Analysis of Perceived Risk for Tactile Products in Different Shopping Contexts

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Abstract

The following study analyzes consumer risk aversion for tactile products. There are five main types of perceived risk, which include financial, time, social, psychological, and product risk related to product performance. With the growth of e-commerce, recreating a sensory experience that customers can enjoy during their shopping in-store. The main concern for online customers when shopping for tactile products is the inability to touch, feel, and interact with the product. This increases mental intangibility, which reflects the inability to create a credible picture of a product and be able to evaluate it with the limited information provided.

A quantitative approach was conducted to analyze the influence of different types of perceived risks, which confirmed that performance risk is the most significant. Providing sufficient product descriptions, reviews, comparisons, and visualizations can be one of the many mitigation techniques used to address this risk, specifically for customers who exhibit concrete thinking. Concrete thinkers are people who focus on a product's physical and functional qualities, in contrast to abstract thinkers, who focus more on its symbolic significance and how it reflects their social image.

The study aimed to check if a product's level of involvement, whether high or low involvement, affects shopping behavior or confidence when purchasing. However, the test results were insignificant, suggesting either that involvement does not influence decision-making or that the study should be reiterated using a more specific, less generalized approach.

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Keywords: Consumer behavior, perceived risk, decision-making processes, mental intangibility, tactile products, sensory experiences, risk mitigation

Resumo

O estudo analisa a aversão ao risco dos consumidores em relação a produtos táteis, destacando cinco principais tipos de risco percebido: financeiro, temporal, social, psicológico e de desempenho. Com o crescimento do comércio eletrônico, recriar uma experiência sensorial semelhante à de lojas físicas tornou-se um desafio. A principal preocupação dos clientes online é a incapacidade de tocar, sentir e interagir com os produtos, o que aumenta a intangibilidade mental e dificulta a avaliação com informações limitadas.

Uma abordagem quantitativa foi realizada para investigar como diferentes tipos de riscos percebidos influenciam os consumidores, e o risco de desempenho foi identificado como o mais significativo. Técnicas como descrições detalhadas, avaliações, comparações e visualizações são eficazes para mitigar esse risco, especialmente para clientes com pensamento concreto. Esses consumidores priorizam as qualidades físicas e funcionais do produto, enquanto pensadores abstratos se concentram mais no significado simbólico e no impacto social do item.

O estudo também buscou entender se o nível de envolvimento do consumidor com um produto, seja alto ou baixo, afeta o comportamento de compra ou a confiança na decisão. Os resultados, no entanto, foram inconclusivos, sugerindo que o envolvimento pode não ser determinante para a tomada de decisão ou que o estudo deve ser refinado com uma abordagem mais específica e direcionada.

Essas descobertas reforçam a importância de estratégias eficazes para superar as barreiras sensoriais do e-commerce e atender às diferentes formas de pensar dos consumidores.

Título: Análise do Risco Percebido para Produtos Táteis em Diferentes Contextos de Compra

Autora: Beata Kwinta

Palavras-chave: Comportamento do consumidor, risco percebido, processos de tomada de decisão, intangibilidade mental, produtos táteis, experiências sensoriais, mitigação de risco

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1. Introduction

1.1 Research topic

During the last years the global e-commerce market has grown significantly and is predicted to expand even more, in 2023 e-commerce was responsible for 19% of the global retail sales, and is expected to reach about 25% by 2027 (Statista, May 2024). This trend has been caused by technology advancements, and consumers being more familiarised with navigating digital platforms. Companies have been investing in adapting and optimising mobile platforms, enhancing user experience, and weighing more importance in digital marketing and social commerce, which enables consumers to make purchases directly through social media apps (Sinelnikov, April 2024) .

Consumer behaviour towards e-commerce has shifted. With enhanced security measures, convenience and rapidity of digital payments and digital wallets, buyers are less reluctant to make online transactions (McKinsey, 2023). Moreover, businesses have improved logistics, transportation, and supply chain efficiency to minimize the time gap between online and in-store shopping experiences, ensuring smoother transactions. However, technical and operational improvements alone could be insufficient to change customer behaviour and shift their attention toward online shopping.

For instance, for the sale of tactile products, which rely heavily on sensory interactions, in-store shopping is posing a specifically challenging experience to replicate online. Different product categories rely on different sensors, for example certain cosmetics rely on scent, while furniture focuses on visual and tactile cues. Sensory interactions, particularly touch, can strengthen emotional attachment to a product but also allow a better cognitive evaluation on the product (Jaeger et al., 2019). To compensate for the lack of touch, online retailers enhance visual attributes and use descriptive sensory terms and language, to evoke similar sensory experience that could replicate the emotional engagement found in in-store shopping.

1.2 Problem statement

When launching a product, companies must take into account the initial costs, including operational costs, sales costs, marketing, and administrative costs. This includes fixed and variable expenses, manufacturing, logistics and supply chain, distribution, promotion, customer support and services, and legal matters. However, a significant portion of calculated costs are those that incur after sales. Customer returns or exchanges, any follow-up additional services and support, repairs, product evaluation, and warranty-related matters are all part of

reverse logistics costs. Transportation costs alone account for up to 60% of total reverse logistics costs, in 2020 in the United States they reached $550 billion , which is over 50% more than 3 years prior (Statista, 2019).

One key goal for companies is to align with actual consumer trends, focus on effective branding, and make a product desirable enough for a customer to purchase. Another challenge, especially for tactile products, is to be able to recreate the sensory experience online to persuade the hesitant purchaser. With these challenges in mind, it is important to find a balance and present the product realistically, to avoid misleading customers, keep them satisfied post-purchase, and avoid any follow up concerns that may arise if they are not sufficiently informed.

In this context, companies and customers can find common ground, because both seek to decrease the risk of an unsuccessful purchase, and the follow-up costs related to it for both parties. Every purchase involves certain risks, and some risks are the same whether related to online or in-store shopping. For instance, a product may be defective or may fail to fulfill its intended purpose. Products may not perform as well as anticipated. For example, cosmetics may not be as effective as promised, electronics may not be as functional, and shoes can turn out uncomfortable and not walkable. Some items may initially be satisfactory, but over time, their quality may decrease due to low durability. Certain risks can be related to safety hazards: malfunctioning appliances may cause direct harm, and some cosmetics or supplements could cause allergies or unwanted side effects.

Tactile products, since they rely on sensory interactions, are often associated with sensory expectations like texture, weight, fit, or scent. When these aspects are not experienced first-hand, there may be a higher chance that the product won't live up to one's expectations when these factors are not personally encountered. For instance, cosmetics or skincare products may have a disappointing feel or scent. Sometimes, the difference can be due to the consumer's altered perception of a product when it is well-displayed in-store: the colour or texture of a furniture might not fit into a home's interior, even though it looked appropriate in a store setting, or the material's quality could appear superior in a specific lighting, but may turn out to be poor in a conventional setting.

