
ANTECEDENTS OF ENVIRONMENTALLY FRIENDLY CONSUMPTION
BEHAVIOUR: THE PORTUGUESE FASHION CONTEXT

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Abstract

The world is in a constant evolution and so are the consumer's needs and preferences. As a result, organizations in the Fast Fashion industry tend to deliver more options that reflect fashion trends in shorter time frames to satisfy customers. Since this industry is one of the most polluting, a significant problem is raised: the harm it causes to our environment. Nowadays, the negative effects of the fast fashion industry are gaining a lot of attention and weight and so are the consumers getting more aware of them, starting to consider their environmentally concerns and knowledge before and in the moment of realisation of their purchases. Bearing this in mind, this research seeks to understand whether consumers' environmental concern, environmental knowledge, environmental responsibility, and environmentally friendly consumption intention influence their environmentally friendly consumption behaviour. This study examines three additional mediation effects. Firstly, the mediation role of environmental concern between consumers' environmental responsibility and their consumption behaviours. Secondly, the mediation role of environmental knowledge and of environmentally friendly intention between consumers' environmental concern and environmentally friendly consumption behaviours. For that, this study employs a quantitative research approach, using a survey that was answered by 402 Portuguese consumers. The results reveal that the variables are positively correlated. The findings corroborate that consumers' environmental concern, environmental knowledge, responsibility and intention play a role in predicting and influencing positively consumers' sustainable consumption. The mediation effects were also validated except for the mediation effect of consumers' environmental concern between consumer environmental responsibility and environmentally friendly consumption behaviours. All the findings are consistent with prior research with the exception of the mediation effect that was not supported. Furthermore, this study extends earlier research on consumers' environmentally friendly behaviour since it brings more knowledge regarding the effect of the antecedents and the mediation effects. The findings have both theoretical and practical implications regarding the impact of these variables on consumers behaviours.

Keywords: Fast fashion industry, environmental impacts, environmental concern, environmental knowledge, consumer responsibility, sustainable consumption

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Resumo

O mundo está em constante evolução, assim como as necessidades e preferências dos consumidores. A indústria *fast fashion* tende a oferecer mais opções que refletem as tendências de moda em ciclos temporais mais curtos de modo a satisfazer os clientes. Como esta indústria é uma das mais poluentes, levanta-se um problema significativo: os impactos negativos que tem no nosso ambiente. Atualmente, os efeitos negativos da *fast fashion* estão a ganhar mais atenção e os consumidores estão mais conscientes dos mesmos, começando a considerar as suas preocupações e conhecimentos ambientais antes e na realização das suas compras. Neste contexto, este estudo visa compreender se a preocupação ambiental, o conhecimento ambiental, a responsabilidade ambiental e a intenção de consumo amigo do ambiente influenciam o comportamento de consumo amigo do ambiente dos consumidores. O estudo examina três efeitos de mediação adicionais: o papel de mediação da preocupação ambiental entre a responsabilidade ambiental dos consumidores e os seus comportamentos de consumo amigos do ambiente; o papel de mediação dos conhecimentos ambientais e intenção dos consumidores de consumo amigo do ambiente entre a preocupação ambiental dos consumidores e os comportamentos de consumo amigos do ambiente. Para tal, este estudo emprega uma abordagem de pesquisa quantitativa, utilizando um inquérito que foi respondido por 402 consumidores portugueses. Os resultados revelam que as variáveis estão positivamente correlacionadas. Os resultados corroboraram que a preocupação ambiental, o conhecimento ambiental, a responsabilidade e a intenção dos consumidores desempenham um papel na previsão dos comportamentos dos consumidores no sentido de um consumo mais sustentável. Todos os efeitos de mediação foram validados, com exceção do efeito de mediação da preocupação ambiental dos consumidores na relação entre a responsabilidade do consumidor e os seus comportamentos de consumo sustentável. As conclusões confirmam investigações anteriores, com exceção do efeito de mediação que não foi suportado. O estudo complementa investigações anteriores sobre o comportamento sustentável dos consumidores e os resultados têm implicações tanto teóricas como práticas no que diz respeito ao impacto destas variáveis sobre os comportamentos dos consumidores.

