problem-solving products.

Also, there was evidence from the previous researches that gender doesn’t affect the way, how customers interact and engage with the online advertisement (this is described more precisely in the discussion part of the thesis), therefore another hypothesis will be:

**H5:** Gender will not affect the Click-Through Rate of online ads of the routine problem-solving products.

## Experiment Description

In this paper, authors are trying to understand how different nudging factors which are used in the digital advertisement are influencing potential customers' decision to click on the ad and visit the webpage with the product. The experiment itself was done on the Facebook platform, using the Facebook Ads Manager. First of all, an online store with one routine problem-solving product (pet feeder) was created. The online shop was created using the Shopify platform. Then 5 different ad visuals were created (based on the number of nudging factors that were found plus a control group that faced advertisement without any nudge).

The aim was to show potential customers the same ad but with different nudging factors in order to grab their attention and non-aggressively and naturally nudge them to visit the store page.

4 Ad copies with a nudging factor as well as a control copy of an ad without nudging factor can be found in **Appendix 3**.

The experiment examined 5 homogenous groups of people during the period of 3 days. A homogenous group of people was created using the Facebook Ads Manager, where the parameters of ad viewers can be controlled and set up as the authors wished. People that were targeted were both, males and females, had the age from 18 to 65+ years, had the same territorial location (Latvia), were having the same group of interest (as in the experiment authors were selling pet feeder, people who were interested in dogs, cats and pets were targeted).

## Experiment Process

The main task was to create 5 ad visuals, each with different nudging factors in it. For example, the first ad copy had a star-rating nudging factor, the second ad copy had free shipping as a free gift nudging factor, etc.

After that authors created their own e-commerce website with the routine problem-solving product in it (pet feeder). The main task here was to create a similar design in both ads and website, in order to create a brand identity as well as to increase trust from the customer side.

The next step was to upload all 5 ad copies to the Facebook ad manager. After that, the setting process happened, where the authors were choosing the homogenous audiences to whom the ad would be shown. It was important to create a homogenous group of people, therefore territorial location and interests were the same.

After that, the authors put a budget of each ad copy as 5$ per day which allowed us to reach 4000 + people for each ad copy. After the ads started to run, authors left them running for 3 days, sometimes checking them in order to see that everything is running smoothly.

After 3 days, ads were shut down and the statistics had been collected. Using the Facebook ad Manager, authors were able to see the value of the Unique CTR which is our dependent variable, and collect the data for each nudging factor used as well as the data about the gender and age group of the customer.

## Analysis of variance (ANOVA)

One-way analysis of variance is a method that allows comparing means of two or more independent clusters. The main assumptions of this method are that the dependent variable (Y) should be measured in numerical form (e.g., exam performance from 0 to 100 or intelligence that is measured by the level of IQ) while the independent variable (X) should be measured in a categorical way (e.g. male or female gender) (Laerd Statistics, n.d.).

The null hypothesis of the ANOVA method says that all means of dependent variables do not differ or basically are the same. The null hypothesis usually is rejected during the analysis.

So, one more important assumption of this method is that there should be no connection between analysed groups meaning that there should be different participants in each group and one participant cannot be in several groups (Laerd Statistics, n.d.).

F=t^2 is the formula that shows the relationships between t-test and ANOVA methods. Therefore, T-test and ANOVA will give the same results if there are only two groups that are analysed. So, ANOVA usually will be used, when there are more than 2 samples that should be analysed.

Dependent variables in ANOVA should also have a normal distribution (or close to it) because, in order for ANOVA to give reliable results, normal data should be used.

The last assumption for ANOVA will be that all variances in the samples should be homogenous (Laerd Statistics, n.d.). This can be checked using Levene’s test that will be described below.

As there are 3 independent variables and one dependent variable, the authors are planning to use 3-way ANOVA in our research to test if age and gender variables are significant. In case they would prove to be insignificant (in case it’s consistent with other works discussed in section 5) – the authors will stick with a one-way ANOVA analysis. 3-way ANOVA is similar to the One-way ANOVA, just in this method the effect of three independent variables on one dependent variable will be tested.

## Tukey’s Range Test

ANOVA can show that there is a statistically significant difference between one group and others. However, ANOVA can’t show whether there are differences between the means of these groups (Abdi &Williams, 2010). To analyse the means differences, the Tukey’s range test or Tukey's honestly significant difference (HSD) test is used.

Tukey’s range test uses the pairwise comparison technique and compares differences between two means. It is based on Student statistical distribution and is called *q* (Abdi &Williams, 2010).

If you have a pair of means, Tukey’s HSD test can show any existing difference between them that exceeds the expected standard error. The confidence coefficient can be expressed as 1-α for any α that is larger than 0 and smaller than 1, but this will only be true if the sizes of all researched samples are identical to each other. If the size of each sample is different, then the confidence coefficient is larger than 1-α (Abdi & Williams, 2010).

## Levene’s Test for Testing Homogeneity of Variances

The idea of Levene’s test is to check whether selected groups have common variance before starting to compare the means of these groups (Gastwirth, Gel & Miao, 2009). So, the main assumption of this test, as it was mentioned already before, is that variances of several groups that have been chosen from the one population are the same.

