UNIVERSIDADE CATÓLICA PORTUGUESA

Social media warwashing

Its effects on Portuguese and Danish consumers: A cross-cultural study

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Abstract

Based on recent war events rooted in the Russia-Ukraine war, this research study compares how Portuguese and Danish consumers are affected when exposed to warwashing. The study attempts to use cultural differences and analyze whether or not these can be used to predict how each consumer acts towards warwashing. Moreover, the research utilized and manufactures four alternative hypotheses and their null hypotheses to be tested. A quantitative survey including nine questions was conveyed in a deductive manner. Consequently, results were analyzed through the statistical program JMP in which paired t-tests were performed. The results show that there does seem to be a significant difference in how Portuguese and Danish consumers are affected by warwashing. Based on statistical evidence, Danish consumers appear to be affected more, taking greater and more frequent actions. The research was exposed to a few limitations such as it being a cross-sectional study not enabling data collection in more than one time period. Another limitation of the research relies in warwashing being a completely new concept with no previous literature.

Keywords: warwashing, social media, consumer behavior.

Word count: 9.997

Abstrato

Com base em recentes acontecimentos de guerra enraizados na guerra Rússia-Ucrânia, este estudo de investigação compara a forma como os consumidores portugueses e dinamarqueses são afectados quando expostos à lavagem de guerra. O estudo tenta utilizar diferenças culturais e analisar se estas podem ou não ser utilizadas para prever a forma como cada consumidor actua em relação à *warwashing*. Além disso, a investigação utilizou e fabrica quatro hipóteses alternativas e as suas hipóteses nulas a serem testadas. Um inquérito quantitativo incluindo nove perguntas foi transmitido de forma dedutiva. Consequentemente, os resultados foram analisados através do programa estatístico JMP, no qual foram realizados testes t pareados. Os resultados mostram que parece haver uma diferença significativa na forma como os consumidores portugueses e dinamarqueses são afectados pela *warwashing*. Com base em provas estatísticas, os consumidores dinamarqueses parecem ser mais afectados, tomando acções maiores e mais frequentes. A investigação foi exposta a algumas limitações, tais como o facto de ser um estudo transversal que não permite a recolha de dados em mais de um período de tempo. Outra limitação da investigação reside no facto de a *warwashing* ser um conceito completamente novo, sem qualquer literatura anterior.

Palavras-chave: *warwashing*, meios de comunicação social, comportamento do consumidor.

Contagem de palavras: 9.997

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1. Introduction

On July 2022, Lego, the Danish plastic toy brand, withdrew all its operations in Russia while closing 81 stores due to the war conflict with Ukraine (Zakir-Hussain, 2022). The company feared a backlash from continuing to operate in Russia and felt pressure from customers to abandon the country to show its sympathy towards the Ukrainian population. However, what actually transpires if other companies try to "color wash" their activities related to the war conflict?

The objective of this research paper is to establish a cross-cultural study of consumer behavior between Portuguese and Danish consumers based on social media warwashing during events surrounding the Russia-Ukraine war. It will analyze the similarities and differences among these consumers to anticipate and predict what drives and impacts consumers' attitudes toward warwashing events and conflicts in Russia and Ukraine. Moreover, it will examine if cultural aspects play a significant role and see whether there is a disequilibrium concerning credibility towards social media warwashing for consumers in Portugal and Denmark. In relation to the similarities and differences, another interesting research point will be examining and evaluating different warwashing strategies. Are consumers more likely to boycott certain warwashing strategies than others? This study attempts to close a research gap that has not yet been studied. The war conflict in Eastern Europe is very recent, and not much research has been conducted up until now. Consumer behavior is a widely studied social, psychological, and economic area. However, there does not seem to be any existing literature or research regarding how consumer behaviors change when a force majeure event such as war occurs. Therefore, studying whether wars impact consumers in Portugal and Denmark differently than in more ordinary events is fascinating. For this reason, it can potentially add to the existing literature on the general topic. This study aims to contribute by

providing a very contemporary point of view evaluating two countries that are rarely compared.

Considering this, this research will answer the following research question: how do Portuguese and Danish consumers respond to social media warwashing amid the Russia-Ukraine war conflict? The research question implies a two-sided perspective in which a comparative analysis between Portuguese and Danish consumers will effectively answer this research question.

2. Literature Review

2.1 Colorwashings

Much literature has already been piloted about the term "greenwashing". In its essence, greenwashing means that organizations lie about their activities and practices for being environmentally sustainable when they are not. Furthermore, previous research suggests that companies only have serious reputational ramifications if the consumers are convinced that the firm deliberately tried to greenwash to gain an advantage or preference (de Jong et al., 2020). Bluewashing is another type of washing that corporations do and is similar to greenwashing but focuses more on benefitting societies and communities. A study on sustainable fashion marketing on Instagram during Black Friday indicates significant pressure on firms to follow the velocity of trends like Black Friday (Sailer et al., 2022). Contrarily to greenwashing and bluewashing, pinkwashing is a newer phenomenon that encompasses firms lying about activities or practices towards LGBT rights, as well as actions to support democracies and liberty for individuals in general. Nowadays customers are more aware of pinkwashing, and consumers lose trust, get confused and even boycott products/services that are believed to be pinkwashing (Schoier & de Luca, 2017).

For this study, it will be thought-provoking to dig deeper and explore whether or not this is universal or if consumers react differently across countries such as Portugal and Denmark.

2.2 Warwashing

Now that we have established existing literature on color washings and gotten a better understanding, this study will also benefit from introducing warwashing as a term. This research paper is concentrated on warwashing. Although the concept of warwashing has not been used before, and this is the first study officially labeling warwashing, it is essential to have a clear grasp of what it implies. It is linked to the other washings previously described, and it denotes that firms try to take advantage of washing activities and operations related to war events.

For example, in the case of the Russia-Ukraine war, warwashing has multiple facets. On the one hand, the literature suggests that companies keeping operations in Russia risk running major setbacks and an elevated threat of consumers declining brand favorability (Frisbie, 2022). Therefore, many worldwide firms, such as Mercedes-Benz and Carlsberg, have pulled activities out of Russia (Ivanova & Gibson, 2022). Some companies not pulling out of Russia try to wash their activities or deny claims against them.

On the other hand, warwashing also revolves around companies claiming to aid Ukraine and its population. As aforementioned, Carlsberg has been one of the companies pulling out of Russia. At the same time, the company has faced challenges from consumers to communicate its support to Ukrainians while running the risk of losing Russian customers (Obitsø, 2022). Corporations have to be very clear communicatively. Consumer pressure has led some firms to advertise their help to Ukraine on social media without providing help but to gain a positive image from the general public. Besides, this literature differs from traditional washings in that it will focus more on washing related to firms

claiming to support victims of war or pulling out activities in war countries. This may imply that the outcomes of warwashing in the Russia-Ukraine conflict are different, which is an interesting aspect to analyze.

Using the concept of warwashing will enable this research paper to analyze the topic more effectively. The ongoing war between Russia and Ukraine may involve companies trying to warwash. Using the term "warwashing" may provide a more precise answer to how Danish and Portuguese consumers react in this very peculiar case.

2.3 Social media washing

Digitalization has evolved tremendously over the last 20 years, and social media platforms are heavily exploited by corporations to communicate with clients and potential customers. Concurrently, this also implies that firms greenwash, bluewash, and pinkwash on social media which has become the primary outlet for washings. Previous literature has found that within Europe (namely the UK, France, Germany, and Turkey), there have been different levels of consumer engagement in "green" products/services as a result of online greenwashing (Topal et al., 2019). For example, customer engagement in green products or services increased in Germany from 2012 to 2017, implying that greenwashing on social media did not play a significant role. On the other hand, customer engagement for the French population remained unchanged. Finally, English and Turkish customers lowered their engagement in green products/services during the period due to greenwashing awareness. This shows that online washings greatly affect consumers when deciding to trust green products or services. This literary evidence demonstrates that washings can occur in different countries. This study can use the literature to distinguish between Portugal and Denmark, suggesting that there may be major differences between the countries.

2.4 Theory of washing typologies

Existing theory and literature also point towards four types of firms regarding greenwashing and other washings. On the one hand, a firm can choose to communicate or not. On the other hand, a firm either has a bad or a good environmental performance (Delmas & Burbano, 2011). Firms that do not communicate and have bad environmental performances are called "silent brown firms". In contrast, companies that do not communicate but have good environmental performance are named "silent green firms". Firms that perform positive communication but have bad environmental performances are "greenwashing firms" while firms that positively communicate and have good environmental performances are called "vocal green firms".

2.5 Geert Hofstede's cultural dimensions

Much existing literature has been performed on culture. An intriguing component of culture is that it can predict outcomes in consumer behavior. For instance, culture shapes consumer perception and cognition ultimately resulting in different preferences, choices, and decisions for consumers in various cultures (Kastanakis & Voyer, 2014). For this reason, in addition to washings and how Portuguese and Danish consumers react to them, it is relevant to observe whether cultural dimensions indicate any correlation.