Palavras-chave: Indústria fast fashion, impactos ambientais, preocupação ambiental, conhecimento ambiental, responsabilidade do consumidor, consumo sustentável

Index

1. Introduction.....	1
2. Literature review	5
2.1. The environmental impact of the fast-fashion industry	5
2.2. Antecedents of environmentally friendly consumption behaviours	6
2.2.1 Consumers' environmental concern	6
2.2.2 Consumers' environmental knowledge.....	8
2.2.3 Consumers' environmental responsibility	9
2.2.4 Environmentally friendly consumption intention.....	11
2.3. Sustainable fashion consumption	11
2.4. Intention – behaviour gap of responsible purchases	13
3. Research Model and Hypothesis.....	16
4. Methodology.....	18
4.3. Measures	19
4.4. Sample.....	23
4.5. Data analysis	24
5. Results	25
5.1. Reliability and validity analysis	25
5.2. Descriptive and correlation analysis	29
5.2.1. Shopping frequency.....	29
5.2.2. Means analysis.....	31
5.2.3. Correlation analysis.....	31
5.3. Test of hypotheses	32
6. Discussion	35
6.1. Limitations and future research	37
6.2. Theoretical Contributions	38
6.3. Managerial Implications	40
7. Conclusions	41
References.....	43

Figures and Tables Index

Figure 1 – Research model and hypotheses	17
Figure 2 – Illustration of the structural model test results	28
Figure 3 – Second-hand shopping frequency pie chart	29
Table 1 – Constructs for the research model	20
Table 2 – Respondent demographics	23
Table 3 – Measurements items and reliability analysis	26
Table 4 – Environmental Concern descriptive statistics	29
Table 5 – Clothing shopping frequency	30
Table 6 – Mean analysis	31
Table 7 – Correlation analysis	31
Table 8 – The results of the main effect analysis.....	32
Table 9 – The results of the mediating effect analysis	33
Table 10 – The results of the mediating effect analysis	34
Table 11 – Overall results from the hypotheses' test	35

1. Introduction

In the past two decades, customers' requirements have become more and more demanding as a result of fashion trends. To address this increasing demand, manufacturers are providing new products in shorten cycles to keep up and survive in such a competitive industry (Chipo et al., 2018). This new business concept is known as *fast fashion*. The fast fashion industry represents a quick transformation of trendy designs into mass market items being sold at lower prices (Sull & Turconi, 2008). As a result, this business model has severe negative consequences to the environment due to the harmful processes and the number of resources that it uses (Niinimäki et al., 2020).

There has been a continuous increase of concern about sustainability and its importance, so as a result consumers are becoming more conscious of these issues (Kang et al. 2013; Barbaritano & Savelli, 2021). Therefore, one wonders whether people would still purchase as much as they do, if they were aware of the massive negative environmental impact of the fast fashion industry. In other words, if fast fashion consumers had the full information on the environmental impact of each piece of clothing, would they change their purchasing attitude, and thereafter, would they reduce purchases or opt for more sustainable options? Consumer behaviours are difficult to anticipate due to their ever-evolving needs, however people generally tend to follow a pattern (Decker, 2020).

The fashion industry comes with high social and environmental impacts, therefore customers' growing understanding of the environmental consequences of their apparel choices sparked a desire for industry changes (Jung & Jin, 2014). Sustainable fashion emerges as a viable alternative to fast fashion's unsustainable elements and can be defined in a variety of ways. As Henninger et al. (2016, p. 401) noted: "*sustainable fashion as part of the slow fashion movement is often misleadingly described as the opposite of fast fashion. Slow fashion is based on a philosophical ideal that centres on sustainability values, such as good working conditions and reducing environmental destruction.*" Sustainable fashion is then characterized by: (i) clothes that do not prejudice the environment or try to do the less harm, (ii) clothes designed to be used by consumers for longer periods of time, and (iii) clothes with producing processes focused on ethical production systems (Jeorgens, 2006; Fletcher, 2010).

Previous studies show that consumers' attitudes toward purchasing sustainable fashion products are influenced by their overall level of concern for social and environmental well-being (McNeill & Moore, 2015). In these situations, price is not the priority, but the

environmental concern is. At first glance, it may appear self-evident that after learning about the harm that this industry causes to our environment, customers will simply modify their purchasing habits. However, some previous studies showed that there exists a gap between the intention of a consumer to purchase with more responsibility and the actual purchase, this gap can occur as a consequence of both internal and external factors (Carrington et al., 2010; Hirsch & Terlau, 2015; Dhir et al., 2021). For instance, one variable that can have a key impact is the economic resources available to consumers. Often, consumers have limited choices due to price sensitivity, and previous findings reported that the price overweight ethical considerations (e.g., Connell, 2010; Gleim et al., 2013; Joshi & Rahman, 2015). Eco-friendly brands tend to have a higher price point than the normal/fast fashion brands due to their more sustainable processes which sometimes are more demanding and need more time. The fact that many environmentally conscious items are more expensive than conventional products, makes them unaffordable for many consumers (Connell, 2010). According to Joshi and Rahman (2015, p. 134): *“It is thus clear that high price negatively influences green purchase intention and behaviour”*, so higher prices can drive away many consumers, who will recur to other brands economically more affordable (and less sustainable).

