Need-for-touch and online purchase propensity: A comparative study of Portuguese and Chinese consumers

Paulo Duarte[a,*] pduarte@ubi.pt, Susana Costa e Silva[b] ssilva@porto.ucp.pt

[a]NECE - Research Unit in Business Sciences, Universidade da Beira Interior, Avenida Marquês D'Ávila e Bolama, 6201-001, Covilhã, Portugal

b[Instruction: Please change to "Católica Porto Business School"]Faculdade de Economia e Gestão, Universidade Católica Portuguesa, Rua Diogo Botelho, 1327, 4169-005, Porto, Portugal

*Corresponding author.

Abstract

This study analyses the impact of Need-for-Touch (NFT) on online purchase propensity by evaluating the influence of the consumer's country of origin. Although NFT has been a major topic of research over the past years, the link between NFT and purchase propensity has rarely been empirically proven. For assessing the relationship an online questionnaire was made available in Portugal and China. A total of 295 complete responses were obtained and the data studied through exploratory and confirmatory factor analysis, namely multivariate analysis of variance and structural equation modeling using AMOS. The results indicate that the consumer's country of origin seems to affect the relevance of the sense of touch for apparel. Consumers with high levels of NFT are more likely to engage in additional brand touchpoints and consequently having stronger brand experiences. The impact of perceived information credibility and brand experience on the perceived product quality influences the propensity to search and to purchase online. Consumer NFT was shown having no direct influence on online purchase propensity but instead is mediated by other variables such as brand experience and the online research propensity. This study is innovative by comparing the NFT between two very different cultures and by providing insights on the relationships between cultural differences and NFT, which could be of great interest for Portuguese companies planning on investing in the Chinese market and vice versa.

Keywords: Need-for-touch; Online purchase propensity; Haptic information; Cultural diversity; Portuguese; Chinese; Consumer behavior

1 Introduction

The retail sector has experienced tremendous changes in the past decade (Verhoef et al., 2015). The increased and streamlined internet access forced retailers to adopt internet-based solutions to fulfill consumers' expectations and continuously enhance the shopping experience (Punj, 2011). Despite being one of the most promising sectors, the online retail faces some imperfections, mainly associated with the absence of some sensorial elements, such as touch (Agardi and Dornyei, 2011) and scent (Weathers and Makienko, 2006; Grewal et al., 2004; Dholakia and Zhao, 2010). Need for touch (NFT) has been a dynamic topic of research over the last years, mainly due to these challenges that are imposed by the limitations of the digital environment. Therefore, a larger number and more diversified studies in terms of scope are needed to assert the impact of NFT on consumer decisions in online environments.

According to Peck and Childers (2003a, p. 431), "need for touch" (NFT) can be defined as "a preference for the extraction and utilization of information obtained through the haptic system". The haptic system is a powerful tool for consumers as it allows them to absorb product information, rank alternatives and decide on the product that better fits their preferences and establish physical and emotional connections with the product. Accordingly, for some consumers (called haptically-oriented consumers) the haptic information is prominent and, for so, they are more likely to use the haptic information during the products' evaluation process (Peck and Childers, 2003b; Lee et al., 2017). Thus, "haptically motivated consumers are more likely to be frustrated when shopping if they do not have the opportunity to experience products directly" (Peck and Childers, 2003a, p. 36).

Nuszbaum et al. (2010) and Rodrigues and Silva (2013) state that individuals have different motives and needs for touching products. The need to haptically examine products can be driven by the consumer's intrinsic motivation to either solve problems, reduce risk, seek fun, fantasy, and arousal or sensory stimulation and enjoyment (Peck and Wiggins, 2006).

Acknowledging that consumers have different motives and display different preferences when shopping online (Lee et al., 2017; Rathee and Rajain, 2019), the present study aims to expand the current knowledge on NFT by assessing the influence of consumers' cultural background on the level of need for touch displayed based on data from two very different countries and cultural contexts (Hofstede, 1980). Hence, this research aims to investigate the influence of the product NFT on the online purchase propensity through a comparative study with consumers from Portugal and China grounded on the cultural dimensions framework by Hofstede et al. (2010) for these two countries, particularly due to the high differences on uncertainty avoidance and in long term orientation.

Specifically, the current study aims to understand how does the product NFT varies between consumers from such different cultures and how does the consumer NFT affects the online purchase propensity. According to our knowledge, the current study stands out from the available literature on NFT as no previous study has

considered how differences in cultural backgrounds may impact NFT. Thus, this study's findings are valuable and innovative for both theory and practice.

2 Theoretical development

2.1 Need for touch and the decision-making process

According to Peck and Childers (2003a), the NFT is considered a motivational-based construct, rather than an ability-based construct, and it comprises two factors: the autotelic and the instrumental. The autotelic factor defines touch as an end, being noticeably hedonic in nature. The Autotelic touch is characterized as being mostly unintentional, spontaneous, automatic (Peck and Childers, 2003a, 2003b; Nuszbaum et al., 2010), and irresistible by nature (Hsu et al., 2010). According to Vieira (2013), (p. 483) "the autotelic touch dimension corresponds to the sensory aspect of product's touch with no purchase goal necessarily salient, but with the spontaneous investigation of multisensory psychophysical product relationships". According to this conception consumers touch products because it is fun, enjoyable, and sensory-stimulating.

Inversely, the instrumental factor connects the NFT with a salient purchase goal, being more controlled and conscious (Peck and Childers, 2003a, 2003b; Nuszbaum et al., 2010). Consumers who reveal a high level of instrumental NFT use touch to collect information about the product characteristics that are inaccessible through other means, helping them to decide if the product fits their preferences (Hsu et al., 2010). Some authors (e.g. Krishna and Morrin, 2008; Hsu et al., 2010) consider this is the only way to assure that a product is worth buying.

Despite the differences between the two dimensions of NFT, the literature places major emphasis on both types of NFT, particularly in the individual levels, its relevance to the decision-making process, and on the fact that it varies according to the nature and characteristics of the product (Chen et al., 2013). For example, NFT was found to be negatively correlated to products' perceived quality in online markets (San-Martín et al., 2017) since certain product categories, mainly those which vary in texture, weight, hardness, and temperature are more susceptible to elicit touch before the purchase decision is made. For instance, consumers may prefer a firm peach instead of a pulpy one (Nuszbaum et al., 2010; Peck and Childers, 2003b).

In general, the literature (e.g. Grohmann et al., 2007; Krishina and Morrin, 2008; Park and Ishii, 2012; Peck and Childers, 2003b; Peck and Shu, 2009; Peck and Wiggins, 2006; Wolf et al., 2008) shows a positive relationship between the product's tactile characteristics, its evaluation and the intention to buy it, especially in high-involvement product categories where the senses are very important to product evaluation (Workman, 2010), and for the decision-making process (Perry et al., 2013).