The null hypothesis of the test is that variances of population are the same. This is called homoscedasticity. If after running the Levene’s test the significance level is lower than the one that was stated, the variances of chosen groups from one population are different and that means that the null hypothesis should be rejected and groups are not homogenous (Gastwirth, Gel & Miao, 2009).

If the null hypothesis is rejected and the results of the Levene’s test are statistically significant, that means that the F-test cannot be interpreted and it’s recommended to move to other tests such as ANOVA with the Welch statistics or a Kruskal-Wallis test.

## ANOVA with Welch t-test

Welch t-test is used when there are violations of homogeneity during the analysis. It compares “means between two independent groups without assuming equal population variances” (Ahad & Yahaya, 2013, p. 888). However, Welch t-test is useful when there are only problems with homogeneity of variances. If besides that there are additional issues, like unequal sizes of the used samples or variance heterogeneity, then the Type I error can appear (Ahad & Yahaya, 2014).

## Games-Howell test

Games-Howell test is similar to the Tuckey test. It also compares differences between two means, however, the difference is that it assumes that sizes and virances of the analysed samples are not equal as well as takes into account the issue with homogeneity of variances . (Toothaker, 1993). This is the reason why the Games-Howell test is usually used more than the Tuckey test. However, Both Tuckey test and Games-Howell test were used in order to be able to compare results of these two options and be able to deal with homogeneity issues.

## Limitations

Experiments

The authors’ personal and main limitation for this research method is a financial limitation. In order to conduct this experiment, the authors needed to pay for Facebook ads, and as the authors are students and don’t have a lot of finances, authors were not able to run ads for a longer period, which can also influence the received data.

Interviews

According to Qu and Dumay (2011), the main limitations of interviews compared to quantitative methods are time and individuality of people. Interviews are very time-consuming and usually, people can’t collect a lot of responses and data with this method due to time constraints. It also takes a lot of effort to conduct the interviews as interviewers should prepare and speak with the interviewee for a long period of time.

Moreover, each person is individual. Therefore, it is hard to control the flow of the interview, and some questions which are normal for one person can be inappropriate for another one.

Qu and Dumay (2011) also state that reliability and inconsistency can be an issue in this type of research method. The authors cannot be 100% sure that all the information said or received from the person is correct and transparent and is not affected by the person's desires and beliefs.

Because of that, the authors relied primarily on the analysis, and only used interviews as a way to find additional information and insights.

# Results

To see if the click-through rate of ads is impacted by the nudging factors the authors ran a Facebook Ads campaign targeting dog, cat, and pet owners in Latvia. In Total, one ad without a nudging factor and four ads with different nudging factors were shown to homogenous groups (in terms of age, gender, and interests) of 23,045 people combined. The number of people who clicked on the ad was recorded. Two analyses were conducted – one-way ANOVA and two-way ANOVA accounting for the effect of gender – showed that there is an effect of increasing click-through rate in groups with different nudging factors at 99% confidence level (F=3.337, p=.0097). Furthermore, Tukey's test was conducted to examine individual differences between the groups. The results of each ad are discussed below.

Overall, here are the variables the authors used while building the model:

* Independent variables:
  + **Age** – a factorial variable with 6 levels (18-24, 25-34, 35-44, 45-54, 55-64, 65+) that describes the ages of the people who saw the ad.
  + **Gender** – a factorial variable with 2 levels (male, female) that describes the gender of the people who saw the ad.
  + **Factor** – a factorial variable with 5 levels (Default, Free shipping, Star review, Discount, Fact statement) that described what nudging factor was used in the ad.
* Dependent variables:
  + **Clicks** – a binary variable (1 or 0) that describes whether the person has clicked on the ad (1) or not (0).

## Default ad – no nudging factor

The first part of the research was conducted in January 2021 and consisted of using the default ad with no nudging factor and running it to a homogenous group of pet-owners in Latvia. For the initial part, a total of 4277 people were shown the ad with no nudging factor – out of whom 24% were male and the rest – female. However, for further analysis, this will not be taken into consideration as the authors found no statistically significant difference between male and female clicking on the ad, but also not to make the sample size biased. The authors have also determined the age groups of the respondents to establish if this is a determining factor in the click-through rate. While age didn’t turn out to affect the click-through rate itself, the results for the factors turned out to be the most prominent for the age group of 25-34 which is consistent with what is indicated by the previous data provided by Marketing Charts – people from this age group tend to shop online the most. It is proven by the fact that the amount of money spent by advertisers to target this specific age group increased by 32% compared to previous years (Marketing Charts, 2019). Control for age and gender were important in this research to make the model more accurate,

Along with determining the age and gender of the sample – the authors started collecting information on whether the person clicked on the ad or not. That information was later used for calculating the click-through rate as the number of people that clicked divided by the total reach. In this initial stage, the mean of the people who clicked on the ad was .0379 which means that 3.79% of people reached with this default ad clicked on it.