Previous studies showed inconsistent findings on the relationship between sustainability concerns and consumption behaviours. Some authors (e.g., Kim & Damhorst, 1998; Dhir et al., 2021) found that even when consumers were concerned about the environment, they would not consider it while making purchases, while Hustvedt and Dickson (2009) found that consumers who were more aware of the environmental implications were also more likely to consider environmental issues when making purchasing decisions. In other cases (e.g., Carrington, Neville, & Whitwell, 2014), an intention-behavioural gap was observed in that people had the intention to do more responsible purchases but in practice their behaviours did not reflect their beliefs and intentions. Because of this inconsistency in earlier findings and the scarcity of research from the Portuguese context of fast fashion this study aims to understand how customers react to these environmental issues and if they recur to more sustainable options, such as buying second-hand clothes or buying from other brands which try to lessen their environmental impact by delivering good quality products that use more sustainable raw materials and processes. The Portuguese context was also chosen for this research due to easier access to responses, since this study was developed in Portugal, the access to data was more easily gathered.

The literature regarding the predictors of consumers' environmentally friendly behavior is vast, but limited research examined the extend by which three specific variables - environmental concern, environmental knowledge, and consumers responsibility – act as predictors of environmentally friendly consumption behavior. Moreover, there is a growing body of literature exploring the link between environmental responsibility and green consumption, but most studies addressed the factors influencing organisational strategies and corporate environmental responsibility (CER), instead of individual's behaviours. Therefore, this study follows an individual level of analysis and focuses consumers' responsibilities, and whether that affect consumers behaviours towards more sustainable consumption practices. Furthermore, this study examines three mediation effects, overlooked by previous research, namely, the mediation role of environmental concern, environmental knowledge, and consumers' intention.

Given the research gaps, the main objective of this study is to understand the antecedents of fashion consumers behaviours, specifically to determine whether consumers': (i) Environmental Concern (EC), (ii) Environmental Knowledge (EK), (iii) Consumer Environmental Responsibility (CER), and (iv) Environmentally Friendly Consumption Intention (EFCI), are enough motivating factors to change consumers' habits towards Environmentally Friendly Consumers Behaviours (EFCBs).

This study follows a quantitative approach, with data gathered from an online survey targeted to Portuguese consumers. The study employed previously tested measures for the assessment of the main variables and the results from PLS analysis generally supported the predicted effects.

The theoretical contributions of this study are manifold. Firstly, this study helps to understand the Portuguese customers' environmental concern, environmental knowledge and their consumer responsibility, and how these factors independently or interactively, influence Environmentally Friendly Consumers Behaviours (EFCBs). This contributes and adds to existing research by investigating and highlighting the importance of these predictors for consumers towards a green consumption behaviour.

Secondly, this study explores three mediation effects, namely the mediation role of: (i) Environmental Concern (EC) on the effect of Consumer Environmental Responsibility (CER) on Environmentally Friendly Consumers Behaviours (EFCBs), (ii) the mediation role of Environmental Knowledge (EK) on the effect of Environmental Concern (EC) on Environmentally Friendly Consumers Behaviours (EFCBs), and (iii) the mediation role of

Environmentally Friendly Consumption Intention (EFCI) on the effect of Environmental Concern (EC) on Environmentally Friendly Consumers Behaviours (EFCBs). This adds as well important empirical and theoretical contributions since there is not much information considering these mediation effects (Newton et al., 2015; Yue, B. et al., 2020).

From a managerial perspective the findings of this study have implications to manufacturers and retailers of eco-friendly products, including the marketing professionals. Namely, this study can offer valuable insight for producers and brand managers to find new solutions and implement strategic decisions to attract consumers by understanding how consumers' environmental concerns (i.e., EK, EC, CER) impact the consumer behaviour.