In online markets, the level of NFT is expected to be lower for products which attributes are easily and objectively judged and communicated online and do not require touch to evaluate then (Neslin et al., 2005). Despite some singularities, the following general hypothesis is proposed:

H1 *There is a positive relationship between consumer NFT and brand experience.*

Since high levels of NFT towards a product may negatively interfere on the consumer predisposition to purchase the product as suggested by Levin et al. (2003) and Cho and Workman (2011), who claimed that products with high NFT were not as likely to be bought online as low NFT products. Similarly, Manzano et al. (2016a) and Manzano et al. (2016b) found that consumers who buy online show a lower level of NFT on both dimensions, therefore it is proposed that:

H2 *There is a negative relationship between consumer NFT and online purchase propensity.*

2.2 Perceived credibility of the information

Pornpitakpan (2004) highlights that the credibility of the source has a direct impact on information recipients' attitudes and behaviors. Several authors (e.g. O'Keefe, 2002; Yoo and Gretzel, 2008; Willemsen et al., 2012) suggest that credibility is composed of different dimensions. Yet, most researchers believe that trustworthiness and expertise are the most relevant components, being trustworthiness the most important (Reichelt et al., 2014) and an antecedent of trust (Ko and Hur, 2014). Trustworthiness is associated with the intention of sharing specific information, and source integrity (O'Keefe, 2002; Willemsen et al., 2012). For its turn source expertise is related to the accumulation of skills, competencies, and knowledge and is frequently associated with the ability to influence others (Mayer et al., 1995). If the source is considered to be an expert on the matter will be more credible and the information recipients are more likely to be persuaded by the content of the message (Hovland and Weiss, 1951; Petty and Cacioppo, 1986).

Since the literature reveals the existence of a relationship between the source credibility and the recipients' attitudes and behaviors (Jain and Posavac, 2001), namely the perceived product quality (Zeithaml, 1988), the following hypothesis is proposed.

H3 *There is a positive relationship between perceived credibility of the information and perceived product quality.*

2.3 NFT and brand experience

Grewal et al. (2004) indicate that product characteristics and the brand are paramount in driving the online purchasing decision. Indeed, brands help in reducing consumers' perceived risk (Wang and Lin, 2016). The responses to brand stimuli may vary in strength and intensity and can be expressed by both customer and non-customer experience (Nysveen et al., 2013). Brand experience includes specific sensations and feelings (Brakus et al., 2009) but does not presuppose a motivational state since experiences can happen even if consumers are not involved with the brand (Brakus et al., 2009). Ishida and Taylor (2012) examined the brand experience construct in retailing suggesting the existence of three brand experience dimensions (sensory, behavioral, and affective), having altogether a strong impact on the evaluation of products.

As previous research indicates that brand experience is an important aspect when explaining several consumer-related behaviors in the online environment (Ha and Perks, 2005) and since NFT seems to be a precedent of brand experience (Moreira and Ferreira, 2013), the following hypotheses are proposed:

H4 There is a positive relationship between brand experience and perceived product quality.

H5 *There is a positive relationship between brand experience and online research propensity.*

2.4 Perceived product quality

The perceived product quality is different from the objective product quality and can be described as a subjective judgment or perception regarding product excellence or superiority (Zeithaml, 1988; Dodds et al., 1991; Chi et al., 2009). According to Garvin (1983), the perceived quality is based on the consumers' recognition, whereas the objective quality is sustained on the product or manufacturing characteristics. Thus, the perceived quality is a subjective assessment sustained on the overall subjective perception of the quality of the product (Zeithaml, 1988; Dodds et al., 1991; Chi et al., 2009). It is based on the product's excellence or superiority (Chi et al., 2009) and enhanced by its uniqueness, including premium price, positive store image, and strong brand names (Stone-Romero et al., 1997). Extant research supports the positive relationship between the perceived quality and the perceived value (Olshavsky, 1985). Specifically, it suggests that product perceived quality might be influenced by brand experience which for its turn may influence the online research propensity of consumers to try to guarantee the confidence in the product quality. For that the following hypothesis is proposed:

H6 *There is a positive relationship between perceived product quality and online research propensity*.

2.5 Online research propensity and purchase

According to Engel et al. (2001), the consumer's decision-making process can be divided into five consecutive stages: need recognition, information search, evaluation of alternatives, purchase, and post-purchase evaluation. From these stages, two are focal for this study, namely, information search and purchasing decision. The information research phase precedes the purchase and can occur both in physical and digital channels. Information search is important for consumers to be aware and compare the available alternatives according to their preferences, to rank them and to select the best option. Based on Rahman and Soesilo (2018) finding that information exposure has a significant effect on consumers' purchase intention, the following hypothesis is proposed:

H7 *There is a positive relationship between online research propensity and online purchase propensity.*

Fig. 1 depicts the proposed theoretical model with the hypothesis.

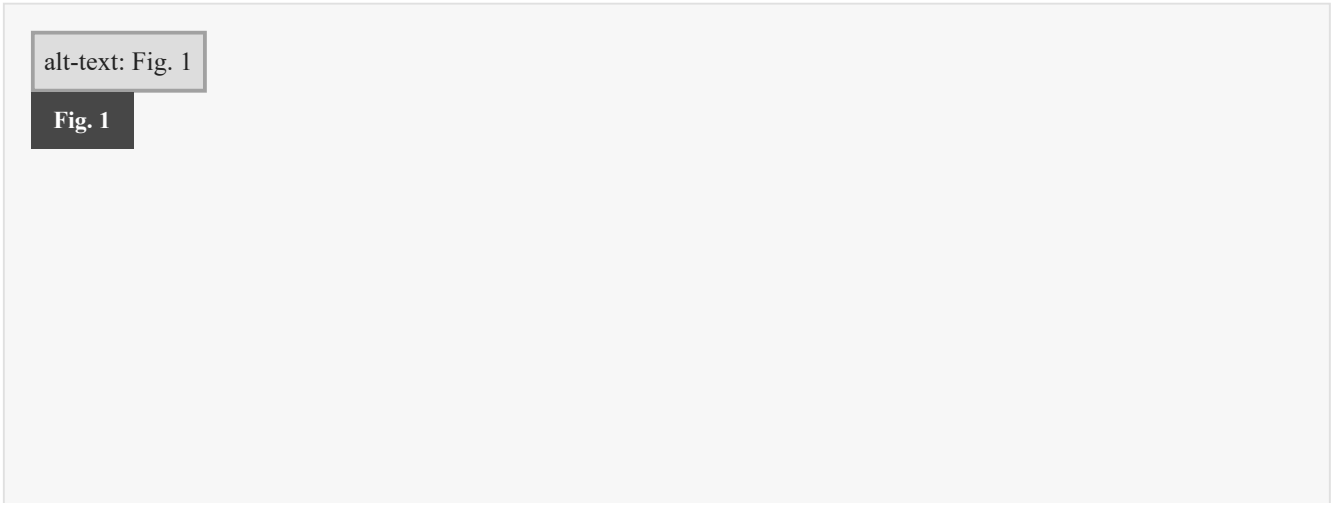
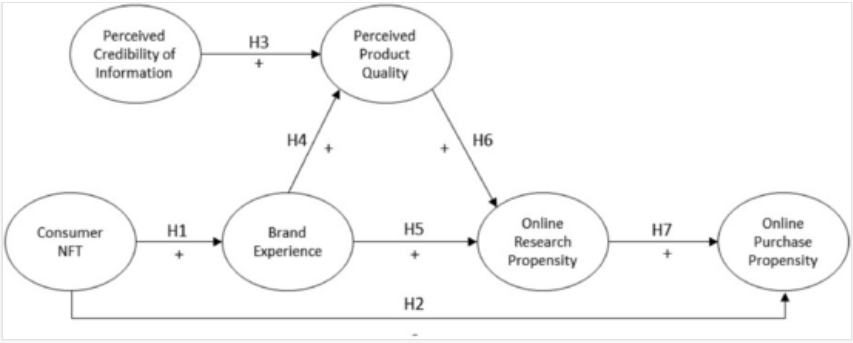