Tactile products may present a higher risk for long-term performance as their defects can be noticeable only after a longer usage. For example, poorly made clothing and shoes may wear off quickly, as repeated handling could cause damage over time. In terms of safety risks, issues are more often tied to material, substances, or compounds that can cause irritation or

allergic reactions that only appear after long-term use or prolonged direct contact with the skin.

1.3 Research objectives:

1. Compare the perceived risks of online vs. in-store shopping.
2. Identify key factors influencing consumer trust and decision-making in both shopping environments.
3. Investigate solutions that help decrease perceived risks in both contexts.

1.4 Research questions:

1. How can online retailers recreate the in-store sensory experience for tactile products?
2. What are the best solutions to mitigate perceived risk for online shopping?

1.5 Significance of the topic

As the e-commerce market continuously grows, companies must identify risks associated with online shopping, specifically for tactile products, where perceived risk may be greater due to the lack of sensory interactions. Since e-commerce operations are easier to track, have no schedule limitations, and can cover a wider market, it is more beneficial for retailers to attract a larger portion of their audience to the online market. However, return rates in e-commerce are far higher than in purchases made in-store for many reasons.

Understanding and differentiating the types of risks related to online and in-store purchases, as well as gaining more insights into consumer behavior and preferences, can help adjust marketing, brand positioning, and business strategies to address any concerns that may arise before or after purchase (Mitchell, 1999). Companies need to understand the consumer's perspective and learn not only how to persuade the buyer but also how to maintain satisfaction. This approach will help to mitigate the costs of follow-ups and reverse logistics, and at the same time increase consumer confidence and retention.

2. Literature review and discussion

2.1 Risk aversion in consumer behaviour

With every purchase comes uncertainty and potential negative outcomes, as it cannot be fully predicted how a product will perform until after the purchase. It is only natural that consumers aim to avoid unsuccessful purchases and rely on various methods such as seeking additional information, consulting with others, checking reviews, or choosing well-known brands. Because purchasing is not purely rational, it is crucial for perceived risk to be first identified and categorized to reduce it effectively. The initial perceived risk theory categorizes perceived risk as financial, functional, social, and psychological.

Financial risk addresses the fear of monetary loss, especially for relatively high-cost products or items that require future maintenance costs. Functional risk includes performance uncertainty when a purchase does not meet expectations or is unreliable. Social risk involves how a purchase is seen by others; for instance, some consumers may avoid buying from certain brands, because of the social impact it may have on their image. The psychological risk measures the emotional impact a purchase may have on the consumer's values or sense of well-being. Fear of after-sale regret, disappointment, or misalignment with one's self-perception can have a direct effect on prolonging the decision-making process of purchase (Bauer, 1967).

A consumer's purchase risk is a combination of objective and subjective assessments. The objective, or „actual" risk, is measurable and based on the probability of negative outcomes. However, it is often difficult to assess due to limited data availability and the lack of objectivity or consistency in consumer purchase behavior. Subjective risk, or „perceived" risk, is the one that primarily influences decision-making. It is rooted in a consumer's interpretation based on their knowledge, experiences, beliefs, and biases. Without sufficient information to make an objective judgment, consumers rely on their perception of uncertainty or potential loss and weigh these against potential purchase benefits to make a decision. A lack of specific measures or indicators that support rational decision-making is a critical factor that companies should aim to minimize by addressing specific concerns and tightening the consumer trust gap (Mitchell, 1999).

Many models measure and categorize perceived risk based on different factors. Some could define it only in a two-factor scheme - in terms of the probability of a negative outcome and the severity of consequences, which due to its simplicity can be easily understood (Cunningham, 1967). However, it is also important to consider specific attributes of a product

that may have a different impact on its subjective risk. For example, one product may carry a higher financial risk while another may be riskier in terms of functionality (Zikmund & Scott, 1977). Other models divide risk into product category-related or product-specific related for a particular item or brand. Product category risk addresses how different product types contribute to a consumer's overall perception of risk (Dowling & Staelin, 1994). High-involvement, complex, high-cost products or services that require more time, money, and consideration carry more perceived risk compared to low-involvement, everyday items that are less costly and require minimal decision-making effort from a consumer, such as groceries. The latter involves mainly functional performance, as failure to meet expectations doesn't have a strong impact on financial or psychological loss (Mitchell, 1999).

For high-involvement products, consumers need to conduct more research, make comparisons, and check reviews, which could be difficult to perform thoroughly when making an in-store purchase. On the other hand, low-involvement products may not be worth the effort of risking being dissatisfied and having to return a product that doesn't hold that much importance in our eyes.

2.2 Perceived risk online

In online purchases, subjective risk can be divided into six categories. Some of these overlap with in-store purchases, such as social and psychological risk, which, as mentioned earlier, involve concerns about the social image associated with a purchase and the potential for regret or frustration if a product does not perform as expected. Financial risk is also present in both shopping environments, however, it can be higher online due to delivery fees and other additional costs. Similarly, product risk tends to be higher when the purchaser cannot physically inspect the product and pre-assess its performance beforehand. Product quality for some products is harder to assess online leading to bigger concerns regarding discrepancies between the advertised product and the reality.

There are two risk factors affecting the safe purchase journey related strictly to e-commerce. Time risk is the main pain point in the online customer journey. This includes navigating complex websites, and waiting for delivery as well as potential follow-ups, such as product exchanges, returns, or additional services if needed. The possibility of time waste can significantly impact purchase intentions. The last risk type, security risk, is the most influential one in e-commerce shopping. The security factor involves concerns about personal data privacy, fraudulent payment methods, or potential mishandling of sensitive information.

Transaction and website security, if not assured, can pose a decisive barrier and is a critical component to be guaranteed by online retailers (Kamalul Ariffin, Mohan, & Goh, 2013).

2.3 Risk mitigation

2.3.1 Risk mitigation techniques specific for low-involvement products

For different risk types, there are different methods that retailers use to mitigate their impact on making a purchase. For low-involvement products, where the customer is more keen on making a rapid, spontaneous shopping decision, a practical and effective tool to reduce financial risk aversion is the use of discounts, promotions, and coupon codes, that provide a perception of savings. If additionally a clear time limit is applied to the offer, creating a sense of urgency and fear of missing out on a unique opportunity, the decision-making process is more likely to be accelerated.

Low-involvement products carry a lower performance risk, as customers don't put that much thought into examining the product information. Instead, consumers tend to rely on habitual buying patterns, often choosing known brands. Therefore, it is recommended to cultivate a long-term steady reputation, ensure after-sale satisfaction, and create loyalty programs that reward consistent clients, that will help foster business-to-customer relations. Increasing convenience - for instance by ensuring easy delivery, and easy return processes - will also help the buyer to facilitate a quick, non-overthought, low-effort purchase. For low-involvement products, people tend to rely on recommendations from others, therefore it is practical to include customer reviews and basic, straightforward ratings. Positive feedback can reassure social validation, making the product carry minimal social risk since it is seen as accepted by the community. Simple, eye-catching indicators such as ratings and visual badges or certifications like „Bestseller" could increase both popularity and quality perception among potential customers.