Cultural analyst, Geert Hofstede, is widely regarded as having been one of the pioneers of establishing a framework for cross-cultural dimensions. Hofstede's cultural framework consists of six dimensions: power distance, individualism, masculinity, uncertainty avoidance, long-term orientation, and indulgence (Hofstede et al., 2010). According to Hofstede, Portugal, and Denmark are two very culturally contrasting countries (see appendix 1). For instance, Portugal only scored 27 on individualism, while Denmark scored 74. Another huge gap lies in uncertainty avoidance: Portugal scored 99 compared to Denmark's 23. The dimension "indulgence" also displays dissimilarities between the countries, as

Portugal scored 33 to Denmark's 70. The dimensions clearly show that Portugal and Denmark, though they are both European countries, possess cultures that are, in fact, very diverse. While all six of Hofstede's dimensions give insight into Portuguese and Danish culture, not all may be relevant in explaining consumer behavior differences. The two most fascinating dimensions regarding consumer behavior are uncertainty avoidance and indulgence.

2.5.1 Uncertainty avoidance

Uncertainty avoidance refers to how members of a particular culture deal with ambiguous or unknown situations (Hofstede et al., 2010). It is highly relevant to consumer behavior and different washings as it involves uncertainty and unpredictability about societies.

Portugal scores 99 on uncertainty avoidance which implies a need for members to battle uncertainty by implementing effective and traditional methods to mitigate risks. On the other extreme, Denmark scores 23. A low score on uncertainty avoidance is often characterized by a minimal need for attempting to predict uncertainty. Existing literature illuminates that Portugal's high uncertainty avoidance results in Portuguese people being less open to change and innovation and adopting information technologies. Contrarily, Danes are more open to it and more confident in risky situations (Yildirim et al., 2016). When facing unexpected events, Danes are more likely to implement new and innovative measures that cope with the issues quickly. Divergent opinions, views, and actions that vary from traditional procedures are encouraged over outdated procedures. Based on the study, the Portuguese should use traditional measures to cope with warwashing, while Danes may resort to altering actions. Thus, comparing the scores on uncertainty avoidance, Portuguese individuals may be less likely to cut off products from previously trusted warwashing firms. At the same time, Danish citizens may act faster and take more radical actions to make changes.

2.5.2 Indulgence

Hofstede's cultural dimension, indulgence, is "the extent to which people try to control their desires and impulses" (Hofstede et al., 2010). Desires and impulses are critical components of consumer behavior, and therefore indulgence may explain differences between Portugal and Denmark related to warwashing.

Denmark scores 70 on Hofstede's indulgence dimension, implying that the country's culture is rather indulgent. In turn, Portugal scored just 33, representing a more restrained country culture. There is a clear difference between Denmark and Portugal in this dimension. According to the theory, Danish people are generally more likely to follow their impulses while breaking down inhibitions to realize a desire. In contrast, Portuguese individuals tend to control/restrain their desires, often having a more pessimistic approach when exposed to events such as warwashing. The literature argues that Danes, possessing an indulgent culture, have higher online shopping expenditures than Portuguese consumers, given that an indulgent culture is usually more optimistic than a restrained one. Data demonstrates this difference as Denmark's online shopping expenditures amounted to 7.388 billion euros in 2012 compared to Portugal's 1.200. The study considered total internet users (4.989.108 to 5.950.449), resulting in the Danish online shopping expenditure per internet user being 1.480,830 euros compared to Portugal's 201,670 euros. Ultimately, the high score in indulgence led Danes to purchase more online than Portuguese consumers (Yildirim et al., 2016).

On the other hand, Danes often perceive being capable of controlling their personal lives through their actions when facing concerns (Hofstede et al., 2010). That is to say that Denmark being indulgent and Portugal being comparatively restrained, Danish consumers have a higher will to confront firms exercising warwashing on social media than Portuguese consumers. It indicates that

Portuguese individuals may be more accepting of social media warwashing because they are less inclined to act heavily on such events.

Based on the cultural patterns, it would seem like social media warwashing will have a lesser reaction on Portuguese consumers than on Danish consumers. The insightfulness of Geert Hofstede's cultural dimensions can be coupled and compared to the survey results in this research project. Relationships can then be extracted, confirmed, or rejected using the predictability of these dimensions. Moreover, it would similarly be useful to connect the dimensions to a consumer boycott theory/study comparing Portuguese and Danish consumers' tendencies to boycott a product or service.

2.6 Boycott, environment and sustainable behavior

In addition to Hofstede's cultural dimensions theory, incorporating the tendency for Portuguese and Danish consumers to boycott a product or service aids another perspective on the predictability of how these consumers are affected by social media warwashing. A research study from 2014 laid out empirical evidence of citizen boycotting in European countries. The study examines the proportion of the population that had boycotted products in the previous 12 months. In Portugal, 1.258 citizens responded, and 6,7% of the sample testified to having boycotted at least one product during the period. 93,3% denied that they had boycotted at least one product in the past 12 months (Baptista & Rodrigues, 2018).

In contrast, out of the 1.499 Danish respondents, 26,5% of the sample boycotted a product in the last 12 months, while 73,5% did not boycott any products in the given time frame. To put these numbers into perspective, the average for all 40.001 respondents is appropriate to compare. 23,1% of all respondents declared that they did boycott a product, during which 76,9% did not boycott a product. Consequently, Danish consumers boycotted products 3,4 percentage points (26,5%-23,1%) more than the average respondent. Contrarily, Portuguese

consumers boycotted products 16,4 percentage points (6,7%-23,1%) less than the average, which is a notable distinction.

Linking these results to warwashing on social media provides intriguing food for thought. One would be persuaded to believe that Danish customers are more sensitive than Portuguese. As they tend to boycott products more than Portuguese consumers, they are also expected to take greater and more frequent actions when faced with warwashing affairs than the Portuguese. This behavior may indicate that Danish consumers are more aware of implementing fierce procedures when exposed to warwashing on online platforms, unlike the Portuguese, whose boycott links heavily with both uncertainty avoidance and indulgence. As aforementioned in the cultural dimensions, Portugal's and Denmark's uncertainty avoidance and indulgence levels are likely to predict that Portuguese consumers would be more prone to shy away from acting. Contrarily, Danish consumers would generally confront issues related to warwashing. If the cultural dimensions are accompanied by boycotting statistics in the two countries, they may lean towards predicting that Danish consumers will be affected more heavily than Portuguese consumers.

Another study researches environmentally friendly actions by citizens in 28 European countries six months before the study (Bassi, 2023). Danish citizens amassed an average of 5,8 actions ranking third of all sampled countries. On the other hand, Portuguese citizens only accumulated an average of 3,05 actions and ranked 25th out of 28 countries. This study displays that Danes consider themselves to take more environmentally friendly actions than the Portuguese on average.

Since Danes appear more environmentally conscious than the Portuguese, this may indicate a stronger will for Danes to take action against warwashing. Perhaps Portuguese citizens do not view environmental actions as a top priority. Again, this evidence links well with cultural dimensions such as uncertainty

avoidance and indulgence, and boycott literature concerning Portuguese consumers possibly not being as concerned about warwashing as Danish consumers.

Based on the literature review, it will be appropriate and useful for this research to establish and set up four hypotheses.

H_1: Danish consumers are affected significantly more than Portuguese consumers by social media warwashing.

This first alternative hypothesis will be accepted if the research concludes that there is correlation but rejected if there is a no significant correlation between Portuguese and Danish consumers when exposed to warwashing on social media. Contrarily, the null hypothesis shows that Danish consumers are not affected significantly more than the Portuguese.

This second alternative hypothesis can only be accepted, but will not necessarily be, if H_1 is accepted.

H_2: Danish consumers tend to be more skeptical towards social media warwashing than Portuguese consumers.

The null hypothesis for the alternative hypothesis 2 is that Danish consumers are not more skeptical towards social media warwashing than Portuguese consumers.

H_3: Danish consumers will take significantly greater actions than Portuguese consumers when exposed to social media warwashing.

As with the second alternative hypothesis, the third alternative hypothesis can only be accepted, but will not necessarily be if H_1 is accepted. The null hypothesis is confirmed if Danish consumers will not take significantly greater actions than Portuguese consumers.

H_4: Danish consumers are more willing to boycott firms suspected of warwashing than Portuguese consumers.

If the null hypothesis will be confirmed if Danes are not more willing to boycott firms than Portuguese consumers.

The data analysis will test these hypotheses, and the method section lays out exactly how the data analysis will be performed.