Fig. 1



Conceptual model.

3 Research methods

The current research follows a positivist paradigm and a quantitative methodology. Accordingly, to analyze the hypothesized relationships, an online survey was designed and made available in Portugal and China. Two versions were written, one in Portuguese and another one in Chinese. Multivariate analysis of variance and structural equation modeling using AMOS 24.0 was employed. The model was tested and validated for the two samples.

3.1 Sample and instrument

The research took place in Portugal and China and it was based on an online survey using Qualtrics Survey Software. The online survey was distributed in both countries with the collaboration of selected companies, universities, institutions, and individuals that shared the survey among their contacts using the snowball sampling technique. A total of 295 complete responses were obtained which is in line with other studies on the subject (e.g. Park, 2006).

The final sample is composed by 163 Portuguese (81 female with an average age of 28.8 years old and 82 males with an average age of 31.0 years old), and 132 Chinese (70 female with an average age of 32.3 years old and 62 males with an average age of 28.5 years old).

The survey was structured into four main sections, each one devoted to collect data on the focal constructs for the chosen product: a sweater. The sweater was chosen due to the specific characteristics of the product, namely the fabrics and the fact that it is a product bought worldwide with no major cultural bias associated. Besides, men and women can buy it in a similar decision-making process. To assure consistency in the perception of respondents an image of the sweater and basic written description, including price and composition was provided to participants.

The questionnaire was designed using validated scales available in the literature originally written in English but translated to Chinese and Portuguese. In both cases, the translation was made by native speakers. This procedure respects the indications by Harzing and Maznevski (2002), (p. 121), suggesting that “an instrument developed in one culture and language has to be translated into the language of the second culture, while at the same time preserving and maintaining the meaning of the original”. The two versions of the survey were pre-

tested to identify possible errors and problems and to evaluate if the items were accurately understood by the respondents to secure the validity of the content. The pre-test did not reveal any major concern so both versions were made available online for one month. Only the completed surveys were considered for further analysis. There were no missing values since all the questions were marked as mandatory.

3.2 Measures

To measure NFT the 12-item scale by Peck and Childers (2003a) was used. This scale has been extensively used in research for measuring NFT and has proven to have high reliability and validity and relates to the theoretical assumptions (Workman and Caldwell, 2007). Half of the scale aims the autotelic dimension and the other half the instrumental dimension of the NFT (see appendix). As for the evaluation of Information's Perceived Credibility, items from Gürhan-Canli and Maheswaran (2000); Sen et al. (2001); Gürhan-Canli and Batra (2004), and by Peck and Childers (2003b) were used. The scale by Peck and Childers (2003b) was used to measures the attitude confidence component. The 12-items' Brand Experience scale developed by Brakus et al. (2009), which includes four dimensions: sensory, affective, intellectual, and behavioral; was used to measure the construct. As for the Perceived Product Quality, the 5-items scale developed by Dodds et al. (1991) was selected.

The Online Research Propensity scale was measured using the 4-items scale from Sung (2009). For the Online Purchase Propensity, two scales were adopted, one by Kwon (2005) and another by Baker and Churchill (1977).

4 Results

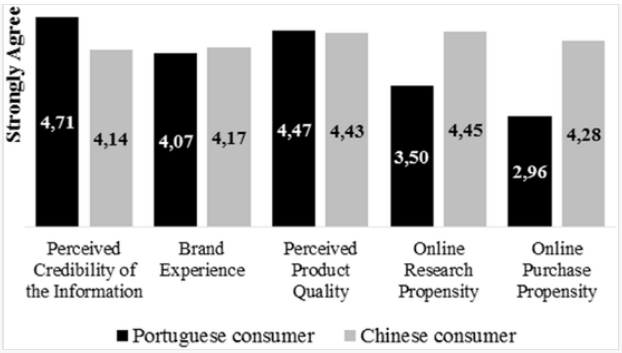
4.1 Descriptive statistics and reliability of the constructs

Chinese consumers showed higher NFT level than the Portuguese consumers with averages of 5.10 and 4.18 on a 7-point scale. Portuguese female displays higher NFT level than Portuguese male (with averages of 4.49 and 3.83 respectively). These results are in accordance with the findings from similar studies (Workman, 2010). Contrary to expected, Chinese women display lower NFT levels than Chinese men (5.32 and 4.92 respectively) which is an attention-grabbing finding.

The results regarding the autotelic and instrumental dimensions of NFT reveal that when compared Portuguese consumers display lower autotelic NFT than the Chinese consumers, 3.73 and 5.09 respectively (Fig. 2). This result suggests that for Chinese consumers the exploratory touch seems to be more irresistible in nature than for Portuguese consumers. Regarding the instrumental dimension, the Portuguese and Chinese consumers display almost identical instrumental NFT levels, 5.07 and 5.18.

alt-text: Fig. 2

Fig. 2



Summary of the constructs means values for Portuguese and Chinese consumers.

A significant difference between the autotelic and instrumental NFT for Portuguese consumers, 3.73 and 5.07 respectively is observed, which is not observable for Chinese consumers, who display similar autotelic and instrumental NFT levels.