To reduce time risk uncertainty, the first step is to ensure an easy user experience and clear categorization within the store or online platform to optimize and facilitate the search and selection process for a customer. A portfolio overly extensive can be too confusing and may overwhelm and discourage the buyer from completing the purchase. The next concern is to ensure a fast and seamless checkout with quick payment and delivery options. In physical stores, organizing the purchase journey flow by choosing the right store layout and opening additional self-checkout points, if needed, can improve the experience. Online, offering faster delivery options at an additional cost can address the needs of time-sensitive purchasers.

2.3.2 Risk mitigation techniques specific for high-involvement products

To address financial concerns of high-involvement products, sellers can use the reassurance of warranties, additional insurance, and easy or prolonged return policies, which provide customers with the confidence to commit to a purchase without fearing long-term financial consequences. An important point is making sure the pricing is straightforward and displayed clearly, without hidden fees, which could make customers reconsider their decision and abandon their cart at the last step. Since high-involvement products are relatively pricier and usually perceived as more of an investment, an option for „buy now, pay later" (BNPL) systems, where customers don't have to pay the full amount up front but divide it in fixed installments, could reduce the financial unattainability gap and create a sense of a lower financial effort. Customers who chose the BNPL system are estimated to have a higher average order size than those who chose traditional payment methods (Kumar, 2024).

When dealing with product performance uncertainty, it is important to provide in-depth, detailed product descriptions, specifications, and instructions, along with accurate visuals. Q&A sections with user feedback may resolve additional follow-up concerns, and comparison tools may help in differentiating products, especially within the same category, in terms of pricing, sizing, or specifications. Including unbiased reviews, either directly from other customers or external review websites may ensure product representation accuracy and build company trust, especially when paired with the possibility of including photos and videos of the purchased item.

To enhance the social perception of a product, it is crucial to start with building the right brand image and reputation of the company or brand itself. A trusted brand is associated with quality, reliability, and positive attributes that align with consumer values. To build a good reputation, companies should focus on long-term trust, provide quality customer service, and transparency, and deliver high-quality products. Using strategic marketing skills and thoughtful product positioning is also essential. A good method for increasing traffic and credibility is using influencer endorsement and user-generated content (UGC). The best practice, but the hardest, is to obtain unbiased but positive reviews from influential consumers. Additionally, having brand ambassadors such as public or known figures and celebrities can create a better social perception, and bring more visibility and attention as well as social validation. However, it is crucial to collaborate only with figures who have a positive reputation to avoid any negative associations.

Time risk is an important factor influencing a person's decision to shop. With high-involvement products, it is essential to ensure that the customer is aware of every step of the delivery process. Estimated delivery times will give proper information about the expected reception of the desired product and can help people organize their schedule according to that. Real-time tracking of deliveries and returns and status notifications either sent by email or available on the carrier website will give the purchaser a sense of control over the time occurrence. Adding pick-up options may help the customer organize his time around the delivery better and additionally offering the label of return can minimize the effort of returning the product.

2.4 The role of mental intangibility in tactile products

Perceived risk arises because of physical and mental intangibility. Physical intangibility occurs when consumers cannot physically interact with products, thereby losing sensory interactions. Mental intangibility refers to the difficulty consumers have imagining a credible picture or evaluation of a product and its qualities based on the limited information provided. The latter intangibility is more impactful and can be mitigated by providing sufficient product descriptions, comparison tools, and methods to help visualize the product better and for a customer to be able to assess the product more effectively (Nepomuceno, Laroche, & Richard, 2013). Touch facilitates better evaluation of the product, and increases purchase intentions and willingness to pay (Liu, Batra, & Wang, 2017). Therefore, purchases online for tactile products can feel riskier than those made in-store.

For low-involvement, simpler tactile products, such as everyday or low-cost items, basic visual representations, and descriptions are often sufficient and provide satisfactory mental clarity and needed information to envision the product. The risk, however, is higher for high-involvement products, where the customer invests more time, effort, and resources to make the right choice. Retailers use visualization tools, such as videos for clothing or augmented or virtual reality (AR/VR) for items like furniture. To improve mental representation for sensory-based times, it is essential to provide detailed descriptions of the specifications, ingredients, materials, or usage instructions and manuals, as well as feedback preferably with pictures and reviews directly from customers and credible influencers, to further enhance customer confidence (Nepomuceno, Laroche, & Richard, 2013).

However, the role of mental intangibility can vary depending on the thinking process of the consumer. The Construal Level Theory explains that abstract thinkers rely on high-level,

general concepts, broader implications, and symbolic meaning. Regarding product perception, abstract thinkers focus less on the product itself and more on how it aligns with their environment, social image, and character, or on product symbolism and versatility for different occasions. An abstract representation is not that much affected by sensory interactions, and touch conditions do not significantly influence one's purchase intentions or willingness to pay.

In contrast, the role of sensory interactions is more impactful for people who rely on concrete representation. Concrete thinkers focus on low-level, specific features, such as material, texture, and physical specifications. They pay closer attention to the tangible attributes of an item. To target these consumers, online retailers must understand how to meet the demand for tactile interactions by learning how to best recreate the sensory experience available in physical stores. (Wumei Liu, 2017)

2.5 Recreating the in-store sensory shopping experience for tactile products online

Online retailers use various methods to represent the quality of a product as realistically online as they appear in-store. Many industries benefit from tools such as augmented reality (AR), which is a technology that incorporates digital information into a real-world environment through devices that support these technologies such as smartphones, tablets, or AR glasses. Industries such as furniture and home goods particularly benefit from AR technology, where with the help of a device, customers can visualize how their interior space would look with different furniture, wall colors, home decorations, paintings, etc. With AR they can fully organize and realistically visualize what would match their interior and what it looks like after making desired changes. Enabling these controls effectively reduces mental intangibility, improving decision-making for tactile products related to home interiors (Heller, Chylinski, de Ruyter, Mahr, & Keeling, 2019).

Other industries, such as clothing, accessories, and even cosmetics also leverage AR technology. For example, some eyeglasses companies allow consumers to virtually try on glasses through their cameras. Similarly, cosmetics brands enable customers to visualize certain make-up products, such as lip color or blush, on their faces. Showing how the products interact with a customer's personal, individual features or environment enhances customer satisfaction and confidence (Jiyeon Kim & Sandra Forsythe, 2008).

Another technology commonly used in industries such as accessories, clothing, home goods, or electronics is 3D product models. They allow customers online to visualize a product in

3D, zoom in on detailed areas, and rotate 360 degrees for a complete view. Such representation of a product can better show the texture, material, and details more closely. This comes in handy, especially for products where the physical attributes and aesthetics are foremost important for the customer. This includes, for instance, handbags, shoes, jewelry, home decor, or electronics like headphones, speakers, or kitchen supplies (Petit, Velasco, & Spence, 2018).