3. Method

3.1 Scope of research

As this research focuses merely on Portuguese and Danish consumers, it is important to define the scope of the research clearly. Most existing data generally describe warwashing, classifying all consumers in the same category. This research focused on comparing two contrasting cultures and sets of consumers to identify and analyze the differences and similarities. While the existing literature has been acknowledged, it must be considered with a grant of salt as conclusions may differ when comparing the general consumer view of warwashing or other countries' consumer behaviors to Portuguese and Danish consumers.

3.2 Scientific approach

Objectivism was desired as the philosophy of science for this research paper. Objectivism can be portrayed as "the position that social entities exist in reality external to social actors." (Saunders et al., 2016, p. 108). In its essence, objectivism concentrates more on facts rather than meaning. Since this research desired to analyze consumer differences and similarities precisely, objectivism was the most appropriate philosophy of science to adopt. The chosen philosophy helped guide the research paper by grounding and limiting ambiguous responses and, instead, staying rooted in the objective reality of Portuguese and Danish consumers.

3.3 Data collection

It made sense to conduct a cross-cultural study to analyze and compare the perception of Portuguese and Danish consumers. This study made used a survey. Using a cross-cultural study on both Portugal and Denmark rooted in the Russia-Ukraine conflict, this research paper allows for the in-depth analysis and comparison between Portuguese and Danish consumers, which was the study's main objective. The time horizon of the research was cross-sectional, implying that it provided a snapshot at a specific time (when the questionnaires ended in December 2022). The choice of a cross-sectional time horizon was based on the time constraint of writing this research paper and on consumer behaviors taking considerable time to change. Concurrently, the research utilized a confirmatory approach in which it sought to explore the phenomenon while being open to various outcomes primarily rooted in objective quantitative data in correspondence to the philosophy of science adopted. This cross-cultural study was conducted using the cross-sectional research design focusing on a specific point in time while collecting data from a wide array of respondents (Saunders et al., 2016). Primary and secondary data were collected in connection with the cross-cultural study.

The research largely used primary data in a quantitative approach with the aim of more generalizability rather than profundity. Conducting primary data through questionnaires inevitably contributed to more refined, profound, and exhaustive research. The primary data was intended to be used as a specific measure for this research in particular

Since the research mainly focuses on quantitative data collection, it was appropriate to perform quantitative questionnaires that supported the study with various insights from both Portuguese and Danish consumers. The main purpose of the questionnaires was to collect data on these consumers and analyze response patterns. This research acknowledges that biases may occur when

collecting primary data. Therefore, it was essential to carefully implement the questionnaire with questions in the proper order while avoiding writing errors leading to forced/preferred answers (Saunders et al., 2016). The questionnaire was performed virtually through an online link posted in different forums and platforms and public areas by paper and pen. It was designed so respondents could choose their preferred language (Portuguese, Danish, or English). The survey was available to be answered for three weeks on surveymonkey.com, aiding enough time to acquire enough responses. The responses from the survey (both virtual and physical responses) were then manually transformed into an Excel sheet able to be analyzed. It was vital to eliminate the errors above and misunderstandings by properly translating and unifying the three questionnaire versions to avoid response biases.

Additionally, respondents picked their nationality (Portuguese or Danish), gender (male, female, or other), and age group omitting possible respondents under 18 years old. Age was divided into several groups: "18-29 years old", "30-44 years old", "45-59 years old", and "60+ years old". These two variables would then be used to differentiate between Portuguese and Danish consumers while also allowing sorting by gender and age for more complete research. Multiple pilot tests were performed to ensure that the survey was free of major errors. Initially, a front page explaining the purpose of the research was shown alongside a brief description of warwashing, including examples related to the Russia-Ukraine war. Respondents were informed that all questions must be considered in light of the conflict in Ukraine, and firms warwashing on social media.

Moreover, respondents were informed of the anonymity of the questionnaire here. The questionnaire consisted of nine questions. This was based on the questionnaire needing to provide the research with enough data and information to be analyzed effectively. On the one hand, the questionnaire did not have less

than nine questions as there would be a risk of not acquiring enough data to establish profound insights on Portuguese and Danish consumers. On the other hand, the questionnaire could have included additional questions, but these would have come with the risk of becoming redundant and/or not relating to the research question. Additionally, a relatively substantial questionnaire runs the risk of respondents losing concentration resulting in exiting the questionnaire before completion and, ultimately, leaving a bias throughout the research as well as a lower completion rate. The research found that a nine-question questionnaire was ideal for it not to be overly lengthy nor short to the extent of unaccounted information being neglected.

The questions (apart from the last) adopted Likert's 7-point scale. This form consists of a rating scale ranging from 1 (being the lowest point) to 7 (being the highest point). It often includes questions or statements such as "drinking milk every day is important to me" followed by choice to select numbers between 1 (strongly disagree) and 7 (strongly agree). 4 is the middle point and is equivalent to "neutral". The value of 2 signifies "disagree" while 3 suggests "somewhat disagree". Conversely, values 5 and 6 indicate "somewhat agree" and "agree". Using the Likert scale allows the researcher to explore and collect the surveys quantitatively while enabling the transformation of the data into tables and statistics.

Moreover, unlike binary response options, the Likert Scale provides more nuanced responses with detailed insights into Portuguese and Danish consumer perceptions of warwashing (Bhandari & Nikolopoulou, 2020). Concurrently, the research also acknowledged that there might be some biases related to the Likert scale. For example, respondents may respond in a way that is at risk of social desirability. This response bias implies that respondents are inclined to answer what is believed to be more socially accepted or less controversial. This bias is critical to avoid as the research wants to analyze the real opinions of consumers.

Another bias connected to the Likert scale was the central tendency error bias in which respondents rarely opt for the scale's extremes (answers 1 and 7) but choose the middle values more often. A respondent may be inclined to select answers in the middle if they lose interest in the questions or remain neutral.

The sampling method used for this research project to select participants was the probability sampling method. More precisely, it made use of a simple random sample. The simple random sampling method selects a random sample of the population in which each member has an equal chance of being represented in the research data (Saunders et al., 2016). The purpose of this sampling method is to accurately represent the population as a whole using a small sample of that population. This was done by distributing the survey link to various virtual platforms and forums. However, to make it as random as possible, avoid selection biases, and include people offline as well, the survey was also conducted by hand, where random Portuguese and Danish citizens were asked to answer in public areas at various times of the day. It may be exposed to the risk of participants clicking off (online) or avoiding answering some questions (offline), which would result in incomplete responses making the survey less random without including this specific respondent's answer.

The data from the questionnaires were analyzed in a deductive manner in which hypotheses were propounded before the data collection. These hypotheses were centered around the literature review. Subsequently, the collected data was then linked to the hypotheses. Using a deductive approach enabled the research to test the hypotheses by first having literature review theories assessed and analyzed in correspondence to the data. Ultimately, the research will either accept or reject the hypotheses as well as the null hypotheses which will then, ultimately, assist in answering the research question.

The secondary data is always collected for a different purpose, so it must be carefully assessed specifically for this study. Regarding data collection, the study

also drew from secondary data (both quantitative and qualitative to envelop triangulation) such as journals, books, articles, and data sets. Authors and organizations were scrutinized to ensure the data's validity and reliability (Saunders et al., 2016). To help collect the secondary data, the study primarily used search engines such as Scopus by searching more advanced and filtering for more precise and reliable literature but also confirmed publishers like Sage. Before employing the data, the journal ranking named SCImago Journal Rank, a scientific reliability measure using journal prestige and total citations in large databases, was assessed.

3.4 Paired t-test/data analysis

An Excel sheet was created to accurately analyze the collected survey data. This research paper utilized paired t-tests to analyze possible significant relationships and differences between Portuguese and Danish consumers. The statistical inference mainly applied statistical tools and software such as Microsoft Excel and John's Macintosh Project (JMP) 17. The statistical inference involved different statistical measures such as the mean, median, distribution, and standard deviation analysis. Furthermore, JMP also enabled the researcher to analyze relationships and hypotheses by performing paired t-tests using p-values (probability values) which indicate how likely particular observations are if the null hypotheses were true. Combined with the p-values, it was vital to identify a significance level showcasing the probability of falsely rejecting a true null hypothesis. This study uses a 5% significance level, which is the benchmark for research, meaning that there is a 5% (0,05) chance of falsely rejecting a null hypothesis even though it was true.

The statistical inference is used in this research to better understand how Portuguese and Danish consumers are affected by social media warwashing and to measure differences supported by clear statistical evidence. The answers will

be compared and analyzed using paired t-tests and a scatter (XY plot) using the abovementioned p-values and significance level.