As presented in Fig. 2, the mean of PCI, BE and PPQ constructs for Portuguese and Chinese consumers are similar. However, for the ORP and OPP constructs it is noticeable that there are significant differences between Portuguese and Chinese consumers for the same product. As an example, the mean of OPP regarding the sweater for Portuguese consumers is 2.96 while for Chinese consumers it is 4.28. These results also show that Portuguese consumers tend to research and purchase less through online channels than Chinese consumers, which is also a relevant finding, especially if a firm intends to sell online in China: Chinese consumers are eager to buy online, even though being more affected by NFT than Portuguese. This means that firms attempting to sell online in China must circumvent the problem of NFT, whereas the ones wishing to focus mainly in countries like Portugal must first improve the attractiveness of electronic commerce.

In summary, the consumers' cultural characteristics associated with the country of origin seems to interfere with the relevance of touch, where Chinese consumers seem to attribute more relevance to touch than Portuguese.

4.2 Model analysis

The model's specification was subject to confirmatory factor analysis (CFA) using the maximum likelihood method to assess convergent validity. Scale purification was performed due to low factor loadings in the standardized regression weights, and low squared multiple correlations values (Hair et al., 2006). The internal scales' consistency was evaluated using Cronbach's alpha. All analysis was performed for the complete sample and for each country subsample separately. Table 1 presents the reliability and the Average Variance Extracted (AVE) coefficients.

alt-text: Table 1

Table 1

The table layout displayed in this section is not how it will appear in the final version. The representation below is

solely purposed for providing corrections to the table. To preview the actual presentation of the table, please view the Proof.

CFA results and measurement model evaluation.

Variable	Items	Factor loadings	t-value	Coefficient alpha	Composite Reliability	Average Variance Extracted
NFT	NFT1	0.77	6.797	0.885	0.886	0.557
	NFT2	0.73	6.639			
	NFT4	0.40	4.631			
	NFT5	0.71	6.549			
	NFT7	0.78	6.821			
	NFT9	0.89	7.179			
	NFT10	0.66	4.750			
	NFT11	0.69				
	NFT12	0.81	6.947			
PCI	PCI1	0.60		0.908	0.912	0.659
	PCI4	0.63	7.327			
	PCI6	0.87	9.290			
	PCI7	0.83	8.946			
	PCI8	0.89	9.472			
	PCI9	0.92	9.698			
BE	BE2	0.62	6.973	0.846	0.853	0.502
	BE4	0.76	8.391			
	BE6	0.73	7.975			
	BE8	0.67	7.670			
	BE10	0.79	8.599			
	BE12	0.63				
PPQ	PPQ1	0.82		0.927	0.930	0.769
	PPQ2	0.93	15.254			
	PPQ3	0.93	15.592			
	PPQ5	0.82	13.100			
ORP	ORP1	0.60	6.596	0.704	0.707	0.487

	ORP2	0.72	7.320			
	ORP4	0.68				
OPP	OPP1	0.90	19.902	0.948	0.949	0.860
	OPP2	0.98	24.383			
	OPP3	0.90				

Convergent validity refers to the “degree that indicators of the same construct are highly correlated and show a uniform pattern of inter-correlations” (Park, 2006, 93). Current results show adequate values for the AVE; therefore, we conclude that convergent validity is assured (Gerbing and Anderson, 1988).

Discriminant validity guarantees that the construct is significantly distinct from related concepts. Discriminant validity is shown in Table 2, from where it can be confirmed that values on the main diagonal are greater than all other values in the same line and column (Fornell and Larcker, 1981).

alt-text: Table 2

Table 2

The table layout displayed in this section is not how it will appear in the final version. The representation below is solely purposed for providing corrections to the table. To preview the actual presentation of the table, please view the Proof.

Discriminant validity.

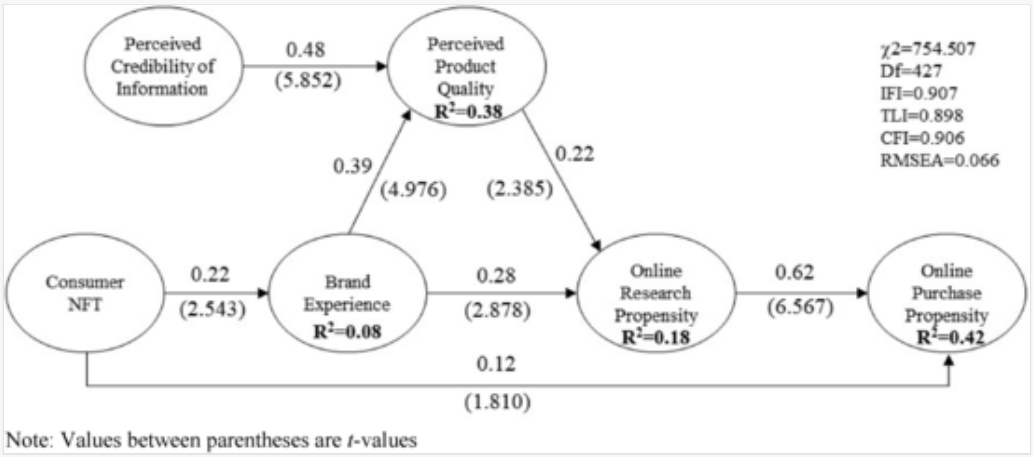
Variables	NFT	PCI	BE	PPQ	ORP	OPP
NFT	0.691					
PCI	−0.149	0.800				
BE	0.218	0.275	0.703			
PPQ	0.019	0.547	0.494	0.877		
ORP	0.094	0.219	0.401	0.313	0.669	
OPP	0.172	0.202	0.243	0.304	0.630	0.927

Structural Equations Modeling (SEM) was used to validate the structural model by testing the suggested relationships simultaneously. The model has six constructs, 31 observed variables, and 94 total parameters considering measurement and latent variable errors and inter-correlations between the latent constructs. The normed chi-square (χ^2/df) has a recommended level range between 1.0 and 2.0. The Incremental Fit Index (IFI), Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) reveal acceptable results. These indices

should present values above 0.900 (Hair et al., 2006). Regarding the Root Mean Square Error of Approximation (RMSEA) the value of 0.066 indicates an acceptable fit (Browne and Cudeck, 1992). The structural equation model with the fit indices is presented in Fig. 3.

alt-text: Fig. 3

Fig. 3



Conceptual model results.
Note: Values between parentheses are *t*-values.

The hypotheses proposed in the model were supported for a minimum significance level of 95%, as presented in Table 3.

alt-text: Table 3

Table 3

The table layout displayed in this section is not how it will appear in the final version. The representation below is solely purposed for providing corrections to the table. To preview the actual presentation of the table, please view the Proof.