An effective method especially for high-end products or luxury goods is creating an immersive virtual shopping environment. Using AR and VR, retailers can simulate walking through an aisle or exploring product displays, like they would do in-store. Customers can even connect with friends and family in a shared virtual space and co-shop in real-time. VR and multi-sensory augmented reality are powerful tools for creating realistic experiences. Retailers can implement touch-sensitive controls to mimic interactions with products, and use vibrotactile interfaces to imitate the sensations of touching fabrics, textures, or even weights. Some developing multisensory-enabling technologies explore ways to even allow the customer to experience tastes or smells of products like food or perfumes.

To implement new technologies in a successful and most importantly impactful way, retailers must ensure they are accessible to target customers, and compatible with widely used electronic devices, usually desktops and mobiles (Heller, Chylinski, de Ruyter, Mahr, & Keeling, 2019). High-end multi-sensory technology or AR systems do not fulfill that requirement and investing in such technologies should be justified by their potential impact and rise of sales and profitability in the long term. Another important aspect to be considered is to avoid overwhelming the customer with excessive interactive features. Sensory overload can negatively affect willingness to purchase due to interface complexity and worse user experience.

3. Hypotheses

H1: The key types of perceived risk influencing a customer's decision whether to shop online or in-store are performance risk and time risk.

H2: Perceived product risk of purchasing tactile products is higher online than in-store.

Since consumer behavior and approach to shopping for high-involvement and low-involvement products are different, it makes sense to distinguish between these two categories of products when assessing their product risk. Low-involvement products, routine,

everyday items, or products that carry lower perceived risk, can often be also an effect of spontaneous purchase decisions, or a choice that wasn't thought through, made only by inspecting the product itself. It is safe to assume that for these an in-store environment would make the perceived product risk lower than online. Contrarily, when shopping for high-involvement products, customers tend to invest more time researching the product, looking for reviews and product specifications, and using comparison tools to look for better options, offers, or pricing. A valid hypothesis would be that product uncertainty could be higher in-store, where that information isn't made easily accessible to the customer. For better accuracy, the second hypothesis has been divided into two more specified hypotheses depending on the level of involvement:

H2.1: The performance risk of low-involvement tactile products is higher in online purchases than in-store.

H2.2: The performance risk for high-involvement tactile products is lower in online purchases than in-store.

4. Methodology

To tackle the problem statement, complete the remaining research objectives, and test the hypotheses, a quantitative approach was taken through an online survey with 18 questions in total. This approach was selected due to its capacity to collect quantifiable, structured data to find correlations, links, and potential causes between consumers' behaviors and views. By combining descriptive and inferential data, the survey made it possible to identify trends and do statistical analysis with SPSS.

The online survey (Appendix 1) was conducted and available to complete between the 9th and 19th of December and distributed on different online and social media platforms, including Instagram, Facebook, Messenger groups, WhatsApp groups, and a survey-sharing online platform, SurveySwap.io.

Screening Questions

To ensure that respondents had relevant data and insights, the first two questions were used to ensure that the survey could be completed only by consumers having shopped for tactile products (either cosmetics, shoes, clothes, electronics, or furniture) whether online or in-store within the last 6 months. As tactile products include products that require sensory interactions they could be classified into one of the mentioned categories. For people who didn't meet these requirements, the survey ended there.

Product Involvement

The following three questions of the survey (Appendix 1, questions 3-5), check whether the products mentioned are considered low or high involvement for the respondent. High-involvement products are products for which people dedicate more effort to researching before purchasing. They typically require more time looking for reviews, and recommendations, and use diverse comparison tools. Additionally, these are usually products that a consumer will put more financial investment into. Five products were given as examples: sneakers, t-shirts, perfumes, skincare products, and headphones. Each of them could be perceived by the respondent as either a low or high-involvement product depending on their individual preferences and priorities. The data was recoded into binary variables 0=low-involvement products and 1=high-involvement products.

These answers are crucial to be able to distinguish when analyzing how the perceived performance of products is different online or in-store and to answer the second hypothesis (H2.1: The performance risk of low-involvement tactile products is higher in online purchases than in-store. H2.2: The performance risk for high-involvement tactile products is lower in online purchases than in-store.).

Perceived Performance Risk

Questions 6 and 7 (Appendix 1) were aimed at measuring confidence level in assessing the 5 mentioned products' performances compared in two different shopping environments. The responses will help to reveal any discrepancies in perceived performance across the two contexts - online and in-store. The last question of this section (Appendix 1, question 8) is a control question to check whether the lack of confidence in a product's pre-assessment may not be as relevant in making a purchase decision. There may be many explanations as to why, even with uncertainty concerning the product's physical attributes, a person could still make a purchase, for instance, with low financial risk (in the case of free deliveries and returns) or according to the Construal Level Theory, abstract thinkers may prioritize symbolic representation or general conception over a product's physical qualities.

Comparison of shopping environments

The next section is dedicated to comparing factors influencing consumer preferences for both environments. Depending on their preferred shopping environment, respondents were asked to argue their stance and identify what features influenced their choice. For undecided respondents, different features have been listed to rank the importance that influences their decision. Preferred purchase context. These questions were aimed at identifying what areas

are most important for the customer and which risks to focus on more when trying to improve their shopping journey.

Risk mitigation

The final section (Appendix 1, questions 13 and 14) explored risk mitigation specifically for online shopping. Respondents who didn't majorly make their purchases online were asked about features that would make them more confident about this form of shopping. Options included better product visuals, detailed descriptions, secure payment options, reviews, and brand reputation. Each attribute reflects a different type of perceived risk that a customer may be concerned about before making a decision. By showcasing which areas customers would prefer to be improved, a better visualization of what solutions to mitigate those uncertainties and concerns can be deduced.

5. Results and analysis

The survey was answered by 124 respondents, of whom 116 passed the screening questions and were eligible to complete the remaining parts. The majority were female (65%), 75% were aged 27 years or younger, and 24% were people from outside of Europe, either from Asia or North America. The location question revealed that 20% lived in rural areas or small towns, 48% lived in medium or large cities and 32% stated they lived in metropolitan areas with over 1 million inhabitants.

The product category that was considered as the most high-involvement was skincare products, with 75% of respondents stating they do either a fair amount or extensive, in-depth research before purchasing, 78% of respondents stating they do price, brands and review comparisons across different websites and 65% stating they would invest relatively more money to ensure high quality. The product category that was perceived as the one requiring the lowest effort was t-shirts. 70% of respondents stated they do little to no research before purchasing, 30% would make comparisons across different websites and only 23% would pay a higher price to have better quality of the product (Appendix 2, Tables 4-6)

To resolve the first hypothesis, questions 9-12 (Appendix 1) were analyzed. Since the structure of the questions differs, the analysis has been divided into sections, first considering only the answers from respondents who decisively selected their preferred shopping context (either online or in-store from question 9, Appendix 1) along with the factors supporting their preference. Results show that those who chose online shopping as their preferred context did so primarily due to being capable of making price comparisons across different websites and

platforms (89%). Additionally, their arguments were predominantly related to time efficiency (over 80% selected „flexible shopping hours", „no need to travel or commute" and 68% „no waiting in queues"). Greater product variety and availability online compared to in-store was also a significant factor (79%) (Appendix 2, Table 1). For customers who preferred in-store shopping, the sample size was much smaller and only 15 people selected this option. As a result, findings can not be fully comparable. The vast majority (80% of respondents) stated that the ability to physically inspect, test, or try products is one of the main reasons for preferring offline shopping. Additionally, 9 respondents out of 15 mentioned the benefit of not having to wait for delivery, providing a time-related justification (Appendix 2, Table 2).