## Testing Social Proof

Along with running the default ad with no nudge, the authors have also created two other ads with the social proof nudge. The template for all of the ads was the same to ensure that the authors only controlled one variable at a time, a small writing with a text was added to the picture (**Appendix 3**). The first ad had a 5-star rating on it, and the second one stated the fact that every third pet owner uses the product (as for why these nudging factors were chosen – read sections 2.2 and 4.3). In total – 4,800 people were shown the ad with the fact statement and 4,638 people were shown the ad with the star review. Only 16.1% of the respondents were male in the former one and 29.9% in the latter one. There were differences in age groups as well. It was important to control for these variables to make the model unbiased, however, the difference in Gender or Age didn’t prove to have a statistically significant effect on the click-through rate which rendered these variables insignificant for this analysis.

In this ad, just like in the previous one the goal was to measure the number of people clicking on the ad, thus, seeing if there would be improvements or changes in the click-through rate compared to the default ad. The mean of people clicking on the ad with the **star review** turned out to be .0342 which translates into 3.42% of all people who saw this ad. This is lower than the click-through rate of the default ad, however, the results have a p-value of .904 which means that this mean doesn’t show a statistically significant difference between the two samples. The results aren’t statistically significant either when looking at the click-through rate within the female-only group or different age groups.

The mean of the clicks on the ad with the fact statement was .0415 which is 4.15% of the sample. As indicated by the p-value of .151 the difference in mean between the default ad and the ad with the fact statement is insignificant. However, the ad with a fact statement had a statistically significant difference in mean when compared to another nudging factor from the reciprocity group – the ad which offered a 30% discount to the customer. The results were true only for the group of people aged 25-34 years old. For this group, the ad with fact statement got a click-through rate of 4.62% compared to only 2.69% for the ad with a discount (p = .04).

From this, the authors can conclude that the social proof nudging factors don’t show a statistically significant difference in the click-through rate when compared to the no nudging factor ad.

## Testing Reciprocity

Alongside testing social proof and the default ad, the authors have also tested 2 other ads with the **Reciprocity** nudging factors in them. The images used in the ad were absolutely the same with the only difference of a different nudging factor in order to test only one variable at a time and make the experiment the least biased it can be (**Appendix 3**). One ad included a statement “Free Shipping” offering the customers the option to not pay for delivery. The other ad offers customers a 30% discount by offering them a promo code. In total – 4,531 people were shown the ad that offers free shipping, out of which 16.3% were male. Another 4,800 people were shown the ad with the discount. Here the proportion of male respondents was 17%. The majority of people were 18-34 years old (more than 50% in both cases). This is why the authors used age as a variable in one of their ANOVA models to control for that.

After measuring the number of people who clicked on the ad – the authors found that for the ad with the **discount** the mean was .0333 which means that **3.33%** of those who have seen the ad performed the click. For the ad that offered **free shipping** – the mean of the clicks divided by impressions was .0457 which translates into **4.57%** of people who clicked on the ad.

As the authors can see the ad with free shipping indeed has a higher click-through rate than the ad without nudging factors (M=.0379 > M=.0457), however, these results are not statistically significant for the entire sample with the p-value of only .316 (the authors can’t accept that at 95% confidence level). The difference in the click-through rate between default and free shipping is only statistically significant when the authors look at the group of people age 25-34 years old where the mean of the clicks is .0525 (5.25% CTR) for the free shipping nudge and .03 (3% CTR) for the ad with no nudge. This is statistically significant at 95% level (p=.0134).

Another statistically significant result that the authors received is that Free Shipping has proven to be higher than a Star Review. For the entire population, the difference turned out to be 4.57% for free shipping compared to 3.43% for the ad with start review at 95% confidence level (p=.0368). This difference was even more pronounced when the authors looked at the group of people aged 25-34. Free Shipping had a 5.25% click-through rate and the star review only had a 3.4% click-through rate (p=.054). When looking at females only – the difference was 4.48% compared to 3.14% (p=.028).

Another interesting statistically significant difference that the authors found was the one between Free Shipping and Discount (M=.0454 > M=.0333, p=.016). The means difference was even more pronounced when the authors looked at the group of people 25-34 years old (M=0.525 > M=0.03, p=.0019). From this, the authors can conclude that using free shipping as a nudge improves the click-through rate when compared to the ad with a discount, which is somewhat contradictory to the authors as they come from the same group of nudges. That is, however, consistent, with the general public thinking that uncertainty elimination helps to increase sales. In this case, the authors tell customers who are always unsure how much they will pay for the shipping that it is free.

## Testing Age and Gender

Particular attention in this research deserves the focus on gender. A little drawback from the data is the fact that 79% of the entire sample is female. So the authors decided to take this into account and control for the gender variable. First of all, the authors have run the three-way ANOVA model with 3 variables – **Nudging factor** and **Gender** and **Age**, as well as the two-way ANOVA with only Factor and Gender. In both cases, neither **Age** nor **Gender** had any statistical significance (for gender variable p3-way ANOVA = .518, p2-way ANOVA =.565; page=.492) in the analysis which is consistent with the research by Carolynn Anne McMahan (2005) which will be mentioned in the Discussion section. Furthermore, the authors have also done the one way ANOVA analysis for both Gender and Age to see if those factors would account for the increase in the click-through rate, and as the results have shown those variables did not have any statistically significant effect on the click-through rate (page = .336, pgender = .708). Therefore, the authors decided to stick with only one way ANOVA model with the **Nudging Factor** variable for the rest of this research.