Hypothesis assessment.a

Research hypothesis		Expected relationship	Estimated parameter	p-value	Supported
H_1	There is a positive relationship between the consumer NFT and brand experience.	Positive	0.220	0.011	Yes
H_2	There is a negative relationship between the consumer NFT and the online purchase propensity.	Negative	0.121	0.072	No
H_3	There is a positive relationship between the perceived credibility of	Positive	0.482	0.000	Yes

	the information and the perceived product quality.				
H_4	There is a positive relationship between the brand experience and the perceived product quality.	Positive	0.390	0.000	Yes
H_5	There is a positive relationship between the brand experience and the online research propensity.	Positive	0.283	0.004	Yes
H_6	There is a positive relationship between the perceived product quality and the online research propensity.	Positive	0.216	0.018	Yes
H_7	There is a positive relationship between the online research propensity and the online purchase propensity.	Positive	0.624	0.000	Yes

Regarding the consumer NFT, it is possible to infer that when the impact of the consumer NFT increases one unit, brand experience increases by 0.275 units. For its side, the brand experience positively impacts the online research propensity and the perceived product quality. The perceived credibility of the information has also a stronger influence on perceived product quality. When the perceived credibility of the information increases one unit, the perceived product quality increases 0.662 units. Additionally, when the perceived product quality increases one unit, online research propensity increases by 0.216 units. The stronger impact comes from online research propensity, where an increase of one unit leads to an increase of 0.9 units in online purchase propensity.

5 Discussion and implications

This study aimed at understanding the influence of consumer's cultural background on the NFT and the subsequent impact on online purchasing propensity. A sample from Portuguese and Chinese consumers was selected for the study and the findings show that Chinese consumers have a higher NFT level than the Portuguese: 5.10 and 4.18 respectively. This is surprising given the extremely high score of Portuguese and the low score of Chinese in the uncertainty avoidance cultural dimension (Hofstede et al., 2010). As for gender, the extant literature provides conflicting results for the relationship between gender and NFT (e.g. Lee et al., 2017; Rathee and Rajain, 2019) and unfortunately, the current findings are not sufficient to prove a clear link between gender and NFT, despite most of the previous research findings being confirmed (e.g. Workman, 2010).

Regarding the specific levels of NFT dimensions, the results show that Chinese consumers display similar instrumental and autotelic NFT levels while Portuguese consumers reveal substantial differences in the instrumental and autotelic NFT levels. In fact, Portuguese consumers seem to be more instrumentally driven when touching products, which is in accordance with the low score on (Hofstede et al., 2010) long-term orientation dimension. Portuguese consumers tend to touch products with a specific goal, as to obtain information about the product characteristics. After being captivated by the benefits of the online, Portuguese are more pragmatic and less skeptical regarding the fact that through the web there are products that cannot be touched or experienced before bought. This finding represents a theoretical contribution to put emphasis on the importance of (Hofstede et al., 2010) cultural dimensions differences as Portugal ranks lower in uncertainty

avoidance and masculinity than China and this is depicted in the findings. From a managerial point of view, this outcome is of particular importance for retailers as it points out the need to prove the advantages of online purchase for Portuguese consumers to surpass the challenges imposes by the absence of touch capability. These findings also point to the importance for companies to invest in providing a more detailed description for product characteristics, expert recommendations and return guarantee to reduce the risk perception related to physical characteristics that depend on touch for evaluation. Additionally, Portuguese consumers also revealed to be more traditionalists than Chinese. Therefore, Chinese companies targeting the Portuguese market should provide extra incentives to surpass the skepticism regarding the online purchase for some types of products.

One interesting finding found relates to the absence of a direct influence of consumer NFT on online purchase propensity in contrast with the literature (e.g. Manzano et al., 2016b). This finding is challenging from a theoretical perspective as it goes against what could be expected for an apparel product and it draws attention to the need for investigating what other factors may be mediating or moderating the relationship between NFT and online purchase propensity.

The propensity to touch positively influences brand experience, meaning that a consumer with a high NFT is likely to have strong brand experiences. Although brand experience does not undertake a motivational state (Brakus et al., 2009), the current findings reveal that touch may be a motivator of brand experience even if consumers are not involved with the brand *a priori*. Research on brand experience may benefit from current findings by further investigate the contribution of interactive touch for consumer engagement. In terms of managerial implications, the current findings lead us to suggest that companies should consider the need to combine multiple channels, at least regarding the hands-on experience to be provided in an initial stage of product or brand launching for both consumers with high and low NFT levels. The finding that consumers with a high NFT level are likely to be engaged in more brand touchpoints and consequently enjoy stronger brand experiences is relevant for the literature on brand experience, namely by draw the attention for the value of NFT level as a segmentation criterium. It is also valuable for brand managers to acknowledge that by segmenting consumers based on their NFT they can improve their brand experience and satisfaction.

Accordingly, previous evidence on the relationships between brand experience, perceived credibility of information (e.g. Pornpitakpan, 2004) and perceived product quality (e.g. Zeithaml, 1988) were confirmed in the current data. The literature also suggests that brand experience and perceived product quality influence online information search preference and level. The current findings provide theoretical support to this relationship, by reinforcing the indication that consumers with intense brand experiences tend to make use of both online and offline brand touchpoints to search for information. From a managerial perspective, this finding underlines the need for brands to expand the number of online and offline touchpoints adopting an omnichannel strategy since all channels are individually important to acquire information and stimulate the purchase. Jointly, the current findings provide support to the theoretical indications that the higher the propensity to search online, the higher the propensity to buy online (Rahman and Soesilo, 2018) and that brand touchpoints represent a key asset for online retailers.

The comparison between Chinese and Portuguese provides several theoretical additions to the literature with implications for the understanding of the influence of NFT on online purchase propensity and reinforcing existent evidence that the consumer country of origin influences the NFT. Since Chinese consumers revealed to have a higher NFT level than the Portuguese and the exploratory touch seems to be more irresistible in nature for Chinese (expressed by the autotelic NFT factor) companies should focus on understanding the differences when designing their offers to specific markets. According to Hofstede et al. (2010), the Chinese have a strong long-term orientation, which means they have a propensity to save and invest more than buy. On the other hand, they are too restrained by social norms and feel that indulging themselves is to some extent not right. For that, they do not put much emphasis on leisure time and control the gratification of their desires (Hofstede, 2001). From a theoretical perspective, these findings endorse the use of Hofstede's et al. (2010) cultural dimensions as a useful background to cross-cultural research on NFT with practical implications for the Portuguese apparel industry seeking to enter the Chinese market.

Additionally, this study provides evidence about the propensity to use online channels during the search and purchase process. It was empirically verified that the majority of consumers tend to act as traditionalists when searching and purchasing. For low NFT products the majority of Chinese consumers research and purchase online, behaving as online enthusiasts. In contrast, Portuguese consumers revealed to be more conservative despite being more likely to research and purchase online.