Answers to questions 10 and 11 were transformed into binary variables, each corresponding to a different type of risk that it is related to - either performance (tackling product risk), time, or financial aspects across the two shopping contexts. A binary logistic regression model was conducted, and while the model was statically significant, all predictors (financial, time, and product-related factors) explained the variation between shopping environments, none of them showed individual significance in revealing which aspect has the most importance (Appendix 3, Table 1 and 2). An explanation for this result may be attributed to the limited sample size, as more than half of respondents couldn't choose their preferred shopping context and selected „it depends". Those who selected options were mainly driven by price sensitivity, with over half ranking price and discounts as the most critical factor influencing their decision (Appendix 2, Table 3). The next three factors as highly relevant were closely related to product and performance assessment. Respondents highlighted access to product information and reviews as the second most influential aspect and product variety and accessibility as the third. Return policies and secure payment options were ranked lowest in importance (Appendix 3, Table 3). Likely, customers don't perceive any difference in payment security between online and in-store shopping. Nowadays, there is more confidence in e-commerce as more cybersecurity precautions are taken with external payment platforms and innovative payment methods, increasing trust in online transactions.

Each question resulted in diverse results. While product risk consistently was one of the highest-ranked factors that influence a customer's decision for their shopping environment, it is challenging to determine whether the second most important one could be a time-related or financial risk. The argument for easier price comparisons was popular among online shopping enthusiasts, and „price and discounts" by over half of undecided shoppers was ranked first. Further investigation is needed for more accurate conclusions, however, these results suggest

that financial aspects seem to be more significant than time-related ones when deciding between online or in-store shopping.

Table 1. Descriptive statistics, means of online and offline product assessment confidence for low and high-involvement products

	involvement level	**means**
confidence_online	low involvement	2.91
	high involvement	3.02
	TOTAL	**2.99**
confidence_instore	low involvement	3.85
	high involvement	3.88
	TOTAL	**3.87**

Data retrieved from SPSS

For the second hypothesis, results showed that across both shopping contexts, confidence in assessing a product's performance online was lower than in-store (see Table 1). According to descriptive statistics, the difference was more pronounced for low-involvement products (means for product assessment confidence equaled 3.85 in-store vs 2.91 online on a 1-5 scale) than for high-involvement ones (means: 3.88 in-store and 3.02 online) (Appendix 3, Table 4). At first glance, confidence levels seem to be influenced by the level of involvement. However, a two-way repeated measures ANOVA to test the interaction effect between those two revealed the interaction was insignificant ($p=0.570>0.05$) (Appendix 3, Table 5). The test indicated that the shopping environment has a significant effect on a person's confidence in product assessment, with in-store confidence levels consistently higher than online.

Results suggest that dividing the second hypothesis into H2.1 and H2.2, based on the level of involvement, cannot be statically supported. To verify the initial hypothesis that didn't consider the involvement level factor (H2: Perceived product risk of purchasing tactile products is higher online than in-store.) a paired samples t-test was performed to compare confidence levels across both environments. The overall mean for online confidence was 2.99, while in-store confidence was 3.87, reporting lower perceived product risk in in-store shopping (Appendix 3, Table 4). The p-value from the test confirmed the difference was statistically significant, and Cohen's d-effect size ($d=-0.61$) indicated a medium-to-large effect, showing that the difference is meaningful (Appendix 3, Table 6 and 7). The two shopping contexts were weakly and non-significantly correlated (Appendix 3, Table 8). Therefore, confidence in one context cannot predict the one in the other. This lack of

correlation shows that the products mentioned in the survey were perceived independently from each other and that all tactile products mentioned were perceived differently depending on the shopping environment.

The second test verified the original second hypothesis, which turned out to be statistically supported. The significant difference between confidence levels in assessing a product's performance showcased that there is a lower perceived product risk in-store than online.

Categorizing products based on their level of involvement generated inconclusive results. This could be because the diverse product categories cannot be broadly categorized based solely on their level of involvement. Each example relies on a different type of sensory interaction that customers depend on to effectively assess the product. Sneakers and clothing rely on touch and feel, and require the customers to try them on to determine if they meet expectations. A similar distribution trend can be observed between these two categories, in terms of confidence in assessing the products online, in-store, and likelihood to purchase them online (Appendix 2, Tables 7-9). One reason may be that respondents may apply similar measures to these categories as they rely on the same type of sensory interaction. On the other hand, perfumes rely heavily on smell, and their perceived performance lies in having a satisfactory scent. This category was stated as the one with the highest perceived product risk online, and it showed the greatest discrepancy compared to perceived product risk in-store (Appendix 2, Tables 7 and 8). A closer category is cosmetics, which also rely slightly on scent and texture, but more on long-term performance, which cannot be assessed immediately. Cosmetics were perceived as the ones with the lowest confidence in assessing performance in-store, with the smallest difference in means compared to online assessment (3.28 vs. 2.99) (Appendix 2, Tables 7 and 8). This may indicate that this category carries greater product risk overall, as its performance can only be evaluated after extended use over a longer period. Headphones for some people may be important to be aesthetically pleasing; however, their specifications and quality are primarily assessed through hearing sense. Only a small percentage of customers have extensive knowledge of the sound effects they want to achieve when purchasing electronic devices. Many people rely on descriptions, external reviews, and recommendations rather than their own personal product assessment. This may be one of the reasons why headphones had one of the lowest levels of confidence in product assessment in-store but the highest one online, and the difference between these two contexts was nearly insignificant (3.73 vs. 3.47) (Appendix 2, Tables 7 and 8).

To further explore the results, a t-test was conducted comparing the confidence level in assessing a product's performance and the likelihood of purchasing the product online. As previously mentioned, a greater uncertainty product's performance doesn't always imply that the consumer will not make an online purchase, especially in cases with low financial and time risk or in cases where the consumer is an abstract thinker, that doesn't require having access to a product's physical qualities. Both questions required an answer on a scale of 1 to 5, and despite overall confidence online averaging 2.99, the likelihood of purchasing scored higher at 3.64, showing a significant difference ($p<0.00$) with a mean difference of -0.65 (Appendix 3, Table 9 and 10). The two variables showed a significant correlation level of 51.3% (Appendix 3, Table 10). This suggests that confidence levels and purchase likelihood are related, with lower confidence correlating with a reduced likelihood of purchasing online. However, the higher purchase likelihood implies that even with greater product uncertainty, customers are still willing to buy online. All products showed that consumers are less confident in assessing their quality online, but in likeliness, for all products besides perfumes, over half of the respondents stated they are either likely or extremely likely to purchase them online.