This dissertation is structured in seven sections. Besides this introductory section this document includes, in Section 2, a review of the relevant literature addressing the (i) The environmental impact of the fast-fashion industry, (ii) Antecedents of environmentally friendly consumption behaviours, (iii) Sustainable fashion consumption. Section 3 presents the Research model and hypothesis followed by Section 4 that describes the methodology used. Further, section 5 presents the findings of this study followed by the discussion of the results considering existing literature, the limitations, the theoretical and practical implications of this study and recommendations for further research. Lastly, Section 7 presents the conclusions.

2. Literature review

2.1. The environmental impact of the fast-fashion industry

Over the last decade, the fast fashion movement has transformed the apparel sector (Bhardwaj, & Fairhurst, 2010). The fast fashion industry implies rapid design, production, distribution, and marketing. It often results in mass productions to make sure customers get more available fashion-products at lower prices. Moreover, the fast fashion industry provides products cheaply produced and priced, and products that tend to replicate the latest fashion trends (Mintel, 2007). The industry brands are always searching for ways to deliver products to consumers in shorter timeframes in order to stay competitive (Bhardwaj and Fairhurst, 2010). In doing so, they often neglect their environmental and social responsibilities. On the other hand, consumers too often neglect the environmental impact and social responsibilities as well. The fact that people tend to buy often new clothes and clothes with lower prices results in a lower use of the garment, which is then disposed for not complying with the ‘actual’ fashion trends (Bianchi & Birtwistle, 2012).

The criticisms to the fast fashion industry have been increasing over the last few years due to its limited consideration for the environment and social issues (Niinimäki et al., 2020). The fast fashion industry has a high environmental cost due to the environmentally polluting supply chain operation and its destructive practices (Niinimäki et al., 2020). Environmental problems occur from a significant use of water and chemicals resulting from textile dying processes, including CO₂ emissions that occur during manufacturing processes, distribution and the consumption of the clothes itself (since during the use phase it is required to wash it, dry it and iron it). Another negative consequence occurs when the garment reaches the end of its useful life or when the garment is not sold, which results in textile waste that is often disposed in landfills (Rana et al., 2015; Niinimäki et al., 2020). Hiller Connell and Kozar (2012, pp. 6-7) noted: *“For example, a t-shirt made from 100% cotton requires 109 mega joules of energy to grow and process the fibbers, manufacture the yarns, knit the textile, construct the shirt, home launder it 25 times, and incinerate it after disposal”*. This mass production of cotton results in the demanding need of fresh water, which is a limited and important resource. Furthermore, to increase the life of cotton and the further tissue that will result from it, cotton is frequently sprayed with agrochemicals that will further lead to more pollution. Another concern that results from

these processes is that the dyes used to colour cotton are often difficult to dispose of, resulting in additional chemical waste (Challa, 2015).

According to the Quantis International 2018 report, there were three main drivers of the industry's global pollution impacts: (i) dyeing and finishing tissues were the first drivers, which resulted in 36% of the total textile pollution, followed by (ii) the yarn preparation with 28%, and (iii) fiber production with 15%. These results are alarming: several real-life examples, such as cotton cultivation show how limited resources in the ecosystem are used in an excessive way. For instance, the global average water consumption to produce 1 kg of cotton surrounds 10,000 liters, in addition to water consumption in textile manufacturing for bleaching and dyeing. These numbers can be put into perspective once we consider that a significant portion of the world population still lacks access to clean water to meet their fundamental human needs.

To fight these environmental problems both businesses and policymakers must congregate efforts to include more sustainable practices and slow their processes and mass productions. Furthermore, consumers must slow down the consumption and implement practices to make their garment last longer (Niinimäki et al., 2020). As stated by Dahlbo et al. (2020, p.195) *"the current business logic in the fashion sector is based on ever-increasing production and sales, fast manufacturing, low product quality and short product life cycles, all of which led to unsustainable consumption, fast material throughput, substantial waste and vast environmental impacts. Both production processes and consumption attitudes must, therefore, be changed."* To break this cycle consumers must opt for more sustainable choices (McGregor, 2005).

As Niinimäki et al. (2020, p. 198) highlighted: *"One approach to lowering fashion's environmental impact is to shift the system from linear (take, make, dispose) to circular with the following three approaches: narrowing (efficiency), closing (recycling) and slowing (reusing)."* There are other alternatives that can minimize waste, such as new business models based on retailing second-hand clothes in order to give clothes a second opportunity and promote circular economy, donate to charities who will therefore distribute them to people in need or even promote material recycling at the end of the piece's lifecycle.