Since need-for-touch towards a product seems to be different from country to country, companies wishing to operate in the Chinese market should adopt marketing strategies that distinctly encourage customers to touch and experience products by promoting touch as an end in itself. In the case of online sales, these strategies should be complemented with 3D virtual tours, zoom-in effects with different levels of detail, hands-on descriptions made by peers, and hassle-free return policy in order to bypass the disadvantages associated with the absence of touch.

The empirical findings also support theory regarding the influence of brand experience and perceived information credibility on perceived product quality following Zeithaml, (1988) indication. Based on this confirmation companies should invest in providing relevant and useful content to customers, at both online and offline touchpoints. Moreover, they should assure the consistency, clarity, and trustworthiness of the information supplied regardless of the channel used. This requires that companies move forward from a multi-channel approach to an omnichannel strategy.

Finally, considering the expected relationship between the propensity to research online and the propensity to purchase online proposed by Rahman and Soesilo (2018), companies should adopt mechanisms to enhance the conversion of online store visitors, turning them into buyers. This goal may be achieved throughout the creation of a sense of shop urgency by offering limited price discounts, free product offers and samples, and other bonuses if visitors buy within a certain time after entering the site. This type of action is important for nurturing customer engagement and reduce the perceived risk associated with online purchase (Forsythe et al., 2006). Additionally, these actions should be supplemented with detailed technical information and comprehensive haptical product descriptions and even with videos showing customers touching, experiencing, and giving feedback about the product[Instruction: Please add "Rodrigues et al. (2017)" here.] Rodrigues et al.,

2017. Due to susceptibility to uncertainty from Portuguese consumers, companies must invest in security mechanisms and well-designed privacy policy as they are important factors to determine the degree of trust that the customer places on a website (Chou et al., 2015). Despite all the differences found, companies selling products possessing high NFT levels should bear in mind that many consumers both in Portugal and China will act as a traditionalist, researching and purchasing in-store, however, if correctly seduced by promotional offers to purchase online Portuguese will easily buy. Conversely, the Chinese require additional information for them to overcome the absence of touch associated with the online market, at least for apparel products as they present a similar level for instrumental and autotelic NFT.

6 Limitations and future research

This study relied only on only one product and two countries and the small sample size limits the generalization of the findings. In future studies, larger and balanced samples including consumers from other countries are desirable to validate current findings. Given our difficulties in recruiting respondents from China, incentives for participation should be considered. Also, additional products could be considered in the future to validate conclusions. Additionally, future studies should control for prior experience of the product and channel as the significance of need-for-touch may differ according to consumer earlier experience. This condition may have impacted the results. There seems to be still a lot to uncover regarding the study of the NFT in the online market. One variable whose effects could reveal to be significant is risk perception. We proposed to include the different types of risk perception in future researches.

Acknowledgements

The authors would like to thank to NECE – Research Unit in Business Sciences funded by the Multiannual Funding Programme of R&D Centres of FCT – Fundação para a Ciência e ~~a~~ Tecnologia, Portugal, under the project UID/GES/04630/2019 and to CEGE – Research Centre in Management and Economics, funded by the Multiannual Funding Programme of R&D Centres of FCT – Fundação para a Ciência e ~~a~~ Tecnologia, Portugal, under the project UIDB/00731/2020.

Appendix A Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jretconser.2020.102122.

Uncited references

Rodrigues et al., 2017; ~~Silva et al., 2012~~; ~~Harzing and Maznevski, 2002~~

References

The corrections made in this section will be reviewed and approved by a journal production editor. The newly added/removed references and its citations will be reordered and rearranged by the production team.

Agardi, I., Dornyei, K., 2011. The influence of internet use and the need for haptic exploration on online purchase activity. In: 2nd EMAC Regional Conference, Alexandru Ioan Cuza University of Iasi. pp. 1–7.

Baker, M.J., Gilbert, A., Churchill, 1977. The impact of physically attractive models on advertising evaluations. J. Market. Res. 14 (4), 538–555.

Brakus, J.J., Schmitt, B.H., Zarantonello, L., 2009. Brand experience: what is it? How do we measure it? And does it affect loyalty. J. Market. 73 (3), 52–68.

Browne, M., Cudeck, R., 1992. Alternative ways of assessing model fit. Socio. Methods Res. 21 (2), 230–258.

Chen, Si-Jing, Lin, C.L., Chien, Chiu-Wei, 2013. The influence of the nature of need for touch, handcraft material and material color on the motivation for touch. In: Patrick, P.L. (Ed.), Cross-Cultural Design. Methods, Practice, and Case Studies (Part I). LNCS, pp. 281–287.

Chi, H.K., Yeh, H.R., Yang, Y.T., 2009. The impact of brand awareness on consumer purchase intention: the mediating effect of perceived quality and brand loyalty. Journal of International Management Studies 4 (1), 135–144.

Cho, S., Workman, J., 2011. Gender, fashion innovativeness and opinion leadership, and need for touch: effects on multi-channel choice and touch/non-touch preference in clothing shopping. J. Fash. Mark. Manag.: Int. J. 15 (3), 363–382.

Chou, S., Chen, C., Lin, J., 2015. Female online shoppers: examining the mediating roles of e-satisfaction and e-trust on e-loyalty development. Internet Res. 25 (4), 542–561.

Dholakia, R., Zhao, M., 2010. Effects of online store attributes on customer satisfaction and repurchase intentions. Int. J. Retail Distrib. Manag. 38 (7), 482–496.

Dodds, W.B., Monroe, K.B., Grewal, D., 1991. Effects of price, brand and store information on buyers' product evaluations. J. Market. Res. 28 (3), 307–319.

Engel, J.F., Blackwell, R.D., Miniard, P.W., 2001. Consumer Behavior. ninth ed. The Dryden Press, Chicago.

Fornell, C., Larcker, D.F., 1981. Evaluating structural equation models with unobservable variables and measurement error. J. Market. Res. 18 (1), 39–50.

Forsythe, S., Liu, C., Shannon, D., Gardner, L.C., 2006. Development of a scale to measure the perceived benefits and risks of online shopping. J. Interact. Market. 20 (2), 55–75.

Gerbing, D.W., Anderson, J.C., 1988. An updated paradigm for scale development incorporating unidimensionality and its assessment. J. Market. Res. 25 (2), 186–192.

Grewal, D., Iyer, G.R., Levy, M., 2004. Internet retailing: enablers, limiters and market consequences. J. Bus. Res. 57 (7), 703–713.

Grohmann, B., Spangenberg, E.R., Sprott, D.E., 2007. The influence of tactil input on the evaluation of retail product offerings. J. Retailing 8 (3), 237–245.