The authors, however, tried to narrow down the sample by age and gender to see if any additional effects were stronger for some groups, and the authors did find additional effects, as it was described above. The next section will provide more insights into how the authors can explain those results.

## 5.5 Checking the hypotheses

After running the analysis, the authors can confirm **H3** and **H5** that when taking a broad population sample – Free Gift (in this specific case free shipping) will indeed improve the performance of the ad better than the discount incentive or the star-review. The authors have also found that neither gender nor age has an impact on the changes in the click-through rate.

When narrowing down the sample to the population of age 25-34 (the largest category of people shopping online) – free shipping remained the best factor to increase the click-through rate when compared to ads with other nudging factors or no nudging factor at all. Fact statement ad has also proven to be more effective than the discount, thus confirming **H2, H3,** and **H5**.

## 5.6 Testing Homogeneity of Variances

After running a Levene’s test, which tests the null hypothesis that the variances of populations are the same (assumption of homogeneity of variances) - the authors obtained the p-value less than .05 at the 95% confidence interval chosen by the authors (p-value = 7.473e-11). This means that Levene’s test is statistically significant and the authors have to reject the null hypothesis of equal population variances. Because of that the authors could not rely on the F-test and had to switch to the ANOVA with Welch’s statistics which does not assume homoscedasticity. To interpret which exact groups are different, the authors used the Games-Howell.

The results were the following. After running a Welch ANOVA test - the p-value was .012 (p<.05) which means that the means of Clickthrough rates were significantly different for different nudging factor groups. The results from the Games-Howell test were identical to that of Tukey’s test, so the differences described above and below in the summary table are true.

**Summary Table:**

The summary table provides the results the authors have received after running the Facebook ads as well as all of the statistically significant relationships:

Below are presented different groups of nudging factors, their category, and the percentage of people who performed a click (Click-through rate).

The second table shows the only statistically significant differences at the 95% confidence interval according to the Games-Howell test. The “Difference column shows the percentage difference between the two groups. And the “p-value” column shows the statistical significance of that difference according to the Games-Howell test.

The same results are shown in summary table number 3, but for the sample of 25-34 years old.

Finally, the fourth summary table shows the click-through rate for each nudging factor in the sample of 25-34 years old.

Table one and four display the descriptive statistics which does not require the assumption of homoscedasticity.

|  |  |  |
| --- | --- | --- |
| Entire Sample |  |  |
|  |  |  |
| **Nudging Factor** | **Click-through Rate** | **Category** |
| Free shipping | 5% | Reciprocity |
| Fact Statement | 4.15% | Social Proof |
| Default (no nudge) | 3.79% | Default |
| Star Review | 3.42% | Social Proof |
| Discount | 3.33% | Reciprocity |
|  |  |  |
| Statistically significant Differences at 95% |  |  |
| **Nudges** | **Difference** | **p-value** |
| Free shipping - Discount | 1.24% | 0.019 |
| Star Review - Free shipping | 1.14% | 0.043 |
|  |  |  |
| Sample - 25-34 Years old |  |  |
| Statistically significant Differences at 95% |  |  |
| **Nudges** | **Difference** | **p-value** |
| Free shipping - Discount | 2.55% | 0.002 |
| Fact statement - Discount | 1.92% | 0.029 |
| Free Shipping - Default | 2.24% | 0.015 |
|  |  |  |
| **Nudging Factor** | **Click-through Rate** | **Category** |
| Free shipping | 5.25% | Reciprocity |
| Fact Statement | 4.62% | Social Proof |
| Default (no nudge) | 3.00% | Default |
| Star Review | 3.40% | Social Proof |
| Discount | 2.69% | Reciprocity |
|  |  |  |

# Discussion

## Gender and age variables

The majority of the authors’ sample were female respondents and the most common age group was 18-35. The authors did not narrow down the sample by age or gender to make it the least biased. Because of that, it was important for this research to impose some additional control for these two variables to see if they have any effect on the Click-through rate. As a result - it turned out that these two variables did not have any effect on the CTR variable.

This can seem confusing from the beginning. There is the research conducted by Carolynn Anne McMahan (2005) in her dissertation for a Doctor of Philosophy Degree at the University of Tennessee in Knoxville. She analyzed differences in gender when it comes to engagement and perception of online ads. The author analyzed three companies – Nike, New Balance, and Reebok. The results of the research showed that there is no statistically significant difference in terms of perception of interactivity of the advertisement based on control and personalization. Moreover, another important finding was that there is no statistically significant difference between genders in terms of their attitude towards online advertisement and intention to purchase the product.

As there is evidence in the previous research that age and gender don’t matter, the question might arise, why authors decided to check the statistical significance of these variables once again. Answering this question, the author's ambition and goal were to check whether age and gender statistical significance will have the same tendency in the Latvian market because previous research was done in the USA.

After doing the analysis, taking into account the gender of the respondents, the authors have received that gender is statistically insignificant for this research. That means that gender does not influence the click-through rate of the online ad, and it doesn’t matter who sees the ad, male or female. The same goes for an age variable.