2.2. Antecedents of environmentally friendly consumption behaviours

2.2.1 Consumers' environmental concern

So far there is not a commonly accepted definition of environmental concern. Environmental concern is described as people's awareness of environmental issues and their

willingness to help solve these issues. On a personal level, the environmental concern results in a favourable attitude toward resolving or reducing environmental harm (Fransson & Garling, 1999; Dunlap & Jones, 2002; Martínez, 2020). This study follows the definition of Dunlap and Jones (2002), who defined environmental concern as *“the degree to which people are aware of problems regarding the environment and support efforts to solve them and/or indicate a willingness to contribute personally to their solution (p.485).”*

Environmental concern is an essential indirect driver of environmental friendly behaviours, which can influence situation-specific cognitions (Bamberg, 2003). As stated by Takás-Sánta (2007, p. 26) *“A high level of environmental concern is likely to be an important prerequisite of long lasting pro-environmental behaviour, and thus long-lasting decrease in environmental impact.”*. Previous studies showed that consumers attitudes toward purchasing sustainable fashion products are influenced by their overall level of concern for social and environmental well-being (McNeill & Moore, 2015). For these consumers, the price is not the priority, but the environmental concern and their beliefs are. Even though some studies relate environmental concern with pro environmental behaviour (Schultz & Zelezny, 2003; Takás-Sánta, 2007), others report that customers’ environmental concern does not necessarily transfer into pro-environmental behaviour (Tam & Chan, 2018).

Some authors (e.g., Mohd, 2016; McNeill & Moore, 2015) have stated that environmental concern can have a substantial impact on how motivated people are to change their consumption behaviours to solve the problem, implying that environmental concern has a direct and positive impact on green consumption intention. Furthermore, previous studies documented a positive relationship between environmental concern and green purchase behaviours, which can indicate that one may influence the other. Consumers’ attitudes towards buying sustainable fashion products are influenced by their general level of environmental concern (Takás-Sánta, 2007; McNeill & Moore, 2015), which confirms that environmental concerns had a direct and positive impact on green purchases, implying that consumers who are concerned about the environment may be more interested in purchasing products that represent and reflect those concerns (Kim & Choi, 2005). Therefore, drawing upon this evidence, this study further investigates the importance that fast-fashion consumers’ environmental concern can have in influencing environmentally friendly consumption behaviours. Hence, the following hypothesis is offered:

H1: Consumers’ environmental concern has a positive and significant influence on environmentally friendly consumer behaviours.

2.2.2 Consumers' environmental knowledge

The term “environmental knowledge” can be defined as *‘a general knowledge of facts, concepts and relationships concerning the natural environment and its major ecosystems’* (Fryxell & Lo, 2003, p. 45). As a result, environmental knowledge encompasses what individuals know about the environment, essential relationships that lead to environmental aspects or consequences and collective responsibilities required for a sustainable development (Mostafa, 2007).

According to previous research, education and acquisition of knowledge are the most successful ways for training young people to learn about environmental issues and, as a result, to reduce or delay environmental damage (Mohiuddin et al., 2018). Furthermore, formal knowledge and education about environmental problems have an impact and influence in pro-environmental behaviour (Molina et al., 2013).

Environmental knowledge and consumer behavior have been extensively studied in the past decade, so it is widely known that environmental knowledge can influence individual's decision to engage and perform a sustainable behavior (Bamberg, 2003; Bong Ko & Jin, 2017; Saari et al., 2021). Individuals who are more knowledgeable about environmental problems typically have more favorable attitudes toward the environment and are more likely to engage in sustainable consumption habits (Saari et al., 2021).

Drawing upon this previous evidence, a similar pattern is to be expected among the consumers of fast fashion, so the following hypothesis is proposed:

H2: Consumers' environmental knowledge has a positive and significant influence on environmentally friendly consumer behaviours.

According to previous studies (e.g., Bamberg, 2003 McNeill & Moore, 2015, Saari et al., 2021) environmental concern can have a substantial direct impact on how motivated people are to change their behaviour and their practices in order to attempt to solve environmental problems. In addition to the direct effect that environmental concern has on consumers' environmental friendly consumption behaviours, it can have as well an effect mediated by consumers' environmental knowledge (Newton et al., 2015; Yue, B. et al., 2020, Saari et al., 2021). According to Newton et al. (2015) for the environmental concern to be viewed as an immediate precursor of environmentally friendly consumption intentions and actual behaviours the environmentally concerned consumers must learn about the environmental characteristics of their accessible consumption options. Thus, in the fast-fashion industry it is likely that the influence of consumers' concern on sustainable

consumers' behaviours is mediated by consumers' environmental knowledge. Therefore, the following hypothesis is proposed:

H3: Consumers' environmental knowledge mediates the positive relationship between consumers' environmental concern and their environmentally friendly consumption behaviours.