Ha, H.-Y., Perks, H., 2005. Effects of consumer perceptions of brand experience on the web: brand familiarity, satisfaction and brand trust. J. Consum. Behav. 4 (6), 438–452.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., Tatham, R.L., 2006. Multivariate Data Analysis. sixth ed. Prentice Hall, Upper Saddle River, New Jersey.

~~Harzing, A.W., Maznevski, M., 2002. The interaction between language and culture: a test of the cultural accommodation hypothesis in seven countries. Lang. Intercult. Commun. 2 (2), 120–139.~~

Hofstede, G., 1980. Cultures Consequences: International Differences in Work-Related Values. Sage, Beverly Hills, CA.

Hofstede, G., 2001. Cultures Consequences: Comparing Values, Behaviors, Institutions and Organizations across Nations. The Sage, Thousand Oaks.

Hofstede, G., Hofstede, G.J., Minkov, M., 2010. Cultures and Organizations: Software of the Mind. third ed. McGraw-Hill Education, New York.

Hovland, C.I., Weiss, W., 1951. The influence of source credibility on communication effectiveness. Publ. Opin. Q. 15 (4), 635–650.

Y.H. Hsu, W. Fang, H.C. Hou. Nondiagnostic haptic cues have effect on taste evaluation: the moderating role of visual cue. available at: http://www.lcbr-archives.com/media/files/12emc014.pdf, 2010, 13 May 2019.

Ishida, C., Taylor, S.A., 2012. Retailer brand experience, brand experience congruence, and consumer satisfaction. J. Consumer Satisfaction, Dissatisfaction Complain. Behav. 25, 63–79.

Jain, S.P., Posavac, S.S., 2001. Prepurchase attribute verifiability, source credibility, and persuasion. J. Consum. Psychol. 11 (3), 169–180.

Ko, J., Hur, S., 2014. The impacts of employee benefits, procedural justice, and managerial trustworthiness on work attitudes: integrated understanding based on social exchange theory. Publ. Adm. Rev. 74 (2), 176–187.

Krishna, A., Morrin, M., 2008. Does touch affect taste? The perceptual transfer of product container haptic cues. J. Consum. Res. 34 (6), 807–818.

Kwon, W., 2005. A Model of Reciprocal Effects on Multi-Channel Retailers' Offline and Online Brand Images: Application to Multi-Channel Specialty Apparel Retailing. The Ohio State University,

Columbus Unpublished doctoral dissertation.

Lee, S.-H., Workman, J.E., Jung, K., 2017. The influence of need for touch and gender on Internet shopping attitudes among Korean consumers. International Journal of Fashion Design, Technology and Education 10 (2), 230–239.

Levin, A.M., Levin, I.P., Health, C.E., 2003. Product category-dependent consumer preference for online and offline shopping features and their influence on multichannel retail appliances. J. Electron. Commer. Res. 4 (3), 85–93.

Manzano, R., Ferrán, M., Gavilán, D., Avello, M., Abril, C., 2016. Need for touch and multichannel search and purchase. In: Campbell, C., Ma, J. (Eds.), Looking Forward, Looking Back: Drawing on the Past to Shape the Future of Marketing. Developments in Marketing Science: Proceedings of the Academy of Marketing Science. Springer, Cham 558–558.

Manzano, R., Gavilan, D., Ferrán, M., Avello, M., Abril, C., 2016. Autotelic and instrumental need for touch: searching for and purchasing apparel online. Int. J. Econ. Manag. Sci. 1–7 Vol. 05 No. 02.

Mayer, R.C., Davis, J.H., Schoorman, F.D., 1995. An integrative model of organizational trust. Acad. Manag. Rev. 20 (3), 709–734.

Moreira, N., Ferreira, P., 2013. If you touch you buy! Need for touch as an antecedent of brand experience and purchase intention. In: 3rd *Conference On Managing Services In the Knowledge Economy*. Lusíada University of Famalicão, Famalicão, Portugal.

Neslin, S., Grewal, D., Leghorn, R., Shankar, V., Teerling, M., Verhoef, P., 2005. Challenges and opportunities in multichannel customer management. In: CRM Thought Leadership Conference. University of Connecticut.

Nuszbaum, M., Voss, A., Klauer, K.C., Betsch, T., 2010. Assessing individual differences in the use of haptic information using a German translation of the 'Need for Touch' scale. Soc. Psychol. 41 (4), 263–274.

Nysveen, H., Pedersen, P.E., Skard, S., 2013. Brand experiences in service organizations: exploring the individual effects of brand experience dimensions″. J. Brand Manag. 20 (5), 404–423.

O'Keefe, D.J., 2002. Persuasion: Theory & Research. Sage Publications, Thousand Oaks, CA.

Olshavsky, R.W., 1985. Perceived quality in consumer decision making: an integrated theoretical perspective. In: Jacoby, J., Olson, J. (Eds.), Perceived Quality. Lexington Books, Lexington: MA, pp. 3–29.

Park, J.W., Ishii, H., 2012. What makes desire for touch strong? Investigation of individual determinants of desire for touch. Asia-Pacific Advances in Consumer Research Conference 10, 409–411.

Park, M.A., 2006. The Compensatory Effects of Pictorial and Verbal Information for Haptic Information on Consumer Responses in Non-store Shopping Environments. Graduate School of The Ohio State University (Ph.D. Dissertation).

Peck, J., Childers, T.L., 2003. Individual differences in haptic information processing: the need for touch scale. J. Consum. Res. 30 (3), 430–442.

Peck, J., Childers, T.L., 2003. To have and to hold: the influence of haptic information on product judgments. J. Market. 67 (2), 35–48.

Peck, J., Shu, S., 2009. The effect of mere touch on perceived ownership. J. Consum. Res. 36 (3), 434–447.

Peck, J., Wiggins, J., 2006. It just feels good: customers' affective response to touch and its influence on persuasion. J. Market. 70 (4), 56–69.

Perry, P., Blazquez, M., Padilla, S., 2013. Translating the need for touch to online fashion shopping via digital technology. In: The First International Conference On Digital Technologies For the Textile Industries. The University of Manchester, September, pp. 5–6.

Petty, R.E., Cacioppo, J.T., 1986. Communication and Persuasion: Central and Peripheral Routes to Attitude Change. Springer-Verlag, New York.

Pornpitakpan, C., 2004. The persuasiveness of source credibility: a critical review of five decades evidence. J. Appl. Soc. Psychol. 34 (2), 243–281.

Punj, G., 2011. Effect of consumer beliefs on online purchase behavior: the influence of demographic characteristics and consumption values. J. Interact. Market. 25 (3), 134–144.

Rahman, F., Soesilo, P.K., 2018. The effect of information exposure of contract manufacturing practice on consumers perceived risk, perceived quality, and intention to purchase private label brand. J. Retailing Consum. Serv. 42, 37–46 May.