This point was also mentioned by Gints Strauss and Ieva Zake, in the interviews that authors conducted (**Appendix 5**). Gints said that Rimi estore is usually advertising products online based on the interests of the customer, and you are not looking at age or gender. He said that each social media has its own user type. For example, Instagram is used mostly by the younger generation, while Facebook is more for adults. Ieva Zake has the same position - they do not target specific age groups in Maxima, they try to make the audience as broad as possible and look more at the social media that is used for the advertisement. That is why, they usually don’t target specific age or gender as it is not important and they focus on the interest of these people.

Therefore, the authors think that results received in the analysis are not the outliers and are common for this type of analysis.

## Results Limitations

After receiving the results of the experiment, the subsequent question will be whether they can be generalized for the industry, or, to be more specific, whether the results will apply to other routine problem-solving products. Speaking about generalization, authors can conclude that the same type of routine problem-solving products (those products that are similar to pet feeder) will have the same results. As authors were analysing the Click-Through Rate of the remote pet feeders advertisement with different nudging factors, other types of feeders (e.g. fish feeder, rabbits feeder, etc.) will have the same results. They all have the same feature - to ease the life of animal owners when it comes to feeding them. So, the people that are by the ad have a similar interest. Moreover, they all have the same function. What is more important and what people who run ads should take into account, is the targeting of the right audience. Fish feeders will not sell to the cat/dog owners, even if the nudging factors will be used. Therefore, the main issue here is the right targeting, and, if everything is done correctly, the results will be the same. This was also approved in the interviews with Rimi e-store and Maxima (**Appendix 5**). Gints said that nudging factors will work correctly only if you target the right group of people and give the right message. While Ieva said that the nudging factor will be useless if the advertisement is bad, it should have the right design and the right targeting.

Results can also be generalized to the products in the same price range. As all the products in the routine problem-solving product niche deal with one or another problem and the goal of all products of that type are to make people's lives easier and free them from the routine tasks, the results will likely be the same. However, it can only be said about the products that are in the same price range category as the one that was tested in the experiment. The authors’ used product price was in the range of 50-100 euro. Therefore, the results for the routine problem-solving products in this price range most likely will be the same (some outliers are possible, for example, if the goal of the routine problem-solving product is completely different from the one that was analysed).

It is difficult to generalize the results for the routine problem-solving products in other price ranges, as they might need different types of marketing that will be appropriate for the specific customer cluster. For example, discount, as a nudging factor, might not work for the products in the higher price range because people are paying high prices for the high-quality level and they might consider discount as something bad and low quality. Gints Strauss (**Appendix 5**) mention the same thing during the interview. He states that people value brand messages more than the nudging factors for the products in the higher price range. That is why Apple doesn’t provide discounts or free shipping and focuses more on their brand message while android phones are using Discounts and other nudging factors more often.

The authors were also analysing the use of nudging factors in online ads in Latvia. And, as it was found out, the results are a bit different compared to those received in the researches done in other countries. Therefore, results cannot be generalized to other countries, even for Baltic countries. Gints Strauss approves that as well during the interview (**Appendix 5**). He said that people from Lithuania are reacting more to the discounts while Estonians are more loyal towards the nudging factors connected with brand positioning and value proposition. Ieva Zake (**Appendix 5)** thinks that nudging factors as a part of the marketing strategy can be generalized for Baltic countries, however, she also thinks that people in different countries will have different reactions to the same nudging factors. Therefore, it can be a great direction for future research.

Another great potential for future research is to check additional nudging factors that were found during the interviews for the routine problem-solving product group. During the interview, Gints Strauss (**Appendix 5**) mentioned Scarcity as a nudging factor that Rimi e-store is actively using. Ieva Zake says that one of the nudging factors they are using is call to action (e.g., “Buy now” button). Therefore, it will be useful to see how these nudging factors will work with the routine problem-solving products.

To sum up, the authors think that the results can be generalized for the routine problem-solving products in the same price range and in the same category. However, for the routine problem-solving products that are in different categories, additional research and experiment are needed. Results cannot be generalized across Baltic countries as well. People have different preferences, therefore, in order to find out, which nudging factors will work the same and which will perform better/worse in other countries, additional research is needed - similar experiments as the one that was used in this research should be done in other countries.

## Findings Implications

Research findings can be useful for new Latvian companies who are starting their online business journey or for already existing ones who are trying to expand their business by going online. Marketing is one of the fundamental things for the companies that are selling the products because it can significantly increase the sales and brand awareness of the company or, if used, incorrectly, destroy their business. Therefore, it is important to find the right tools and strategies that are working and that are increasing the chance of getting sales. And findings from this research can help companies to do that.

By conducting the experiment, authors have found the nudging factors that work and that do not work in the Latvian market when it comes to selling routine problem-solving products of the specific price range (50-100 euro). So, the Latvian companies who are specializing in selling this type of product can implement research findings straight away. It is also useful for other Latvian companies who are selling different types of products online because authors have proven that the use of nudging factors is a working strategy and it can increase the advertisement clicks and as a result, more potential customers will see their product. So, they receive a working strategy and the only thing they have to do is to test a couple of nudging factors (same or different) to find out, which of them will bring more clicks. They do not need to test a marketing strategy from scratch, so this will save them a lot of marketing budget money.