Respondents who didn't predominantly shop online were asked which features would increase their confidence. The three most cited features were positive reviews and ratings, detailed product descriptions, and better product visualization (each of these aspects was chosen by over 60% of respondents). These findings emphasize the importance of accurate product representation for online retailers in effectively mitigating perceived product risk. Other relevant solutions included having improved return policies, whether financially more affordable, less burdening, or easier to manage. A significant aspect was also brand reputation. Companies must build a well-established reputation, ensuring customer satisfaction and reliability. A strong brand increases customer trust and loyalty, reducing perceived risk across all dimensions (Appendix 2, Table 10).

6. Limitations

Many limitations of the study can be named. To be able to acquire more accurate and impactful results for a specific retailer, it would be more effective to focus more on one geographic area, one country, and differentiate the results in terms of the size of the city that a respondent is located in. As much as it is an advantage to have a diverse sample and get different perspectives, the results may be too diversified as cultural differences could reflect

on mixed behaviors as well as the financial, systemic, and economic situation of a continent or country. For example, online shopping may not be as popularised or facilitated in one country as it is in another or rural areas. A larger sample size might give more reliable findings, however with only a bit over 120 responses, the survey should have been more directed towards a more specific target audience with more rigorous screening questions.

Another downside is the generalization of tactile products and the choice of product categories. The survey mentions five exemplary categories of tactile products, very different from one another. The aim was to give examples of products that require sensory interactions and could be viewed as either low or high involvement by the respondent. However, the nature of the interaction, whether it is touch, smell, or hearing could have a significant impact on the risk perception by the customer, especially when analyzing the preferred shopping context. It could be that an unsatisfactory tactile or auditory experience is not as relevant as an unfavorable smell of a product. Respondents identified perfumes as the least likely to be purchased online, whereas most showed little hesitation in purchasing sneakers or headphones online. Again, it would be more effective to focus on one group of products that share common characteristics and attributes that could show more comparable results.

The third main limitation lies in the constantly changing attitudes in consumer behavior. E-commerce is a highly dynamic industry, driven by trends, seasonality, or economic or political circumstances. It may be likely that findings might differ based on seasonal factors, such as Christmas versus summer. In the same way, findings might be different during an economic or political crisis than in normal circumstances. Moreover, the whole e-commerce industry constantly changes, marketing strategies, social media, online communication, and customer preferences evolve more each year and some issues with online purchases that were more significant in the past may have been resolved or partially mitigated already.

7. Conclusions

With every purchase inevitably comes uncertainty, which is categorized into subjective and objective. The subjective one called perceived risk, influences a customer's decision-making process and is controllable by retailers, who can learn to address, mitigate, or even eliminate it. It is important to understand how to categorize, differentiate, and address concerns that lie on the customer's side to provide an improved customer journey experience and maintain customer satisfaction which then contributes to higher customer retention, new purchasers, improved performance, lower follow-up costs, and better contribution margin.

Confidence levels for purchasing online in comparison to in-store are lower, therefore there is greater customer uncertainty in this environment. Perceived risk can be identified as mainly related to financial, psychological, social, performance, or time-related factors. For tactile products, which rely on sensory interactions, the main challenges of online shopping lie predominantly in greater perceived product risk, which was confirmed in the study analysis. The incapability of physically interacting with products contributes to higher mental intangibility, which refers to the difficulty consumers have imagining a credible picture or evaluation of a product and its qualities. To mitigate physical product risk, the key tools should facilitate capturing an accurate image of the product without interacting with it to reduce mental intangibility. The best solutions for retailers to address this are by providing detailed product descriptions, including product reviews and ratings, and accurate product representation. Quality photos and videos are the standard way of showing a product's appearance, but to recreate the sensory experience that is lacking in the online market, 3D visualizations can better reflect a product's physical properties and attributes, such as texture, material, and color. Moreover, the implementation of AR technology enables emphasizing sensory engagement with virtual try-ons or visualization tools. These solutions aim to enhance and appeal to the more concrete thinker type, who mainly pays attention to tangible aspects of a product. These are the types of customers, who are heavily influenced by sensory interactions and value more physical characteristics, functional attributes, or usability of an item.

Product risks for more abstract-thinking customers are more often related to social and psychological aspects rather than their physical properties. To speak to these types of customers, retailers must preserve a well-maintained reputation, adjust their branding to specific target customers, and be wary of their image. Products must be marketed in terms of what they represent symbolically, and socially, or what values or aesthetics they convey. Consumers may overlook physical shortcomings if the product aligns with their ideals or desired self-image. Therefore, quality, focused campaigns, celebrity endorsement, influencer marketing, and social media engagement may increase the confidence of abstract thinkers in purchasing.

While online purchases are associated with additional costs such as delivery and potential costs of return, which increase financial risk, they also enable easy price comparisons across websites, reducing this risk. To minimize this perceived risk, online retailers offer free returns if made up to a certain period, and sometimes free delivery if the consumer spends over a

certain amount. In this way, confidence levels rise, customers are more likely to pay a higher amount and are less reluctant to make a risky purchase, as the consequences of a bad purchase decision will not mean they will have to spend more. Additionally, companies sometimes offer extra discounts for loyalty members, either for returning clients or for those who acquire a membership. Creating a sense of belonging and access to special offers increases loyalty and returning customer rates as well as giving the feeling of saving money when the customer benefits from those offers.

Following the same thought process, online purchases allow a customer to save time by avoiding travel or being restricted by store hours, which effectively reduces time risk, however, having to wait for delivery and dealing with possible returns naturally increases it. To tackle the perceived time risk during online shopping, giving an approximate date of delivery, and making sure the customer is provided with tracking options, which gives a sense of control over the time of delivery, reduces uncertainty, and makes it possible for the customer to organize their pick-up schedule. Moreover, during high-season periods, companies often give a guarantee of delivery by a specific date. For example, orders made by a certain deadline will be shipped to arrive before Christmas. Some food ordering and fast-delivery platforms offer extra discounts or even a full refund, in cases when the time of delivery exceeds a specified time, which effectively mitigates perceived time risk. Unfortunately, the analysis could not determine which type of perceived risk, financial or time-related, is most critical for online retailers to address.

The decision-making process may be influenced by whether the product purchased is perceived as a low or high-involvement one. The lower the level of involvement, the lower the effort, care, or expectations that the customer has towards it, and therefore the perceived risk they feel during the purchase. High-involvement products have higher expectations as customers tend to invest more time, money, and effort to make a decision, thus perceived risk will be relatively higher. Unfortunately, it could not be verified whether the level of involvement influences a customer's behavior in choosing their preferred shopping context as tests showed no significance. After further investigation, a better fit might be to check if the nature of the sensory interaction, whether it is touch, feel, scent, or hearing, has a greater influence on this decision and which aspects are most relevant for online retailers to address.