2.2.3 Consumers' environmental responsibility

Limiting the growth of the fast fashion industry is not enough, and consumers are being asked to consider and promote a circular economy, which involves behavioural changes, such as keeping their clothes, using them as much time as possible, and arranging an alternative use once they do not want to reuse them. Consumers are being asked to extend products' lifetime, including for fashion goods (Niinimäki et al., 2020). However, behavioural changes are not easy and this extension of usage is more likely to happen when consumers are involved in green apparel practices. Once consumers opt to purchase environmentally friendly products to support environmental goals, then they will have a significant impact on green growth, reducing the negative impact on the environment (OECD, 2016).

The importance of consumers' knowledge towards the environment has been emphasized, since consumers' environmental knowledge is a pre-requisite for a shift toward responsible consumption and sustainable development (Hansen & Schrader, 1997). The increased awareness of the harmful consequences of traditional production and consumption systems on our planet has prompted the interest of other stakeholders concerning corporate and consumers' responsibility (government, manufacturers and consumers). Consumers' knowledge has also resulted in a social reorientation, with the goal of incorporating sustainable practices into both companies' activities and consumers' practices (Barbaritano & Savelli, 2021). Therefore, and in the fast-fashion industry, it is crucial to understand how consumers' environmental knowledge and responsibility influence the environmentally friendly consumption intentions and sustainable consumers behaviours. Although there is not a global agreement on what a responsible consumer is, one can agree on Webster (1975) definition of a socially conscious consumer, defined as *"a consumer who takes into account the public consequences of his or her private consumption or who attempts to use his or her purchasing power to bring about social change"* (p. 188). A more recent approach, from Soni et al. (2021, p. 425) defines consumer social responsibility as *"an understanding which helps consumers pursue green*

practices with the aim of societal and environmental welfare by sacrificing their luxuries, seeking resource sharing, avoiding unnecessary wastage, and adopting ethical and moral behaviour.”

Herein, consumers’ environmental responsibility is defined as *“a state in which a person expresses an intention to take action directed toward remediation of environmental problems, acting not as an individual consumer with his or her own economic interests, but through a citizen-consumer concept of societal-environmental well-being”* (Stone, 1995, p.601). Previous studies have documented a positive relationship between consumers’ environmental responsibility and consumption behaviour, such that as the level of environmental responsibility increases the respective willingness for consumers to purchase sustainable products increases as well (Attaran & Celik, 2015). Stern et al. (1999) also found a strong link between consumers’ environmental responsibility and pro-environmental activity, indicating that those consumers who feel more environmentally responsible are more likely to engage in pro-environmental behaviours. Therefore, consumers’ environmental responsibility can be an important antecedent of environmentally friendly consumption behaviours even in the fast-fashion industry. Hence, the following hypothesis is proposed:

H4: Consumers’ environmental responsibility has a positive and significant influence on environmentally friendly consumer behaviours.

Furthermore, it is reasonable to presume that consumers’ environmental responsibility can boost consumers’ environmental concern, which in turn will promote environmentally friendly consumer behaviours (Yue, B. et al., 2020). The other way around may seem to be a possibility as well, according to Yue, B. et al. (2020) the environmental concern can influence green consumption intentions positively and serve as a partial mediator in the link between consumer responsibility and green consumption intentions. Kaiser and Scheuthle (2003), found that including responsibility in the original Theory of Planned Behaviour (TPB) model significantly increased the explanatory power of the attitude variables, demonstrating that the sense of responsibility was a strong predictor of environmental attitudes and, consequently, that environmental attitudes influenced environmental behaviour. Thus, it is proposed the following hypothesis:

H5: Consumers’ environmental concern mediates the positive relationship between consumers environmental responsibility and environmentally friendly consumer behaviours.

2.2.4 Environmentally friendly consumption intention

An individual's behavioural intention (regarding environmentally friendly consumption behaviour) shows a person's willingness to act in a particular way and is seen as the immediate precursor to actual behaviour (Saari et al., 2021). According to the Theory of Planned Behaviour the immediate antecedent of the actual behaviour is the behavioural intention (Ajzen, 1991).

