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# How to reduce perceived risk when buying online: The interactions between intangibility, product knowledge, brand familiarity, privacy and security concerns



Marcelo Vinhal Nepomuceno<sup>a,1</sup>, Michel Laroche<sup>b,\*</sup>, Marie-Odile Richard<sup>c</sup>

<sup>a</sup> Department of Marketing ESCP Europe 79, avenue de la République, 75543 Paris cedex 11, France

<sup>b</sup> Concordia University, Department of Marketing, John Molson School of Business, Montreal, Quebec, Canada H3G 1M8

<sup>c</sup> Independent researcher

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## ABSTRACT

This paper studies how product intangibility and its moderators affect perceived risk in an online shopping setting. The moderators studied were brand familiarity, product knowledge, privacy concerns and security concerns. Student samples performed online experimental tests, wherein product intangibility was manipulated. The findings indicate that both mental intangibility and physical intangibility increased perceived risk. Mental tangibility had more impact over perceived risk than physical tangibility. This study is the first to show how intangibility, product knowledge, brand familiarity, privacy and security concerns interact and affect perceived risk. Previous studies did not have the opportunity to observe the interactions of these relevant dimensions, thus not identifying which one would have a stronger effect over the perceived risk of buying online. In short, we found that when interacting with intangibility security and privacy concerns increase perceived risk to the same degree. On the other hand, product knowledge reduces the perceived risk more than brand familiarity.

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## 1. Introduction

Online shopping continues to have a strong and steady growth. According to the *U.S. Census Bureau (2009)*, yearly-adjusted online retail sales grew at rates superior to 20%, from the fourth quarter of 1999 to the third quarter of 2008. This strong increase explains why e-commerce accounted for 0.6% of the total sales in the U.S. in 1999, but 3.5% of total sales in 2009. This growth kept pace even during the recent economic crisis, as online retail sales accounted for 4.9% of total sales in the first quarter of 2012 (*U.S. Census Bureau, 2012*). Due to the increasing importance of online shopping, researchers should investigate why some people buy through this medium and why others are still reluctant to use it.

Several factors may explain the resistance of consumers to online shopping. In this study we look at perceived risk, defined as the subjective expectation of loss (*Mitchell, 1999*). Perceived risk plays an important role when buying online (*Bhatnagar and Ghose, 2004; Tan, 1999*), because in this setting consumers feel insecure about their purchase decisions. This increased perception of risk seems to derive from the online purchase scenario. Online tangible products might be perceived as intangible ones, because

consumers have no direct contact with the goods being purchased (*Peterson et al., 1997*). Furthermore, privacy and security concerns might also discourage someone from purchasing online (*Eastlick et al., 2006*), also reducing the amount spent (*Akther, 2012*). In sum, it seems clear that online settings pose risks that partially explain consumers' resistance to them.

In addition, there are factors that reduce the perceived risk (PR) of buying online. For example, consumers who are highly informed about a product should be more confident to buy it online, as expertise might compensate for lack of contact with the product. Similarly, buying a product from a familiar brand might reduce the PR of buying online, as consumers know what to expect from a familiar brand (*Morgan-Thomas and Veloutsou, 2013*). While brand familiarity and product knowledge reduce PR, privacy and security concerns increase it. These assertions are expected, but what is less clear is how these factors interact. What should increase the PR of buying online more, privacy or security concerns? Conversely, what would decrease PR more, brand familiarity or product knowledge? Does, for example, brand familiarity compensate for privacy concerns? These questions are important not merely because they tackle important issues faced by practitioners. In effect, by answering these questions we extend our knowledge about consumer behavior, as these factors co-exist in consumers' minds. By testing which dimension is more relevant, and how they interact, we extend our knowledge as to how to decrease the perceived risk of buying online.

\* Tel.: +1 514 848 2424; fax: +1 514 848 4576.

E-mail addresses: [mnepomuceno@escpeurope.eu](mailto:mnepomuceno@escpeurope.eu) (M.V. Nepomuceno), [laroche@jmsb.concordia.ca](mailto:laroche@jmsb.concordia.ca) (M. Laroche), [marie-odile.richard@hec.ca](mailto:marie-odile.richard@hec.ca) (M.-O. Richard).

<sup>1</sup> Tel.: +33 1 49 23 22 57.

## 2. Literature review

### 2.1. Intangibility and perceived risk (PR)

Traditionally, intangibility is defined as "what cannot be seen, tasted, felt, heard or smelled" (Mittal, 1999). However, this definition fails to consider other aspects of intangibility such as the mental dimension. In time, a product that is mentally intangible is one that is hard to be imagined, remembered or simply mentally grasped (McDougall and Snetsinger, 1990; Mittal, 1999; Laroche et al., 2001). Authors have described a third dimension of intangibility, namely generality (Laroche et al., 2001). This dimension describes if the product is specific or not. However, this dimension is not measured in this study, as it is difficult to be manipulated in an experimental setting. In other words, it is not possible to make a product appear less specific while maintaining it mentally or physically tangible. Therefore, we did not manipulate this dimension.