There are many ways of refining the study to acquire desired outcomes and more focused data, exploring perceived risk in e-commerce. To have more concise results, a better solution would be to focus on one tactile product category, such as furniture, cosmetics, skincare,

clothing, and a more targeted area of research either geographically or demographically. Findings may differ depending on location-based specifications or demographic variations. Different generations may exhibit different shopping behavior, which can be related to their comfortability to navigate and adopt new technologies, or their level of engagement on social media. Furthermore, it would be interesting to study a time-based approach to consumer behavior dependent on either a short-term impact by seasonality or trends, or in the long-term influenced by technological advancements, economic changes, or marketing strategies and brand building by companies. The topic of perceived risk is very broad and can be tackled from many different perspectives.

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Appendices

Appendix 1

Online survey

Intro

Thank you for participating in this survey!

This survey aims to better understand consumer preferences and experiences with shopping. It will take you approximately 5-7 minutes to complete this questionnaire, and your responses will remain anonymous.

Your time and feedback is greatly appreciated :)

Screening questions

1. Have you shopped for products online or in-store in the past 6 months? (Yes/No) (if „No"-> end survey)

2. Which of the following product categories have you purchased in the past 6 months? (Check all that apply: cosmetics, shoes, clothes, electronics, furniture, none of them) (if „None of them"-> end survey)

Level of involvement

3. On a scale of 1 to 6, how much effort would you typically dedicate to researching before purchasing the following products? (Matrix for each product: 1 - No research, 2 - Minimal effort, 3 - A little research, 4 - Some research, 5 - A fair amount of research, 6 - Extensive, in-depth research)

- Sneakers
- T-Shirts
- Perfumes
- Skincare products
- Headphones

4. For which of these products would you compare prices, brands or reviews across different stores or websites? (Multiple answers question)

- Sneakers

- T-Shirts
- Perfumes
- Skincare products
- Headphones

5. For which of the following products would you consider spending relatively more money to ensure high quality?

- Sneakers
- T-Shirts
- Perfumes
- Skincare products
- Headphones

Perceived performance risk

6. How confident are you in assessing the quality of these products online? (For each product: 1 - Not at all confident, 2 - Barely confident, 3 - Somewhat confident, 4 - Very confident, 5 - Completely confident)

- Sneakers
- T-Shirts
- Perfumes
- Skincare products
- Headphones

7. How confident are you in assessing the quality of these products in store? (For each product: 1 - Not at all confident, 2 - Barely confident, 3 - Somewhat confident, 4 - Very confident, 5 - Completely confident)

- Sneakers
- T-Shirts
- Perfumes
- Skincare products
- Headphones

8. How likely would you be to buy these products online? (For each product: 1 - Extremely unlikely, 2 - Somewhat unlikely, 3 - Neither like nor unlikely, 4 - Somewhat likely, 5 - Extremely likely)

Shopping behaviour

9. Do you prefer to shop online or in-store? (Multiple choice)

- Online (if yes then question 10)
- In-store (if yes then question 11)
- Depends (if yes then question 12)

10. Online-> Why? (Multiple choice)

- Greater product variety and availability
- Easier price comparisons
- More frequent discounts and promotions
- Flexible shopping hours (no time schedule restrictions)
- No waiting in queues
- No need to travel or commute
- Access to customer and product reviews
- More detailed product information and descriptions
- Convenient return and warranty policies
- Ability to shop from any location
- Generally better prices
- Other (please specify)___

11. In-store-> Why? (Multiple choice)

- Ability to physically inspect the product for quality
- Opportunity to try-on or test products
- Immediate access to purchased items (no delivery wait)
- Lower risk of having to return the product
- Personalized customer support or expert advice
- A more enjoyable and immersive shopping experience
- Simple and intuitive shopping journey
- Greater trust in payment security

- Easier to resolve issues (e.g., exchanges, complaints)
- Convenient location
- Other (please specify)___

12. Depends -> Rank in order the importance of these factors that define your choice:

- Price and discounts
- Product accessibility and variety
- Time efficiency (quick shopping journey)
- Ability to physically assess the product
- Flexible and easy return policies
- Secure payment options
- Access to detailed product information and reviews

Risk mitigation for online shopping

13. How often do you shop online compared to in-store?

- Never
- Sometimes
- About half the time
- Most of the time
- Always

-> If „Most of the time" or „Always" then skip next question

14. Which features would make you feel more confident about purchasing online? (Multiple answers question)

- Better product visual representation
- Better return policies
- Positive user reviews and ratings
- Brand reputation
- Secure payment options
- Detailed product descriptions and informations
- Other (please specify)___

Demographics

15. Choose your gender

- Male
- Female
- Non-binary/third gender
- Prefer not to say

16. Choose your age

- Under 18 years old
- 19-27 years old
- 28-43 years old
- 44-59 years old
- 60 years old or more

17. Where do you live?

- Rural area (less than 10,000 inhabitants)
- Small town (10,000–50,000 inhabitants)
- Medium city (50,000–250,000 inhabitants)
- Big city (250,000 -1 mln inhabitants)
- Metropolitan (over 1 mln inhabitants)

18. In what country do you reside at the moment? (open question)___

Appendix 2

Table 1. Answers to question 10, appendix 1

Why? (select your main reasons)	Percentage	Count
Greater product variety and availability	79%	22
Easier price comparisons	89%	25
More frequent discounts and promotions	46%	13
Flexible shopping hours (no time schedule restrictions)	82%	23
No waiting in queues	68%	19
No need to travel or commute	86%	24
Access to customer and product reviews	57%	16
More detailed product information and descriptions	39%	11
Convenient return and warranty policies	32%	9
Ability to shop from any location	61%	17
Generally better prices	39%	11

Table 2. Answers to question 11, appendix 1

Why? (select your main reasons)	Percentage	Count
Ability to physically inspect the product for quality	80%	12
Opportunity to try-on or test products	80%	12
No delivery wait	60%	9
Lower risk of having to return the product	53%	8
Personalized customer support or expert advice	13%	2
A more enjoyable shopping experience	20%	3
Simple and intuitive shopping journey	27%	4

Greater trust in payment security	20%	3
Easier to resolve issues (e.g., exchanges, complaints)	20%	3
Convenient location	27%	4

Table 3. Answers to question 12, appendix 1

Please rank in order the importance of these factors that define your choice	1	2	3	4	5	6	7
Price and discounts	29	8	8	5	3	0	0
Product accessibility and variety	7	8	10	9	7	9	3
Time efficiency (quick shopping journey)	2	8	9	5	9	10	10
Confidence in assessing the product	5	7	5	15	8	6	7
Flexible and easy return policies	0	3	3	8	13	12	14
Secure payment options	4	4	8	4	9	12	12
Access to detailed product information or reviews	6	15	10	7	4	4	7

Table 4. Answers to question 3, appendix 1

On a scale of 1 to 6, how much effort would you typically dedicate to researching before purchasing the following products?	No research	Minimal effort	A little research	Some research	A fair amount of research	Extensive, in-depth research
Sneakers	5	10	12	26	37	9
T-Shirts	10	34	24	17	10	3
Perfumes	6	5	9	22	33	23