4. Results

4.1 Data presentation

As previously mentioned, the survey incorporated nine questions, and during the three weeks of data collection, the total observations accounted for 218 responses. The distribution can be seen in the figure below:

	Portuguese	Danish	Total
No. of responses	104	114	218
— **Female**	49	64	113
~ 18-29	13	25	38
~ 30-44	11	19	30
~ 45-59	12	10	22
~ 60+	13	10	23
— **Male**	50	45	95
~ 18-29	16	20	36
~ 30-44	11	10	21
~ 45-59	15	4	19
~ 60+	8	11	19
— **Other**	5	5	10
~ 18-29	2	3	5
~ 30-44	1	2	3
~ 45-59	2	0	2
~ 60+	0	0	0

Figure 1 – Data distribution

The survey questions are laid out in a manner in which they can be divided into three sections: "Consumer priorities" (questions 1-3), "consumer empowerment" (questions 4-6), and "types of warwashing" (questions 7-9).

4.1.1 Consumer priorities

Question 1 of the survey dictates whether or not warwashing is a priority for Danish and Portuguese consumers when buying products or services.

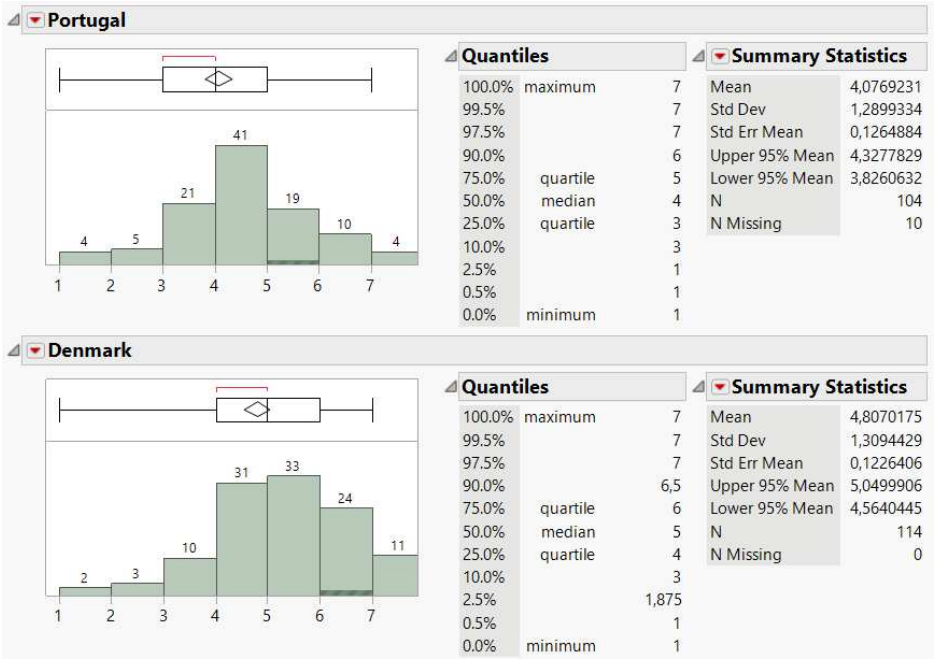

Figure 2 - Warwashing as a priority

As can be observed from the histogram in figure 2, both Danish and Portuguese consumers follow a normal distribution. Portuguese consumers appear to be more centered, while Danish consumers are skewed to the right side of the figure. The median for Portugal is 4, while Denmark's is 5. The data for Portugal showcase a mean score of 4,07. In contrast, Danish data score a mean of 4,8, indicating that Danish consumers are relatively more likely to have warwashing as a priority when buying products or services than Portuguese consumers. The standard deviations are similar at 1,29 for Portugal and 1,31 for Denmark, implying a similar average spread from the mean.

Question 2 of the survey assessed if consumers would avoid products or services from warwashing firms even if cheaper alternatives existed. The average response for Portuguese consumers is 3,54, while it is 4,34 for Danish consumers. Both means are lower than the ones in question 1. Not every consumer seems prepared to act at the expense of acquiring cheaper products or services. Furthermore, like the first question, Danish consumers generally seem less

willing to compromise on price when faced with more affordable warwashed products or services than Portuguese consumers.

The last component of consumer priorities is question 3. It relates to consumers' likelihood of informing family and friends about warwashing behavior on social media.

Only the Portuguese data set follows a normal distribution, as the Danish data set can be described as bimodal with two peaks. As can be observed by the distribution of the two data sets, the Danish consumers seem to be more spread. The standard deviation for Portuguese consumers is 1,4, whereas it is 1,69 for Danish consumers. The bimodal distribution displays this distinction by its shape.

4.1.2 Consumer empowerment

The first component of consumer empowerment relates to question 4. It revolves around the willingness of consumers to do an in-depth exploration of companies suspected of warwashing. The mean in Portugal is 4,05 compared to Denmark's 4,49. The means are quite contrasting, and they would lead to believe that there is a significant difference. However, this can only be identified with certainty after analysis. Also worth noting is that only a single Danish consumer picked option "1". The standard deviations are fairly similar at 1,31 and 1,35, respectively.

Concerning boycotting and question 5, what is interesting to observe is that only one respondent from each country strongly disagreed with the statement. There is a tendency for respondents to use the highest scores on the scale, with 10 of the Portuguese respondents strongly agreeing and 11 of the Danish respondents similarly agreeing. The Portuguese median is 4, compared to Denmark's 5. The average for Portugal is 4,13, and for Denmark, it is 4,66. The relatively high standard deviation may be caused by respondents using the top

value more in this question than in others, indicating that both consumer sets are willing to boycott a warwashing brand even though they had a preference for it.

Question 6 is very much related to question 5. It concerns consumers' belief that their actions can help prevent warwashing firms. It is worth noting that, unlike previous questions, both Portuguese and Danish consumers have used option "1" to a large extent. 14 out of 104 (13,5%) of the Portuguese sample population chose the lowest value suggesting that they strongly disagree with their actions being capable of preventing warwashing. For Denmark, 6 out of 114 (5,3%) responded the same way. The mean for Portugal is 3,06, while it is 3,51 for Denmark. These are the lowest values, yet both Portuguese and Danes disagree with the statement.

4.1.3 Types of warwashing

Considering whether consumers are more attentive and distrustful towards advertising on social media than other platforms aids an insight into whether or not warwashing on social media is a worse type of warwashing than other platforms. The median for Portugal and Denmark is 4 for both. Nevertheless, the means are very diverse. Portuguese consumers have an average answer of 3,72 compared to Danish consumers' 4,27. This implies that Danish consumers are more attentive and distrustful of advertising and potential warwashing on social media than on other platforms compared to Portuguese consumers. The standard deviations are relatively high at 1,42 for Portugal and 1,52 for Denmark, implying that average consumer opinions are spread away from the mean, often picking choices "1", "2", "6" and "7".

It is also interesting to observe if transparent companies are preferred over tacit companies when considering warwashing. The penultimate survey question revolves around just this. Figure 3 provides a snapshot of the data:

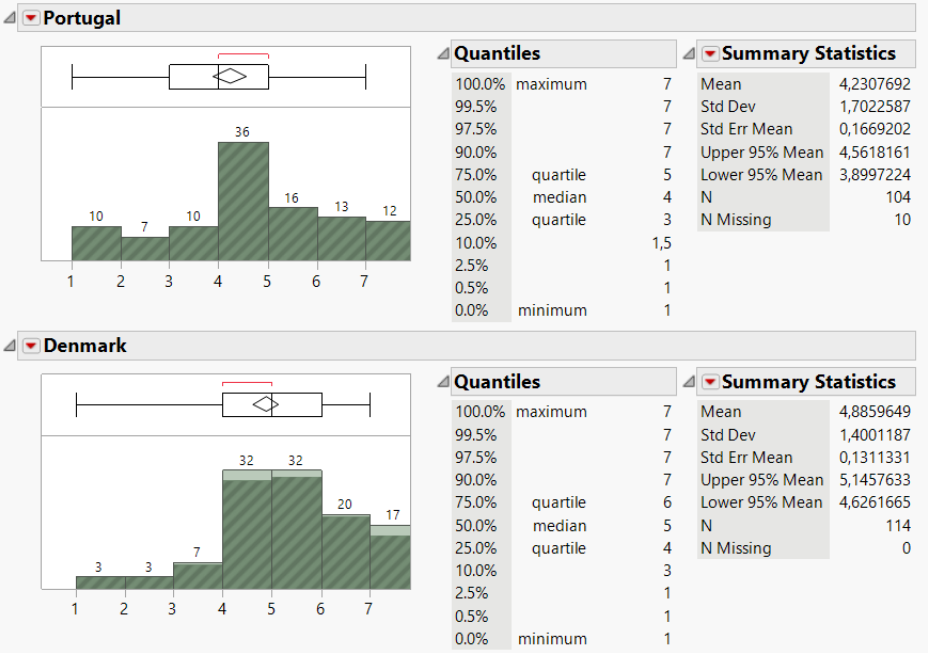

Figure 3 - Transparent to tacit firms

The figure displays that Portuguese data is widely dispersed, with a standard deviation of 1,7 compared to Denmark's 1,4. The median for Portuguese consumers is 4, while it is 5 for Danes. Both means are higher than the previous questions at 4,23 for Portugal and 4,89 for Denmark. This indicates that both consumer sets prefer transparent firms over tacit firms. This means they prefer companies that are open about their activities and contributions.