Rathee, R., Rajain, P., 2019. "Online shopping environments and consumer's Need for Touch". Journal of Advances in Management Research Vol. ahead-of-print No. ahead-of-print, available at:. doi:10.1108/JAMR-12-2018-0116.

Reichelt, J., Sievert, J., Jacob, F., 2014. How credibility affects eWOM reading: the influences of expertise, trustworthiness, and similarity on utilitarian and social functions. J. Market. Commun. 20 (1–2), 65–81.

Rodrigues, T., Silva, S.C., 2013. The need for touch in the online retail. Revista Portuguesa de Marketing 30 (1), 70–90.

Rodrigues, T., Silva, S.C., Duarte, P., 2017. The value of textual haptic information in online clothing shopping. J. Fash. Mark. Manag.: Int. J. 21 (1), 88–102.

San-Martín, S., González-Benito, Ó., Martos-Partal, M., 2017. To what extent does need for touch affect online perceived quality?. Int. J. Retail Distrib. Manag. 45 (9), 950–968.

Sen, S., Gurhan-Canli, Z., Morwitz, V., 2001. Withholding consumption: a social dilemma perspective on consumer boycotts. J. Consum. Res. 28, 399–417 December.

~~Silva, S.C., Bradley, F., Sousa, C.M., 2012. Empirical test of the trust-performance link in international alliances context. Int. Bus. Rev. 21 (2), 293–306.~~

Stone-Romero, E.F., Stone, D.L., Grewal, D., 1997. Development of a multidimensional measure of perceived product quality. J. Qual. Manag. 2 (1), 87–111.

Sung, Y.C., 2009. Online Apparel Shopping Behavior: Effects of Consumer Information Search on Purchase Decision Making in the Digital Age. Chaoyang University of Technology, Taichung, Taiwan.

Verhoef, P.C., Kannan, P.K., Inman, J.J., 2015. From multi-channel retailing to omni-channel retailing: introduction to the special issue on multi-channel retailing. J. Retailing 91 (2), 174–181.

Vieira, V.A., 2013. The association between need for touch and desire for unique products and consumer (inter)dependent problem-solving. Rev. Adm. 48 (3), 481–499.

Wang, E.S., Lin, R., 2016. Perceived quality factors of location-based apps on trust, perceived privacy risk, and continuous usage intention. Behav. Inf. Technol. 36 (1), 2–10. doi:10.1080/0144929x.2016.1143033.

Weathers, D., Makienko, I., 2006. Assessing the relations between e-tail success and product and web site factors. J. Interact. Market. 20 (2), 41–54.

Willemsen, L.M., Neijens, P.C., Bronner, F., 2012. The ironic effect of source identification on the perceived credibility of online product reviewers. J. Computer-Mediated Commun. 18 (1), 16–31.

Wolf, J.R., Arkes, H.R., Muhanna, W.A., 2008. The power of touch: an examination of the effect of duration of physical contact on the valuation of objects. Judgment and Decision Making 3 (6), 476–482.

Workman, J.E., 2010. Fashion consumer groups, gender, and need for touch. Cloth. Text. Res. J. 28 (2), 126–139.

Workman, J.E., Caldwell, L.F., 2007. Centrality of visual product aesthetics, tactile and uniqueness needs of fashion consumers. Int. J. Consum. Stud. 31 (6), 589–596. doi:10.1111/j.1470-6431.2007.00613.x.

Yoo, K.H., Gretzel, A., 2008. The influence of perceived credibility on preferences for recommender systems as sources of advice. Journal of Information Technology and Tourism 10 (2), 133–146.

Zeithaml, V.A., 1988. Consumer perceptions of price, quality and value: a means-end model and synthesis of evidence. J. Market. 52 (3), 2–22.

Highlights

- Chinese consumers have a higher level of Need-for-Touch than Portuguese.
- Portuguese consumers have substantial differences in instrumental and autotelic NFT levels.
- Consumers with high levels of NFT are more likely to engage in additional brand touch-points.
- Perceived information credibility and quality influences the intention to purchase.
- Perceived product quality is influenced by brand experience and perceived information credibility.

Appendix A Supplementary data

The following are the Supplementary data to this article:

Multimedia Component 1

Multimedia component 1

alt-text: Multimedia component 1

Multimedia Component 2

Multimedia component 2

alt-text: Multimedia component 2

Queries and Answers

Query: Your article is registered as a regular item and is being processed for inclusion in a regular issue of the journal. If this is NOT correct and your article belongs to a Special Issue/Collection please contact d.ganesh@elsevier.com immediately prior to returning your corrections.

Answer: Yes

Query: Please confirm that given names and surnames have been identified correctly and are presented in the desired order and please carefully verify the spelling of all authors' names.

Answer: Please change Susana's name to "Susana C. e Silva".

The surname for "Susana C. e Silva" is just "Silva".

Query: Please confirm that the provided email “pduarte@ubi.pt” is the correct address for official communication, else provide an alternate e-mail address to replace the existing one, because private e-mail addresses should not be used in articles as the address for communication.

Answer: The email address is correct.

Query: References "Gürhan-Canli and Batra (2004); Gürhan-Canli and Maheswaran (2000); Garvin (1983)" are cited in the text but not provided in the reference list. Please provide them in the reference list or delete these citations from the text.

Answer: Gürhan-Canli, Z. and Batra, R. (2004). “When Corporate Image Affects Product Evaluations: The Moderating Role of Perceived Risk”, Journal of Marketing Research, Vol. 41 No. 2, pp. 197-205.

Gürhan-Canli, Z. and Maheswaran, D. (2000). “Determinants of Country-of-Origin Evaluations”, Journal of Consumer Research, Vol. 27 No. 1, pp. 96-108.

Garvin, D. A. (1983). Quality on the line. Harvard Business Review, 61, 64-75.

Query: Have we correctly interpreted the following funding source(s) and country names you cited in your article: FCT, Portugal; Fundação para a Ciência e a Tecnologia, Portugal?

Answer: The correct form is "Fundação para a Ciência e Tecnologia, Portugal"

Query: Uncited references: This section comprises references that occur in the reference list but not in the body of the text. Please position each reference in the text or, alternatively, delete it. Any reference not dealt with will be retained in this section. Thank you.

Answer: "Rodrigues et al., 2017" has been placed in the text.

The other two references were deleted.

Query: Please provide the volume number or issue number or page range or article number for the bibliography in Ref(s). Rathee and Rajain, 2019.

Answer: The complete reference is:

Rathee, R. and Rajain, P. (2019), "Online shopping environments and consumer’s Need for Touch", Journal of Advances in Management Research, Vol. 16 No. 5, pp. 814-826. https://doi.org/10.1108/JAMR-12-2018-0116