Environmentally friendly consumption intention is an indication that individuals are willing to engage in a particular action. In this case, their engagement in sustainable consumption is indicated by their intention to consume in an environmentally responsible manner (Joshi, 2012). According to Ajzen (1991) the intention is assumed to be an immediate predictor of behaviour. The degree of behavioural intention also affects how likely a behaviour is to occur.

According to empirical studies, when a consumer exhibits an intention to consume a particular product, there is a significantly higher chance that the product will be purchased, according to the Theory of Reasoned Action (Westaby, 2005). According to Wu and Chen (2014) the behavioural intention is significantly positively related to actual behaviour, which indicates that when a consumer has the intention to do a sustainable apparel consumption it is more likely that he will translate it into actual behaviour. Joshi (2012) studied the effect of environmental concern on the environmentally friendly behavioural intentions, and according to the results consumers' environmental concern has an impact and influence in these behavioural intentions. Intentions that will likely be translated and lead to more environmentally friendly behaviours (Wu and Chen, 2014, Saari et al., 2021).

Based on the aforementioned research, the following hypothesis are proposed:

H6: Consumers' intention to consume environmentally friendly products is positively associated with their environmentally friendly consumption behaviours.

H7: Consumers' environmentally friendly intention mediates the positive relationship between consumers' environmental concern and their environmentally friendly consumer behaviours.

2.3. Sustainable fashion consumption

The fast-fashion industry comes with high social and environmental impacts, so customers' growing understanding of the environmental consequences of their apparel

choices sparked a desire for industry changes (Jung & Jin, 2014). The World Commission on Environment and Development (Brundtland, 1987) issued a commonly referenced definition of sustainability as the: *“development that meets the needs of the present without compromising the ability of future generations to meet their own need.”*

Sustainable fashion emerges as a viable alternative to fast fashion's unsustainable elements and can be defined in a variety of ways. As Henninger et al. (2016, p. 401) noted: *“sustainable fashion as part of the slow fashion movement is often misleadingly described as the opposite of fast fashion. Slow fashion is based on a philosophical ideal that centres on sustainability values, such as good working conditions and reducing environmental destruction.”* Sustainable fashion is then characterized by: (i) clothes that do not prejudice the environment or try to do the less harm, (ii) garment designed to be used for consumers for longer periods of time, and (iii) their producing processes focus on ethical production systems (Jeorgens, 2006; Fletcher, 2010).

Sustainable consumption behaviour is often connected with pro-environmental consumption behaviour, which is a behaviour characteristic that aids people in lessening their adverse effects on the environment (Saari et al., 2021)

In order to change consumers behaviours towards higher sustainability managers need to understand how to motivate consumers to engage in sustainable choices. According to Buerke et al. (2017) a foundation for responsible consumer behaviour is a sustainability-focused value orientation and increased consumers' awareness. Thus, it is important to promote responsible consumption and promote consumers' education.

Consumer's behaviour is driven by the desire to meet and fulfil consumer's needs and encompasses *“[...] the processes involved when individuals or groups select, purchase, use or dispose of products, services, ideas or experiences to satisfy needs and desires”* (Solomon et al., 2013, p. 3). Previous research examining apparel environmental knowledge and its relationship with purchasing behaviours and consumers attitudes found inconsistent results. For example, Kim and Damhorst (1998) found that consumers' environmental concern did not impact their purchases, and more recently, Dhir et al. (2021) showed that a greater understanding and awareness of environmental issues among consumers did not translate into a widespread increase in green clothes purchases. Although customers are ethically concerned and sustainability is an emerging theme, consumers in the fashion sector frequently purchase items that have negative environmental effects, regardless of their attitude and intention to purchase more environmentally friendly options. This phenomenon is known as the attitude-behaviour gap (Wiederhold & Martinez, 2018)

On the contrary, Hustvedt and Dickson (2009) reported that consumers who are more aware of the environmental implications of apparel manufacture are more likely to consider environmental issues when making purchasing decisions than those who are less knowledgeable. Butler and Francis (1997) also found, among customers expressing favourable environmental attitudes, that the majority only considered the environment sometimes, if at all, while purchasing clothing goods. The authors observed that “[. . .] although consumers indicated their general concern for the environment, believed that we should work to improve environmental conditions, and thought that people should take environmental issues into account when purchasing clothing, they themselves did not report doing so”.

Given the inconsistent findings observed so far, this study aims to examine the antecedents of fast-fashion consumers behaviours, specifically to determine whether consumers’: (i) Environmental Concern (EC), (ii) Environmental Knowledge (EK), (iii) Consumer Environmental Responsibility (CER), and (iv) Environmentally Friendly Consumption Intention (EFCI), are enough motivating factors to change consumers’ habits towards more Environmentally Friendly Consumers Behaviours (EFCBs).