Question 9, and the final, asked respondents which type of warwashing they consider the most serious. Below is the distribution for both Portuguese and Danish citizens:

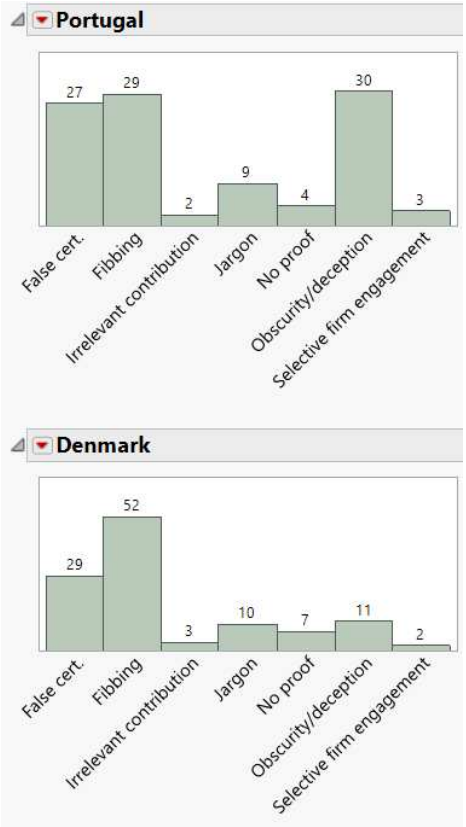

Figure 4 - Warwashing techniques

The data illustrates that Portuguese consumers consider obscurity/deception as the most serious warwashing technique, with 30 out of 104 responses, the equivalent to 28,8%. On the other hand, Danish consumers do not consider obscurity the most serious type. Only 11 out of 114 (9,6%) respondents answered "obscurity/deception". For Danish consumers, fibbing is the dominant technique of serious warwashing with 52 observations out of 114 (45,6%) followed by 29 observations of false certification. Common for both sets of consumers is that none of them perceive "no proof", "irrelevant contribution," or "selective firm engagement" to be very serious.

4.2 Data analysis

The paired t-test p-values for each question can be seen in appendix 3.

4.2.1 Consumer priorities

As presented in 4.1.1 in question 1, Danish consumers had a comparatively larger mean than Portuguese consumers. Subsequently, using the JMP software program, we find evidence that the difference was not just by coincidence. The paired t-test's p-value for question 1 is less than 0,0001, much lower than our pre-set significance level of 5%. Putting the data into another perspective, the scatter diagram provides a nuanced view:

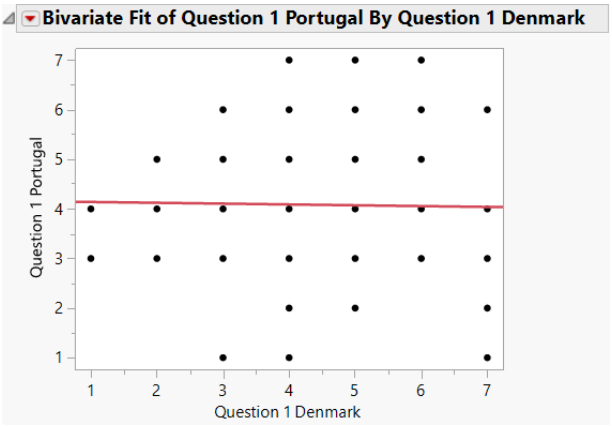

Figure 5 - Scatter plot Q1

If there were to be a clear correlation between Portuguese and Danish consumers, then the black dots would tend to follow the red fit line. This is not the case, and we can deduce that there is a meaningful difference in question 1 and that it is not due to a happenstance. This difference implies that we can confirm the second alternative hypothesis in Danes being more likely than the Portuguese to have warwashing as a priority. Portuguese individuals are more "neutral" towards the question, whereas Danes lean more towards agreeing.

If we take a closer look at the data, it becomes intriguing when concentrating on the independent variables of age and gender, too, to see how the dependent variable is affected. It becomes evident that there is a clear pattern. Danish females aged 18-29 have an average mean of 5,16 compared to Danish males aged 60+, with a mean of only 4,09 far from the average of 4,8. The same pattern was found and analyzed in the Portuguese data with women aged 18-29 having an

average of 4,46 compared to men aged 60+ with an average of merely 3,5. Observing all the data for question 1, a larger discrepancy between women and men in Denmark compared to Portugal was evident. In Denmark, females had a relatively larger mean than men (4,94 to 4,56) than in Portugal (4,02 to 4,1). The data analysis revealed that females in Denmark are more likely to have warwashing as a priority than males. On the other hand, Portuguese males are more likely to have warwashing as a priority than females. However, Danish consumers seem to have a greater emphasis than Portuguese consumers when it comes to having warwashing as a priority when buying products or services.

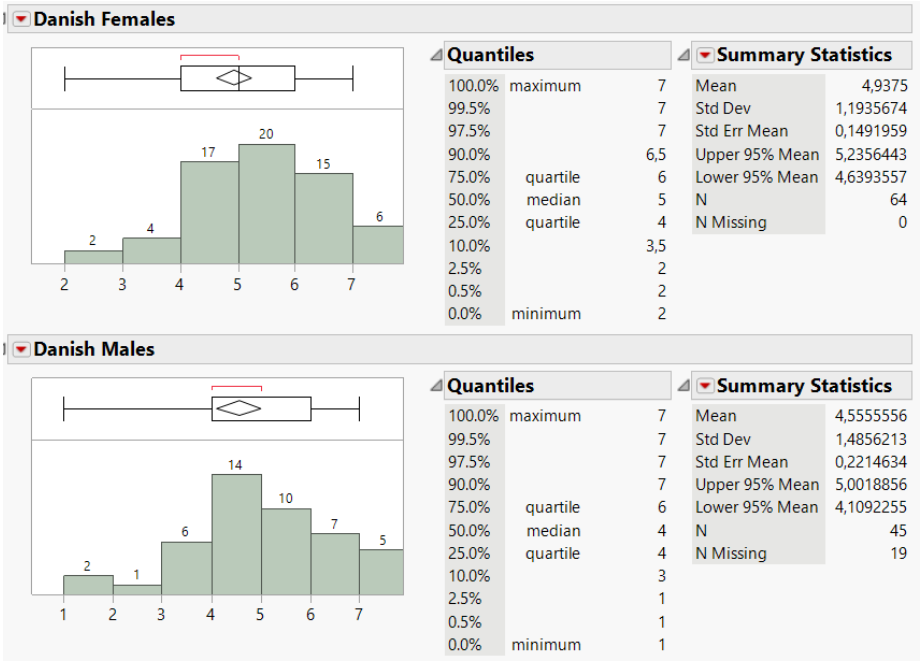

Figure 6 - Danish genders compared Q1

For question number 2, both standard deviations were comparable to the ones in question 1, which predicts that respondents may have only altered the answer slightly from question 1 if at all. Using JMP to compute the data shows a similar result to question 1. The paired t-test's p-value for question 2 is also <0,0001%. Hence, we can deduce a correlation between the two sets of consumers regarding the willingness to buy/avoid cheaper warwashed products or services. The analysis explains that there is less than a 0,0001 chance of such an occurrence,

given that the null hypothesis is true. So, in correspondence with the significance level at 5%, it is undoubtful that there is a clear correlation and tendency for Danes to avoid cheaper warwashed products/services.

There were only minor intra-related differences for question 2. Once again, Danish females aged 18-29 scored the highest with a mean of 4,68, while similarly, aged Portuguese females scored only 3,38 in contrast. Moreover, Portuguese males aged 18-29 scored significantly higher, with a mean of 4,25. A contrasting pattern is already unfolding as Danish females appear to have higher mean scores than males. Contrarily, Portuguese males seem to have elevated means compared to Portuguese females. It is thought-provoking to couple the tendency mentioned above for Danish individuals to act faster and avoid warwashing firms with the results of question 2. Cultural dissimilarities seem to impact and influence the outcome of responses in question 2. As was laid out before, Hofstede's cultural dimensions and the additional literature on culture point to Danish consumers being far more frequent purchasers online than the Portuguese, combined with less importance on risky situations. It can be seen that the cultural aspect has an impact.