## Answering the research question

At the beginning of the work, the authors stated their research question as **How Social Proof and Reciprocity nudging factors influence the Click-Through Rate of online ads for routine problem-solving products?**

Based on previous researches that were analysed in the literature review section, the authors found out that the most effective nudging factor categories are Social Proof and Reciprocity. They were proven to give the best results and positively influence ad engagement and click-through rate.

After conducting their own experiment, authors received the results that *Fact Statement* (Social Proof) and *Free Shipping* (Reciprocity) increase the click-through rate of the routine problem-solving product (in this case, remoteless pet feeder) while *Star-rating* (Social Proof) and *Discount* (Reciprocity) decrease the click-through rate.

Therefore, the answer to the research question is mixed. Authors have found out that indeed, Reciprocity and Social Proof nudging factor groups can have a positive influence on the advertisement click-through rate, however, not all nudging factors in these groups have a positive influence on it.

Gints Strauss (**Appendix 5**) also assumed that authors will not receive the simple answer to their research question. He stated that even though the nudging factors that were used were proven to work in other research, that doesn’t mean that it will have the same pattern when it comes to the Latvian market and the routine problem-solving products. He has seen cases where these nudging factors performed great, however, it all depends on the right targeting and product type. Ieva Zake has the same opinion (**Appendix 5**). She says that it all depends on the products you are advertising as well as the audience. So, the results in other countries might be different.

Authors think that Free Shipping as a nudging factor increased the click-through rate of the advertisement because it helped potential customers to deal with uncertainty - after seeing the ad, they knew that the shipping will be free and no hidden costs are involved, therefore, were more ready to buy the product.

The same can be said about the Fact Statement. People were not sure whether the product was reliable and popular. But when they saw the fact that every 3rd person uses this remoteless pet feeder, their uncertainty of the quality of the product and its popularity disappeared and they were more ready to buy it. Moreover, it has built some kind of trust with the customer (that this product is used by other people).

Authors think that Discount and Star-rating decreased the click-through rate of the advertisement due to various reasons. First of all, Star Rating is usually used in the online shop itself but not in the advertisement. Therefore, it might look sketchy to the customers (plus, it was shown a 5-star rating, not the 4.8 or 4.9), and this scared them off. While the discount issues we have already discussed. The discount (30%) for the product in this price range (50-100 $) might seem too high that raised the uncertainty for the customers. Moreover, there were no upcoming holidays or other events, therefore, the discount was looking inappropriate and too high, creating the feeling that the product is of low quality.

# Conclusion

Taking into account all the information mentioned in the discussion part of the research, the ***answer to the research question*** will sound like this: Social Proof and Reciprocity nudging factors have positive influence on the increase of the click-through rate of an online ad of routine problem-solving product. Free shipping was proven to be the best nudging factor among all analysed ones. However, marketers or people who run ads should look at the price range and purpose of the product they sell. Otherwise, some Social Proof and Reciprocity nudging factors can negatively affect the click-through rate.

# References

Abdi, H., & Williams, L. J. (2010). Newman-Keuls Test and Tukey Test. *Encyclopedia of Research Design* (p. 1-11). Thousand Oaks, CA: Sage.

Ahad, N. A., & Yahaya, S. S. S. (2013, November). *Sensitivity Analysis of Welch’s t-Test*. Presented at the 21st National Symposium on Mathematical Sciences, Penang, Malaysia.

Berger, M., Nüske, N., & Müller, C. (2020, December). *Digital Nudging in Online Grocery Stores - Towards Ecologically Sustainable Nutrition*. Presented at Forty-First International Conference on Information Systems, India.

Big Commerce. (n.d.). What is social proof and why it's necessary for e-commerce success. Retrieved November 20, 2020, from <https://www.bigcommerce.com/ecommerce-answers/what-is-social-proof/>

Cialdini, B. R. (2006). *Influence: The Psychology of Persuasion. Revised edition*. New York: Harper Business

Curle, M. (n.d.). *Trust Me: 3 Types of Social Proof that Drive Customers to Buy* [Blog post]. Retrieved from <https://www.sellbrite.com/blog/3-types-of-social-proof-that-drive-customers-to-buy>

Djurica, D., & Figl, K. (2017, August). *The Effect of Digital Nudging Techniques on Customers’ Product Choice and Attitudes Towards E-Commerce Sites*. Presented at 23rd Americas Conference on Information Systems, Boston.

Demarque, C., Charalambides, L., Hilton, J. D., & Waroquier, L. (2015), Nudging sustainable consumption: The Use of Descriptive Norms to Promote a Minority Behavior in a Realistic Online Shopping Environment. *Journal of Environmental Psychology*, 43, 166-174.

Eigenbrod, L., & Jason, A. (2018, June). *How Digital Nudges Influence Consumers -Experimental Investigation in the Context of Retargeting*. Presented at 26th European Conference on Information Systems, Portsmouth, UK.

Guthrie, J., Mancino, L., & Lin, C. J. (2015). Nudging Consumers toward Better Food Choices: Policy Approaches to Changing Food Consumption Behaviors. *Psychology & Marketing*, 32(5), 501-511.