Skincare products	3	2	6	12	42	33
Headphones	1	3	8	14	44	28

Table 5. Answers to question 4, appendix 1

For which of these products would you compare prices, brands or reviews across different stores or websites?	Percentage	Count
Sneakers	67%	68
T-Shirts	29%	29
Perfumes	65%	66
Skincare products	77%	78
Headphones	76%	77

Table 6. Answers to question 5, appendix 1

For which of the following products would you consider spending relatively more money to ensure high quality?	Percentage	Count
Sneakers	56%	55
T-Shirts	23%	23
Perfumes	49%	49
Skincare products	66%	65
Headphones	77%	76

Table 7. Answers to question 6, appendix 1

How confident are you in assessing the quality of these products online?	Average	Minimum	Maximum	Count
Sneakers	2.98	1.00	5.00	97
T-shirt	3.24	1.00	5.00	97
Perfumes	2.27	1.00	5.00	97
Skincare products	2.99	1.00	5.00	97
Headphones	3.47	1.00	5.00	97

Table 8. Answers to question 7, appendix 1

How confident are you in assessing the quality of these products in store?	Average	Minimum	Maximum	Count
Sneakers	4.03	1.00	5.00	97
T-shirt	4.24	1.00	5.00	97
Perfumes	3.99	1.00	5.00	97
Skincare products	3.28	1.00	5.00	97
Headphones	3.73	1.00	5.00	97

Table 9. Answers to question 8, appendix 1

How likely would you be to buy these products online?	Average	Minimum	Maximum	Count
Sneakers	3.65	1.00	5.00	97
T-shirt	04.01	1.00	5.00	97
Perfumes	2.73	1.00	5.00	97
Skincare products	3.61	1.00	5.00	97
Headphones	4.20	1.00	5.00	97

Table 10. Answers to question 14, appendix 1

Which features would make you feel more confident about purchasing online?	**Percentage**	**Count**
Better product visual representation	60%	34
Better return policies (easier or cheaper)	51%	29
Positive user reviews and ratings	68%	39
Brand reputation	47%	27
Secure payment options	35%	20
Detailed product descriptions and informations	65%	37
Other (please specify)	7%	4

Appendix 3

Table 1. Results of the binary logistic regression - overall model, data retrieved from SPSS

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	31,727	3	<,001
	Block	31,727	3	<,001
	Model	31,727	3	<,001

Table 2. Results of the binary logistic regression - variables, data retrieved from SPSS

Variables in the Equation

		B	S.E.	Wald	df	Sig.
Step 1[a]	performance_all	-21,004	11507,083	,000	1	,999
	financial_all	22,796	11507,083	,000	1	,998
	time_all	21,659	14576,816	,000	1	,999
	Constant	-20,966	14576,817	,000	1	,999

Table 3. Descriptive statistics of question 12, appendix 1, data retrieved from SPSS

Statistics

		Please rank in order the importance of these factors that define your choice – Price and discounts	Please rank in order the importance of these factors that define your choice – Product accessibility and variety	Please rank in order the importance of these factors that define your choice – Time efficiency (quick shopping journey)	Please rank in order the importance of these factors that define your choice – Confidence in assessing the product	Please rank in order the importance of these factors that define your choice – Flexible and easy return policies	Please rank in order the importance of these factors that define your choice – Secure payment options	Please rank in order the importance of these factors that define your choice – Access to detailed product information or reviews
N	Valid	51	51	51	51	51	51	51
	Missing	1314	1314	1314	1314	1314	1314	1314
Mean		1,98	3,80	4,59	4,10	5,29	4,80	3,43
Median		1,00	4,00	5,00	4,00	5,00	5,00	3,00
Mode		1	3	6[a]	4	7	7	2
Skewness		1,031	,073	-,282	-,029	-,618	-,558	,675
Std. Error of Skewness		,333	,333	,333	,333	,333	,333	,333
Kurtosis		-,183	-1,101	-1,214	-,865	-,351	-,840	-,699
Std. Error of Kurtosis		,656	,656	,656	,656	,656	,656	,656
Sum		101	194	234	209	270	245	175

a. Multiple modes exist. The smallest value is shown

Table 4. Two-way repeated measures ANOVA test, descriptive statistics, data retrieved from SPSS

Descriptive Statistics

	low and high	Mean	Std. Deviation	N
confidence_online	low involvement	2,91	1,109	135
	high involvement	3,02	1,111	320
	Total	2,99	1,111	455
confidence_instore	low involvement	3,85	1,062	135
	high involvement	3,88	,962	320
	Total	3,87	,991	455

Table 5. Two-way repeated measures ANOVA test, within-subjects effects, data retrieved from SPSS

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
ShoppingContext	Sphericity Assumed	153,297	1	153,297	146,057	<,001	,244
	Greenhouse-Geisser	153,297	1,000	153,297	146,057	<,001	,244
	Huynh-Feldt	153,297	1,000	153,297	146,057	<,001	,244
	Lower-bound	153,297	1,000	153,297	146,057	<,001	,244
ShoppingContext * Involvement	Sphericity Assumed	,339	1	,339	,323	,570	,001
	Greenhouse-Geisser	,339	1,000	,339	,323	,570	,001
	Huynh-Feldt	,339	1,000	,339	,323	,570	,001
	Lower-bound	,339	1,000	,339	,323	,570	,001
Error(ShoppingContext)	Sphericity Assumed	475,457	453	1,050			
	Greenhouse-Geisser	475,457	453,000	1,050			
	Huynh-Feldt	475,457	453,000	1,050			
	Lower-bound	475,457	453,000	1,050			

Table 6. Paired samples t-test, between-subjects effects, data retrieved from SPSS

Tests of Between-Subjects Effects

Measure: MEASURE_1

Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	8853,902	1	8853,902	7576,141	<,001	,944
Involvement	,812	1	,812	,695	,405	,002
Error	529,401	453	1,169			

Table 7. Cohen's d-effect paired samples effect size, confidence in-store and online, data retrieved from SPSS

Paired Samples Effect Sizes

			Standardizer[a]	Point Estimate
Pair 1	confidence_online - confidence_instore	Cohen's d	1,448	-,609
		Hedges' correction	1,450	-,608

Table 8. Paired samples online and in-store confidence correlations, data retrieved from SPSS

Paired Samples Correlations

		N	Correlation	Significance One-Sided p	Significance Two-Sided p
Pair 1	confidence_online & confidence_instore	455	,054	,123	,246

Table 9. Paired samples test, online confidence and likelihood of purchasing, data retrieved from SPSS

Paired Samples Test

		Paired Differences					t	df	Significance One-Sided p	Significance Two-Sided p
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper				
Pair 1	confidence_online - likeliness to buy online (merged)	-,648	1,241	,058	-,763	-,534	-11,140	454	<,001	<,001

Table 10. Paired samples correlation, online confidence and likelihood of purchasing, data retrieved from SPSS

Paired Samples Correlations

		N	Correlation	Significance One-Sided p	Significance Two-Sided p
Pair 1	confidence_online & likeliness to buy online (merged)	455	,513	<,001	<,001