To analyze the last question of consumer priorities, computing question 3 is necessary. Plotting the data in JMP results in a p-value of 0,636. This indicates no correlation between Portuguese and Danish consumer responses concerning informing friends and family about warwashing behavior on social media. Nonetheless, on average, Portuguese consumers are more likely than Danish consumers to advise their peers about warwashing, which is somewhat surprising given that Danish consumers have had much greater means in the previous two questions. The p-value is considerably higher than the 5% significance level: therefore, deducing any correlation or meaningful difference is impossible. For this reason, survey question number 3 supports the null hypothesis for H_1 and H_3.

What is also worth noting when digging into this data is that Danish females have the highest mean of 4,72, and there is a clear tendency for younger Danish consumers to inform peers about warwashing. In comparison, older Danish consumers are not very engaged. Analyzing the means of just 3,4 for Danish females aged 60+ and 2,73 for Danish males aged 60+ provides a nuanced portrait of younger Danes taking more action than older Danes. Conversely, Portuguese responses do not seem much affected by age groups.

To sum up the "consumer priorities", it becomes apparent that there are vast variations in the Portuguese and Danish consumer sets. Questions 1 and 2 point to Danes considering warwashing a priority and reluctance to buy warwashing products at a cheaper cost. These distinctly argue against the null hypotheses whereas question 3 cannot provide any profound testimony that Portuguese and Danish consumers are unlike.

4.2.2 Consumer empowerment

To start the analysis of consumer empowerment and how empowered Portuguese and Danish citizens feel toward social media warwashing, it is appropriate to analyze question 4. A result of 0,012 appears when computing the p-value. Thus, it can now be deduced with certainty that there is a correlation between Portuguese and Danish respondents. Danish respondents are more likely to explore and investigate firms they suspect of warwashing than Portuguese respondents. This may have to do with the literature review regarding country culture and Portuguese individuals being more accepting while Danes consider more extreme measures to fight warwashing while Portuguese citizens are more pessimistic towards it. The data confirm the alternative hypothesis 3 in Danes taking greater actions.

Another discovery can be observed in that for question 4, Danish females aged 18-29 do not score the highest (4,4). Danish males in the "30-44" age group have the highest mean of 4,7. For Portuguese consumers, females aged 18-29 score the

highest, with 4,46, while Portuguese females aged 60+ score 4,23. Additionally, what is remarkable about this data is that the highest and lowest average is the same gender and age group. As previously mentioned, responses from Danish males aged 30-44 have a mean of 4,7. Alternatively, Portuguese consumers aged 30-44 have a mean of merely 3,36. This can be explained by a couple of outliers answering "1", but it is an interesting occurrence nevertheless. If, by experiment, we remove the outliers the new mean increases to 3,63

In regards to boycotting as a means of consumer empowerment, it is also appropriate to analyze question 5. Here, the p-value was computed to a value of 0,01. As this value is less than the significance level, it can be concluded that there is a correlation that is not due to a coincidence. That is to say that Danish consumers are more likely to boycott brands that they have a preference for compared to Portuguese respondents. Both means are above four, highlighting that, on average, both data sets skew more toward agreeing to boycott. However, based on the analysis, Danish consumers are far more likely to take boycotts into action to discontinue ties with warwashing brands. This confirms the alternative hypothesis 4. The results may have to do with the Portuguese being more loyal to brands while preferring what is old, known, and structured. As mentioned, Danish culture scores low on uncertainty avoidance and being indulgent rather than restrained. Furthermore, when connected to the boycott theory that the literature review laid out, there appears to be congruence between the theory stating and predicting that Danish consumers are more likely to boycott products than Portuguese consumers. The sustainable and ethical behavior theory also supports this claim by Denmark being one of the top countries in this category, as boycotting is an exceedingly ethical action towards warwashing.

Once again, Danish females in the age group "18-29" score the highest mean of 5,08, and there is a clear trend in this group agreeing most to questions. In comparison, Portuguese females in the same age group have a mean of 4,31,

substantially lower. An enthralling notion of the data is that Danish females constantly have higher means than Danish males, while, for Portugal, a clear picture of gender differences cannot be depicted. Equal for both Portugal and Denmark is that there is a trend of the means decreasing as the age increased. While a correlation is undoubtedly noticeable, it is vital not to get ahead of oneself. Inherently, correlation does not imply causation, and we cannot strictly say that age is the deciding factor, as there may be latent variables.

To analyze consumer empowerment fully, question 6 helped provide a view of how actions can prevent warwashing. The paired t-test's p-value resulted in 0,0087, meaning that we reject the null hypothesis that there is no correlation between Portuguese and Danish consumers in question 6 due to the set significance level. In other words, the Portuguese sample population disagrees more with the question than the Danish respondents. Both data sets have an average below four, indicating that they disagree with the statement. Nonetheless, the Danish mean is closer to the value "4" while the Portuguese mean is closer to the value "3". What can be derived from this is that Portuguese and Danish consumers ultimately hold different opinions when evaluating whether they believe their actions can prevent warwashing. The evidence supports alternative hypothesis 3 as Danes are likely to take more actions due to a stronger belief in them having an impact. It may be related to Hofstede's cultural dimension because Portuguese culture is more pessimistic than Danish culture, which believes in immediate and radical change through action.

Based on assumptions, one would be led to believe that the younger age groups are more optimistic than older age groups in preventing warwashing by actions and will therefore have higher means. However, this is only partly true. Danish females, independent of age group, score almost the same mean in question 6. Even more captivating is that a reverse order is evident for Portuguese women as "45-59" and "60+" score higher than the two youngest age

groups. For males in both Denmark and Portugal, the only relationship appears to be the "60+" age groups scoring lowest in both countries with 2,91 and 2,38.

To assess "consumer empowerment", all three categories/questions (4, 5, and 6) related to consumer empowerment show resounding evidence that Danish consumers generally feel more empowered towards warwashing than Portuguese consumers. The data implies that Danish consumers feel that their actions make changes relatively more than Portuguese consumers feel.

4.2.3 Types of warwashing

Question 7 laid out whether or not social media advertising (and potential warwashing) is a more suspect type of advertisement than other platforms. Initially, Danish individuals look more concerned than Portuguese respondents, and the durability of this argument can be computed, analyzed, and tested using the p-value through JMP. The p-value of question 7 comparing Portugal and Denmark is 0,0021, which is low enough for the research to deduce a correlation that did not occur by happenstance. Hence, there is evidence beyond a reasonable doubt that Danish consumers are indeed more attentive and distrustful towards social media advertising than other platforms compared to the Portuguese sample population. Danish consumers are more likely to agree with the statement, while Portuguese consumers are more likely to disagree.

If the data is explored deeper, some interesting information comes to light. What becomes palpable is that for both data sets, there are huge differences when comparing age groups. For instance, Portuguese and Danish females aged 18-29 have means of 4,38 and 4,84. On the other hand, Portuguese and Danish females aged 60+ score only 2,54 and 2,6, far from any other age groups. The same pattern can be analyzed for Portuguese and Danish males aged 18-29, scoring 4,25, and 4,8 compared to Portuguese and Danish males in the 60+ group, accounting for averages of just 2,625 and 2,3, also far from any other age groups. These results may be due to younger people being targeted more on social media as well as

being more active users (Auxier & Anderson, 2021). The youth, especially Gen Y and Gen Z, are more aware of how firms can manipulate social media. In contrast, older people (baby boomers) and Gen X can be ignorant about this subject. The younger age groups may be more attentive to firms attempting to warwash on social media without giving proof, providing references to work, and trying to hide other activities.

Transparency seemed to be preferred over tacticity by both Portuguese and Danes in question 8. By computing in JMP, it is possible to see whether the gap between the sets is significant. Doing this results in a p-value of 0,0034. The value is less than 5%, so there appears to be a substantial correlation. A closer look at the X/Y scatter plot confirms that the dots do not follow the red fit line indicating that there is a correlation:

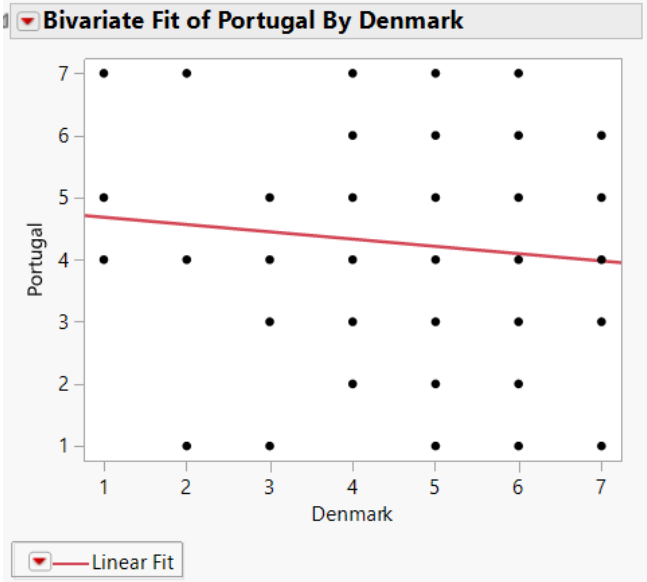

Figure 7 - Scatter plot Q8

The correlation relies on the fact that Danish consumers prefer transparent companies relatively more than Portuguese consumers. This implies that it is not enough for firms to be tacit for Danes and that transparency is highly preferred. Looking back at the literature review and washing typologies, Danish and

Portuguese consumers prefer vocal green firms over silent firms than may be more suspect of being silent brown firms.