Gastwirth, L. J., Gel, R. Y., & Miao, W. (2009). The Impact of Levene’s Test of Equality of

Variances on Statistical Theory and Practice. *Statistical Science*, 24(3), 343-360.

Howard, J. A., & Sheth, J. (1969). *The Theory of Buyer Behaviour*. New Jersey: Wiley.

Howard, J. A. (1994). *Buyer Behavior in Marketing Strategy*. New Jersey: Prentice Hall.

Hum, S. (2014, November 7). *Giving Before You Get: 10 Examples of Reciprocity in Marketing* [Blog post]. Retrieved from <https://growthhackers.com/articles/giving-get-10-examples-reciprocity-marketing>

Hum, S. (2020, July 13). *How To Use Reciprocity In Marketing* [Blog post]. Retrieved from <https://www.referralcandy.com/blog/reciprocity-marketing-examples/#comments>

Hum, S. (n.d.). *Laws of Attraction: 7 Examples of The Liking Principle* [Blog post]. Retrieved from <https://www.referralcandy.com/blog/liking-principle/>

Huang, N., Hong, Y., Chen, P., & Wu, S. (2018, January). *Digital Nudging for Online Social Sharing: Evidence from A Randomized Field Experiment*. Presented at 51st Hawaii International Conference on System Sciences, Hawaii, USA.

Ingendahl, M., Hummel, D., Maedche, A., & Vogel, T. (2020). Who can be nudged? Examining Nudging Effectiveness in the Context of Need for Uniqueness. *Journal of Consumer Behaviour*, 1-13.

Kracher, B., & Corritore, L. C. (2004). Is There a Special E-Commerce Ethics? *Business Ethics Quarterly*, 14(1), 71-94.

Kaptein, M. (2011). *Adaptive Persuasive Messages in An E-Commerce Setting: The Use Of Persuasion Profiles*. Presented at the 19th European Conference on Information Systems, ECIS 2011, Helsinki, Finland.

Kahneman, D. (2011). *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux.

Khan, M. (2004). *Consumer Behaviour*. Delhi: Newagepublishers.

Lewicki, M. (2016). The Reciprocity Rule in Electronic Commerce. *Handel Wewnętrzny*, 5(364), 149-161.

Laerd Statistics (n.d.). One-way ANOVA in SPSS Statistics. Retrieved from: <https://statistics.laerd.com/spss-tutorials/one-way-anova-using-spss-statistics.php>

Ly, K., Mažar, N., Zhao, M., & Soman, D. (2013). *A Practitioner’s Guide to Nudging*. Rotman School of Management, University of Toronto.

Marketing Charts. (2019, March). *Marketers Spending More on Digital Ads Targeting Boomers*. Retrieved from <https://www.marketingcharts.com/digital/display-and-rich-media-107537>

McMahan, A. (2005). *Gender and Internet Advertising: Differences in the Ways Males and Females Engage with and Perceive Internet Advertising*. PhD dissertation, University of Tennessee, Knoxville. Retrieved from: <https://trace.tennessee.edu/cgi/viewcontent.cgi?article=3765&context=utk_graddiss>

Meske, C., Amojo, I., & Mohr, P. (2020, March). *Digital Nudging to Increase Usage of Charity Features on E-Commerce Platforms*. Presented at 15th International Conference on Wirtschaftsinformatik, Potsdam, Germany.

Newman, J. E., Garry, M., Bernstein, M. D., Kantner, J., & Lindsay, D. S. (2012). Nonprobative photographs (or words) inflate truthiness. *Psychonomic Bulletin & Review*, 19, 969-974.

Nguyen, S. (2020, November 1). *Top 30+ Social Proof Examples which increase conversion rate instantly* [Blog post]. Retrieved from <https://www.mageplaza.com/blog/top-social-proof-examples.html>

OGOship. (n.d.). How to Boost Online Store Sales with the 6 Principles of Persuasion [Blog post]? Retrieved from <https://www.ogoship.com/blog/how-to-boost-online-store-sales-with-the-6-principles-of-persuasion>

Patel, N. (2015, January 9). *9 Ways to Use Urgency Psychology to Improve Conversions* [Blog post]. Retrieved from <https://marketingland.com/12-ways-use-urgency-psychology-improve-conversions-112603>

Patzer, L. G. (1996). *Experiment-research Methodology in Marketing: Types and Applications*. Santa Barbara: Praeger.

Prasad, K. R., & Jha, K. M. (2014). Consumer buying decisions models: A descriptive study. *International Journal of Innovation and Applied Studies*, 6(3), 335-351.

Qu, Q. S., & Dumay, J. (2011). The Qualitative Research Interview. *Qualitative Research in Accounting & Management*, 8(3), 238-264.

Röthlisberger, M. (2020). *Digital Nudging Decoy Effect and Social Norms Nudge in E-commerce*. Bachelor’s thesis, University of Applied Sciences, Switzerland. Retrieved from: <https://www.fhgr.ch/fileadmin/fhgr/angewandte_zukunftstechnologien/SII/churer_schriften/sii_churer_schriften_116_roethlisberger.pdf>

Statista. (2020). Retail e-commerce sales worldwide from 2014 to 2023. Retrieved from: https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/

Semeradova, T., & Weinlich, P. (2019). Calculation of Facebook Marketing Effectiveness in Terms of ROI. *Leveraging Computer-Mediated Marketing Environments,* 286-311.