Online shopping has two impacts on intangibility. First, it increases the intangibility of physically tangible products. Many consumers are resistant to e-commerce because of its inability to provide physical cues (Featherman and Pavlou, 2003). Second, though the internet can tangibilize the intangible (Berthon et al., 1999), by providing information (Thakor et al., 2004), the online setting is perceived as more intangible than traditional channels (Lee and Tan, 2003; Lin et al., 2009). That is because the website cannot be touched, felt or smelled, but only seen.

Whereas the online setting impacts intangibility, the latter also impacts PR. In general, the more a product is seen as intangible, the more it is perceived as risky (Brasil et al., 2008; Laroche et al., 2001; Mitchell and Grotorex, 1993). Because consumers are unable to physically examine an object when buying online, they might be more concerned that the item would not perform as expected (Simonian et al., 2012). We only look at the impact of intangibility on three types of risk. The first is performance risk, which is the potential loss occurred by the failure of a product to perform as expected (Mitchell, 1999). As pointed by previous studies, consumers who are unable to physically examine an apparel are concerned that the item would not perform as expected (Simonian et al., 2012). The second type is financial risk, defined as the potential loss of money by purchasing an item or a service (Grewal et al., 1994). This type of risk is important because consumers who purchase online could fear that the product may not be delivered, resulting in frustrating financial costs (Salam et al., 2003). Finally, we look at time risk, which is the potential loss of time and effort for purchasing a bad product (Featherman and Pavlou, 2003). This type of risk is important because the underperformance of an unexamined product might result in the perception that time and effort are being wasted (Featherman and Pavlou, 2003). We did not look at other types of risk, such as psychological and social risks, because research indicated that they are less important in online settings (Featherman and Pavlou, 2003). Social risk plays a non-significant impact on online shopping, while psychological risk is five times less important than financial risk and roughly three times less important than time risk. Considering these effects, to maintain the questionnaire at a manageable size, we disregarded these two dimensions.

### 2.2. Moderators: Product knowledge, brand familiarity, privacy and security concerns

We test which of these moderators have a stronger impact on PR when interacting with intangibility. In other words, we investigate if privacy and security concerns increase the negative impact of intangibility on PR, and if brand familiarity and product knowledge compensate for the effects of intangibility and privacy and security concerns. These questions are important because a

person purchasing online might be simultaneously concerned with privacy, while highly familiar with a brand.

Even though these moderators were extensively studied in the literature, they were chosen for this study because previous studies have not demonstrated how they interact. For example, studies showed that the relationship between intangibility and PR is weaker for high-product knowledge individuals than for low-product knowledge ones (Laroche et al., 2003, 2005, 2010). There is also evidence that privacy concerns increase the PR of buying online (Nepomuceno et al., 2012). However, little is known about how these dimensions might interact. Would product knowledge compensate for privacy concerns, or will privacy concerns always lead to an increased PR, regardless of one's knowledge about a product? This question is relevant for theory development, as it extends our knowledge about how PR online is formed. Furthermore, this question is relevant for practitioners, as they can use the findings to reduce the PR more efficiently.

Privacy and security concerns have an important role on explaining consumers' resistance to online purchases (Bart et al., 2005; Mothersbaugh et al., 2012; Taylor et al., 2009). Consumers who believe that malicious individuals can breach one's private information via the internet (Miyazaki and Fernandez, 2001), and those who believe that online transactions are susceptible to frauds and thus not secure should be even less likely to purchase online. This occurs as intangibility, privacy and security concerns should increase the PR of buying online. Consequently, high intangibility combined with high concerns for privacy and security should significantly increase PR. That is because several negatively loaded pieces of information are processed simultaneously (Nepomuceno et al., 2012).

Although both privacy and security concerns should increase the impact of intangibility on PR, what is unclear is which of the two has a stronger impact. When buying online, consumers are often asked to fill forms providing personal information, such as age, name and address. Likewise, consumers are asked to pay using credit cards or other financial means. One could argue that the fear of being susceptible to fraud (i.e. security concerns) has a stronger impact than the fear of having personal information leaked (i.e. privacy concerns). That is because being susceptible to fraud causes several inconveniences, particularly financial ones. On the other hand, having one's identity detected by a third-party will lead to smaller consequences, such as receiving unwanted advertisements. Therefore, we test:

**H1.** The relationship between intangibility and PR will be more strongly moderated by security concerns than by privacy concerns.

Brand familiarity reduces PR. Studies on brand familiarity show that repeated exposure to a brand reduces PR and increases positive affects (Baker et al., 1986; Obermiller, 1985). When brand familiarity increases, the PR associated with it is reduced (Mieres et al., 2006) and trust is increased (Benedictus et al., 2010). A person who is familiar with a brand will be less concerned with the product's performance. Likewise, by knowing the brand he perceives less financial risk when purchasing it. Finally, brand familiarity should also reduce one's time risk, as a brand expert will need less time to evaluate the product. However, this rationale was not always found by previous studies. For instance, Huang et al. (2004) found that brand familiarity does not reduce PR (sales and service risks) of online shopping.

Differently to brand familiarity, product knowledge seems to have a stronger compensatory effect on PR. Whereas for brand familiarity mixed results were found, for product knowledge the literature seems more consistent. The more a person is informed about a product, the less PR he will notice when buying that particular product (Klerck and Sweeney, 2007; Laroche et al., 2003). In fact, the risk associated with buying a new product often

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