The data shows that the youngest age groups have the highest means in both countries. Portuguese females aged 18-29 score 4,77, while similar Danish females score 5,4. Portuguese males in the same age group score 4,94 compared to similar Danish males scoring 4,8. Danish females aged 18-29 consistently score highest in Danish data, while Portuguese males aged 18-29 tend to have the highest mean. The rest of the age groups do not show any striking differences. However, there is a major difference: Portuguese females aged 60+ have a significantly lower mean than Danish females of similar age. The Portuguese scored 3,62 while the Danes scored 4,6. The difference may be attributed to cultural dimensions such as indulgence. Portuguese individuals are comparably more restrained, whereas Danish citizens are more inclined to confront warwashing.

Regarding question 9, it is, likewise, possible to further analyze if there is a correlation between Portuguese and Danish consumers and their perception of the most serious warwashing technique. Consequently, when computed, the paired t-test p-value shows a value of 0,9766. This value is far more than the 5% significance level. The outcome enlightens sufficient evidence to deduce that the observation is the same as the expected distribution, and there are no noteworthy dissimilarities.

It can be deduced that "types of warwashing" has provided several answers. Questions 7 and 8 confirm that Danish consumers are more likely to consider social media advertising more suspect and prefer transparent companies relatively more than Portuguese consumers. No significant evidence was found in question 9 concerning which type of warwashing technique is more serious.

This comparative research case study deduces that Danish consumers are more likely to have warwashing as a priority, initiate greater actions when exposed to warwashing, and believe that their actions make a difference, as well as be more suspect of non-transparent firms. Only questions 3 and 9 show no correlation in meaningful dissimilarities concerning informing friends/family about warwashing and most serious warwashing techniques. For this reason, the first alternative hypothesis can be confirmed as Danes are affected relatively more than the Portuguese. Danish females emerged as scoring the highest overall means of all groups, and, in general, Danish females scored higher than Danish males. On the other hand, there did not seem to be a relationship between Portuguese females and males. However, the study deduced that the "60+" age group scored much lower means than other age groups.

Based on the survey, the null hypotheses can be rejected. The survey's data presentation and data analysis show a significant correlation between how Portuguese and Danish consumers are affected by social media warwashing. Simultaneously, all alternative hypotheses can be confirmed.

	Test	P-values	Confirmed
Hypothesis 1	Paired t-tests	0,0001, 0,0001, 0,6362, 0,0116, 0,0098, 0,0087, 0,0021, 0,0034, 0,9766	Confirmed
Hypothesis 2	Paired t-tests	0,0021	Confirmed
Hypothesis 3	Paired t-tests	0,0001, 0,6362, 0,0116, 0,0098, 0,0087	Confirmed
Hypothesis 4	Paired t-tests	0,0098, 0,0087, 0,0034	Confirmed

Figure 8 - Hypotheses overview

The hypotheses overview shows the survey question p-values for each hypothesis. For example, hypothesis 1 incorporates more than one question, with the lowest score being 0,0001 meaning that the hypothesis can be confirmed and the null hypothesis rejected. Hypothesis 2 includes only the p-value for question 7 related to social media use while the hypothesis 3 p-values consists of survey questions 2 (0,0001), 3, 4, 5 and 6 corresponding to consumers taking actions. Finally hypothesis 4 is composed of survey questions 5, 6 and 8 (0,0034) in accordance with boycotting.

5. Discussion

This research paper commenced by informing about firms taking advantage of different color washings methods due to war events like the Ukraine-Russia conflict and establishing a new notion called "warwashing". With the guidance of the introduction, literature review, and data sections, this research can draw several conclusions. The literature review helped explain why differences are observed and regulated five hypotheses, aiding guidance in answering the primary research question. The posed hypotheses helped in answering the research question.

To definitively answer the research question and bear in mind the survey, Portuguese and Danish consumers are differently affected when exposed to social media warwashing. Danish consumers are affected more than Portuguese consumers. For example, the nine survey questions claim and verify that Danish consumers are more prone to having warwashing as a priority while also being more likely to not buy from warwashing firms despite cheaper alternatives. Additionally, Danes are affected in a way in which they are willing to perform a greater degree of exploration into suspect companies as well as boycott more often than the Portuguese. On the other hand, Portuguese consumers are affected in a manner that sees them believing less that their actions can prevent warwashing than Danish consumers. Lastly, Danish consumers appear more attentive and distrustful of social media advertising than their counterparts. They are more likely to purchase from transparent firms rather than tacit ones related to warwashing communication.

Connecting the literature review to the results provided multiple theoretical findings. Firstly, Hofstede's cultural dimensions accurately predicted that Danish consumers are influenced more than Portuguese as it confirms differences in Danes taking greater action, having more optimism in change, and demanding transparency. The boycott theory from the literature review also

confirms the results predicting a greater tendency for Danes to boycott products and services. This theory finds that Danish consumers should have higher scores in questions 5 and 6 related to boycotting, which was indeed the case. Therefore, the boycott theory successfully predicted the survey outcome confirming the results.

Furthermore, the results also support the literature suggesting that Danes take more environmentally friendly actions than Portuguese. All the literature suggested that Danish consumers would be affected more than Portuguese consumers in the survey. The theory about environmentally friendly actions also supported the hypothesis that Danes are affected relatively more than Portuguese. Ultimately, the theoretical findings and results of Danes being affected more than Portuguese confirmed the components of the literature review to be true.

Based on the paper, some curiosities can be discussed. For example, how should companies cope with differences between Portuguese and Danish consumers on social media? Considering the data results, managers and corporations must adapt their social media use in correspondence. On the one hand, firms need to consider Portuguese consumers, and here they may not need huge alterations on social media. Firms need to acknowledge that, while warwashing is still a topic, companies do not necessarily need to be extremely transparent with consumers like Danish consumers. The data shows that Danes require more transparency from companies on social media. Therefore social media managers mainly dealing with Danish consumers might be better off by paying a great deal of attention to clearly communicating activities connected to potential warwashing. Suppose a company has both Portuguese and Danish consumers. In that case, it arguably needs to assess which consumer segment is more valuable, and then use that strategy to avoid being accused of warwashing. Alternatively, companies could split their social media activities by language,

only exposing Portuguese and Danish consumers to advertisements in their language. However, this option must be evaluated regarding the time, error tendency, and costs of having social media in numerous languages.

Another curiosity to discuss is what warwashing types companies should be extra aware of to avoid. The data shows that fibbing is a very serious technique coupled with social media being more distrustful of Danish consumers. Therefore, companies dealing with Danish consumers must avoid any type of activity resemblant to fibbing while being more transparent, preferably making social media pages transparent and not being tacit about key activities. If companies fail to do so, serious consequences are likely to follow, such as boycotting. Conversely, Portuguese social media managers may need to avoid obscurity, but they may not need to be as transparent and vocal in activities as Danish managers. Independent of nationality, irrelevant contributions with high levels of transparency and communication are not likely to become a major concern for managers. However, although such activities should still be avoided, the consequences are unlikely to be grave.

At last, is it sustainable for companies to engage in warwashing? While the short-term outcomes and economic benefits of warwashing activities are unknown, the paper illustrates strong evidence that companies will receive backlashes if caught. The long-term consequences of warwashing are not to be taken lightly. In the long run, if firms are caught, evidence shows that Danish and Portuguese consumers are more willing than not to boycott (albeit Danes comparatively more). Other consequences may follow, such as deeper exploration into company activity by consumers in the future. The loss of consumers and sales will have a deep and embedded impact on companies and a tarnished reputation which characterizes a very unsustainable firm. So even though companies may gain short-term, the long-term consequences are enormous making warwashing an unsustainable business practice.

6. Conclusion

Based on this research, it becomes evident that warwashing is a topic that matters for organizations especially regarding consumer behaviors. It appears that firms not only need to ignore warwashing, but rather try to actively avoid it. As a concept, warwashing is a problem for firms since this study shows differences across two cultures. Therefore, warwashing remains a dynamic concept that organizations must be wary of seeing that consequences may vary across consumer segments. Evidence shows that if these differences are disregarded, then major backlashes such as boycotting occur. Simultaneously, organizations need less cultural standardization when operating in multiple countries, even if these countries are situated on the same continent. With all the pandemonium in the world contemporarily, warwashing is a phenomenon that managers must confront. The reason why warwashing matters so much for organizations is also related to consumers being more aware of sustainable business practices and easier access for consumers to investigate firm activities. What is also intriguing to note is that major companies like Carlsberg have taken initiatives and realized that the consumers demand actions regarding the Russia-Ukraine war. Pulling out activities in regions is just one way of actively engaging against warwashing, and it is important to fathom that warwashing is not only concerned with greenwashing during war events. Warwashing is the combination of different colored washings. Hence, the concept is constructed differently than traditional washings as it is focused on washing during special events (war) rather than a specific type of washing.