Santora, J. (2020, May 13). *30+ Proven Ways to Use Social Proof to Increase Your Conversions* [Blog Post]. Retrieved from <https://optinmonster.com/11-ways-to-use-social-proof-to-increase-your-conversions/>

Sunstein, R. C. (2014). Nudging: a Very Short Guide. *Journal of Consumer Policy*, 37, 583-588.

Thaler, H. R., & Sunstein, R. C. (2008). *Nudge: Improving Decisions About Health, Wealth, and Happiness*. London: Yale University Press.

Toothaker, L. (1993). *Multiple Comparison Procedures*. Thousand Oaks: SAGE Publications.

Vinerean, S., Cetina, I., Dumitrescu, L., & Tichindelean, M. (2013). The Effects of Social Media Marketing on Online Consumer Behavior. *International Journal of Business and Management*, 8(14), 66-79.

Weinmann, M., Schneider, C., & vom Brocke, J. (2016). Digital Nudging. *Business & Information Systems Engineering*, 58(6), 433-436.

Xueming, L., Xianghua, L., & Jing, L. (2019). When and How to Leverage E-commerce Cart Targeting: The Relative and Moderated Effects of Scarcity and Price Incentives with a Two-Stage Field Experiment and Causal Forest Optimization. *Information Systems Research*, 30(4), 1-25.

# Appendices

## Appendix 1: Summarized Principles of a Good Nudge

**Изображение выглядит как стол

Автоматически созданное описание**

## Table Description automatically generatedAppendix 2: Summarized Previous Researches About Nudges

## Appendix 3: Ad Copies Used In The Experiment

Diagram

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## Appendix 4: R Studio Outputs

**Three-way ANOVA with Nudging Factor, Age and Gender**

Text

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**Two-way ANOVA with Nudging Factor and Gender**

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**One-way ANOVA with Age Variable**

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**The Sample Grouped by Gender**

A picture containing text

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**One-Way ANOVA With a Gender Variable**

Text

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Description automatically generated

**Summary of the Sample Grouped by Nudging Factor.**

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**Summary of the Sample Grouped by Gender and Nudging Factor (where mean is the mean of people who clicked on the ad)**

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## Appendix 5: Summary of the Interviews

**Summary of the interview with Gints Strauss - Rimi e-store marketing manager.**

(Full version of the interview is available in attachments)

Rimi estore is selling routine problem-solving products – even though they are an online grocery store, but they have a big variety of non-food products. They are running several types of ads, for example, brand and product advertisements or retargeting ads. They are using image ads to promote simple products. If the product is new and customers are unaware of it, Rimi estore is using video ads. Rimi is using nudging factors in both in-store and online advertisements.

Rimi estore is running online ads for routine problem-solving products as well.

Speaking about the best age group to target, Gints cannot give a straightforward answer. Age groups depend on the social media, where the online ads are running, for example, the young generation is using Instagram more than Facebook. Therefore, they usually care about and target specific interests rather than age.

Rimi estore thinks that the aim of each nudging factor is the same – help to sell the product. For the routine problem-solving products such nudging factors as Discount, Free Shipping and Buy 1 get 1 free are used. Besides that, they are also using Scarcity as a nudging factor.

The main metrics they are looking at are sales and reach of the ad. However, they are also looking at Click-through Rate (CTR), but it is analysed only when Rimi estore is running product ads with nudging factors.

Gints thinks that there will be no simple answer in this research. Nudging factors can give different results and performance of an ad – it all depends on the type of product, as well as its price range and branding. But the result will be useful for the companies.

He also said that he doesn’t think that results can be generalized for all Baltic countries as some nudging factors are more effective in one country than another (e.g., Lithuanians react more to Discount while Estonians focus more on the product brand.)

**Summary of the interview with Ieva Zake – Maxima internet project manager.**

(Full version of the interview is available in attachments)

Maxima is selling routine problem-solving products - their product range includes food products and a big variety of non-food products or near food products, for example, hygiene products and household products. They are running content ads on social media, as well as product ads on various media and social media platforms. They are usually running image types of ads throughout the year, however, when they have an ongoing marketing campaign, they are also using video ads.

Ieva Zake says that Maxima uses Discount incentives as a nudging factor most of the time. The second option would be Fact Statement but it is used rarely.

Maxima doesn’t choose a specific age group for targeting. The campaign usually targets a wide audience age-wise, as stores are visited by a variety of clients.

Maxima is using nudging factors in online ads less than in in-store ads. The reason is that the main goal of their online ads is to drive customers to the physical store. Therefore, they only usually use Discount as a nudging factor.

Ieva Zake says that they are looking at reach and impressions because the main goal is to convince a client to visit the store. They are also measuring CTR, however don’t analyse it too much.

Ieva thinks that findings from this research can be useful for small and medium-sized companies as they don’t have a huge client flow, therefore, nudging factors can help them to get traffic.

She also said that she thinks that the use of nudging factors can be generalized for all Baltic countries, however, the effect of these nudging factors on customers cannot be generalized because people in different countries will have a different reaction.