6.1 Limitations and future lines of research

While this research paper accounts for and analyzes how Portuguese and Danes are affected by social media warwashing, it does not cover everything related to the subject and has limitations. The fact that the study is cross-sectional and not longitudinal implies that the data was only collected at one point in time,

and, inherently, it is not possible to compare results over time to see if there is any noticeable evolution. Another limitation was limited access to existing cultural data comparing Portugal and Denmark. The existing cultural data was scarce and usually either accounted for differences between bigger European countries or comparisons between continents. Finally, there was a limitation in "warwashing" hitherto being an unstudied phenomenon inferring a shortage of specific literature on the topic.

A suggestion for further reasons is the exact reasons why the differences occur. With more time and the absence of a word limit, adding other demographic control variables such as income, religion, ethnicity and education would be intriguing to make the research more robust and deliver potential unforeseen insights. Conducting a longitudinal study to compare in time will also contribute to more nuanced insights. A third suggestion revolves around the managerial decisions for corporations to consider when war events are ongoing and what initiatives should be taken to truly be transparent about activities. Nonetheless, this research paper contributes to the existing literature on greenwashing, bluewashing, and pinkwashing by merging them into a new concept called "warwashing". This concept is highly relevant to the present day. It is more specific than traditional washings providing new and original insights that may be used as a reference for future research.

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Appendix 1 – Hofstede's cultural dimensions – Portugal and Denmark compared

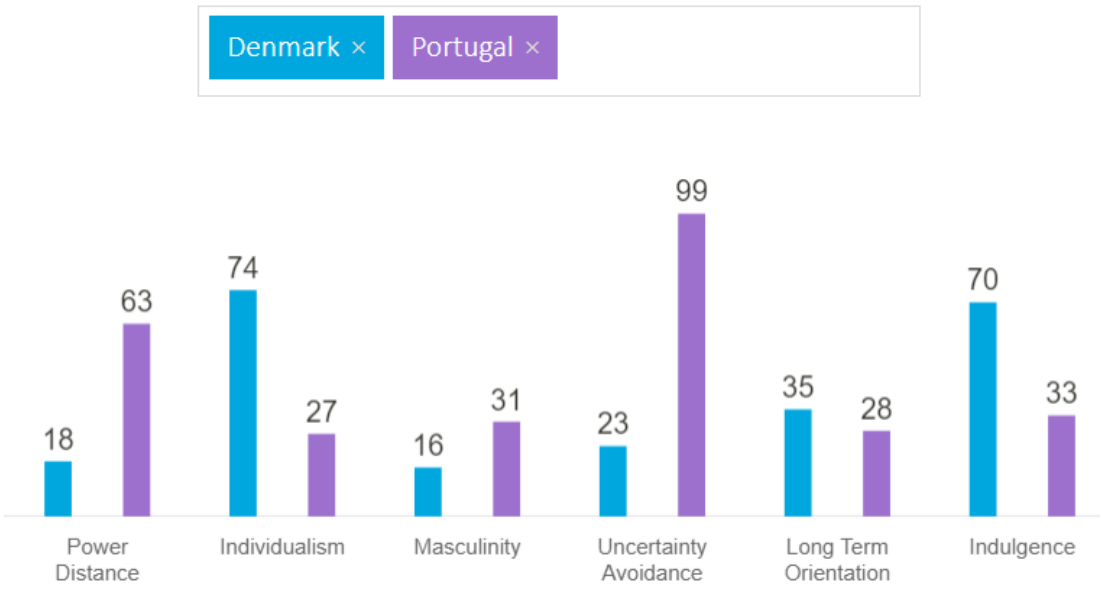

Figure 9 - Hofstede's cultural dimensions - Denmark and Portugal

Source: Hofstede-Insights

Appendix 2 – English survey copy based on the 7-point Likert scale (apart from question 9 which is a choice question)

Question 1: To what extent do you agree with the following statement?: Warwashing is a priority for me when I buy products or services.

Question 2: To what extent do you agree with the following statement?: I will not buy products or services from warwashing firms even if it is cheaper than alternatives.

Question 3: To what extent do you agree with the following statement?: I am likely to inform my friends and family about warwashing behavior from firms.

Question 4: To what extent do you agree with the following statement?: I am willing to do in-depth exploration into companies I suspect warwash.

Question 5: To what extent do you agree with the following statement?: I am likely to boycott a brand that I have a preference for if I knew the firm had warwashing activities.

Question 6: To what extent do you agree with the following statement?: I believe that my actions can help prevent firms from warwashing.

Question 7: To what extent do you agree with the following statement?: I am more attentive and distrustful towards advertising on social media than on other platforms.

Question 8: To what extent do you agree with the following statement?: I am more likely to buy from transparent companies that openly declare their contribution rather than tacit companies regarding warwashing.

Question 9: Which warwashing technique do you consider to be most serious? Possible options: No proof, irrelevant contribution, fibbing,

obscurity/deception, false certifications, jargon to confuse customers and selective firm engagement.

Appendix 3 – Parameter table results from JMP

Portugal	4,07692	t-Ratio	-3,74458
Denmark	4,76923	DF	103
Mean Difference	-0,6923	Prob > |t|	0,0003*
Std Error	0,18488	Prob > t	0,9999
Upper 95%	-0,3256	Prob < t	0,0001*
Lower 95%	-1,059		
N	104		
Correlation	-0,0175		

Figure 10 - Question 1 JMP results

Portugal	3,55769	t-Ratio	-4,18454
Denmark	4,31731	DF	103
Mean Difference	-0,7596	Prob > |t|	<,0001*
Std Error	0,18153	Prob > t	1,0000
Upper 95%	-0,3996	Prob < t	<,0001*
Lower 95%	-1,1196		
N	104		
Correlation	0,04644		

Figure 11 - Question 2 JMP results

Portugal	4,03846	t-Ratio	0,349339
Denmark	3,96154	DF	103
Mean Difference	0,07692	Prob > |t|	0,7275
Std Error	0,2202	Prob > t	0,3638
Upper 95%	0,51363	Prob < t	0,6362
Lower 95%	-0,3598		
N	104		
Correlation	-0,036		

Figure 12 - Question 3 JMP results

Portugal	4,04808	t-Ratio	-2,30315
Denmark	4,46154	DF	103
Mean Difference	-0,4135	Prob > |t|	0,0233*
Std Error	0,17952	Prob > t	0,9884
Upper 95%	-0,0574	Prob < t	0,0116*
Lower 95%	-0,7695		
N	104		
Correlation	0,06854		

Figure 13 - Question 4 JMP results

Portugal	4,13462	t-Ratio	-2,3692
Denmark	4,58654	DF	103
Mean Difference	-0,4519	Prob > |t|	0,0197*
Std Error	0,19075	Prob > t	0,9902
Upper 95%	-0,0736	Prob < t	0,0098*
Lower 95%	-0,8302		
N	104		
Correlation	0,03844		

Figure 14 - Question 5 JMP results

Portugal	3,05769	t-Ratio	-2,4162
Denmark	3,49038	DF	103
Mean Difference	-0,4327	Prob > |t|	0,0174*
Std Error	0,17908	Prob > t	0,9913
Upper 95%	-0,0775	Prob < t	0,0087*
Lower 95%	-0,7879		
N	104		
Correlation	-0,0055		

Figure 15 - Question 6 JMP results

Portugal	3,72115	t-Ratio	-2,92479
Denmark	4,31731	DF	103
Mean Difference	-0,5962	Prob > |t|	0,0042*
Std Error	0,20383	Prob > t	0,9979
Upper 95%	-0,1919	Prob < t	0,0021*
Lower 95%	-1,0004		
N	104		
Correlation	-0,0363		

Figure 16 - Question 7 JMP results

Portugal	4,23077	t-Ratio	-2,76739
Denmark	4,85577	DF	103
Mean Difference	-0,625	Prob > |t|	0,0067*
Std Error	0,22584	Prob > t	0,9966
Upper 95%	-0,1771	Prob < t	0,0034*
Lower 95%	-1,0729		
N	104		
Correlation	-0,0961		

Figure 17 - Question 8 JMP results

Test	ChiSquare	Prob>ChiSq
Likelihood Ratio	23,471	0,9466
Pearson	21,169	0,9766

Figure 18 - Question 9 JMP results