2.4. Intention – behaviour gap of responsible purchases

The ethical consumerism is a growing movement, ethical consumers often tend to do more sustainable purchases (Carrington, Neville & Whitwell, 2014). The intention of purchasing with more responsibility might be present but many times it is not reflected in consumers purchases. More recent studies expanded our knowledge of the barriers to consumption of green apparel products despite customers’ environmental concerns, which can help explain why environmentally friendly products are not purchased as frequently as expected (Carrington et al., 2010; Gleim et al., 2013; Dhir et al., 2021). Some researchers attribute it to decision-making evaluation criteria, such as price, style and fit, availability, and (lack of) knowledge, which are considered more important than ethical and environmental issues when purchasing (Carrington et al., 2010; Goworek et al., 2012; Gleim et al., 2013). Other factors that could explain this gap are for instance the length of time between the intention and the actual purchase, or the fact that intentions might alter over time. As a result, purchase intentions might not be an adequate proxy of buying behaviours (Sutton, 1998). According to Sutton (1998) “*the longer the interval between the measurement of intention and behaviour, the greater the likelihood that unforeseen events will occur that lead to changes in intention.*” (p. 1326).

Furthermore, green apparel products tend to have higher prices than conventional fast fashion products that do not consider measures to do less harm on the environment. Therefore, consumers may avoid purchasing socially responsible products unless the pricing is comparable to 'average products' (Mohr & Webb, 2005). Even though the brands have more sustainable practices in some cases consumers are not willing to pay more and compromise their economic resources.

Despite the ethical intentions might be authentic and genuine, there are internal and external factors that influence the ethical purchase decisions. According to Carrington, Neville, & Whitwell (2014) the core motivational framework has four factors influencing this gap between the real ethical intentions and the actual purchases, which are “(1) *prioritization of ethical concerns*; (2) *formation of plans and habits*; (3) *willingness to commit and sacrifice*; and (4) *modes of shopping behaviour*” (p. 2726). Some consumers have prioritized their ethical concerns into primary and secondary concerns, for instance while one can give more importance to products who use less water consumption levels, others primary concern can fall into the creation and disposal of waste, thus if it is not possible for the customer to purchase a product who respects all concerns, he will prioritise his primary concerns. To change behaviours and break old habits that are often to rooted in consumers shopping habits it is require a lot of planning and research in order to find new alternatives that go in accordance with those ethical concerns (Carrington, Neville, & Whitwell, 2014). On a purchasing daily basis, consumers may be forced to sacrifice something as a result of ethical purchasing considerations, there is a trade-off where the buyer must commit to one decision at the expense of the other.

According to previous studies, the findings reveal that the key characteristics influencing the purchase intention of eco-friendly garment include environmental knowledge, demographic parameters and environmental concern, education and the income that the consumers have available (Maichum et al., 2016, Sobuj et al., 2021). Through a study it is possible to estimate that when consumers are persuaded by other people around them, they tend to purchase eco-friendly products (Sobuj et al., 2021). These underling characteristics will be key factors for consumers who are environmentally involved and concerned to opt for this green garment instead of consuming fast fashion garment.

Understanding the elements that influence the ethical intention-behaviour gap would allow to identify the difficulties and barriers that consumers face when purchasing ethically, as well as the concerns that prevent ethical purchase from becoming a reality. In this way,

brands and goods with a social responsibility focus, in particular, can more easily understand the wants, obstacles and drivers of the socially responsible consumer and change their approach to satisfy those demands and surpass those difficulties.

This study will focus on the purchase intention and as well in the environmentally friendly consumption behaviour, so it is important to understand the reasons for this gap to occur, and therefore apply the knowledge to solve the issue.

3. Research Model and Hypothesis

The literature on sustainable consumption behaviours supports the expectation that consumers of fast fashion can be more environmentally friendly and reflect that in their purchases when these variables are present and are taken into consideration. By drawing upon the literature on the following hypotheses are tested:

H1: Consumers' environmental concern has a positive and significant influence on environmentally friendly consumer behaviours.

H2: Consumers' environmental knowledge has a positive and significant influence on environmentally friendly consumer behaviours.

H3: Consumers' environmental knowledge mediates the positive relationship between consumers' environmental concern and their environmentally friendly consumer behaviours.

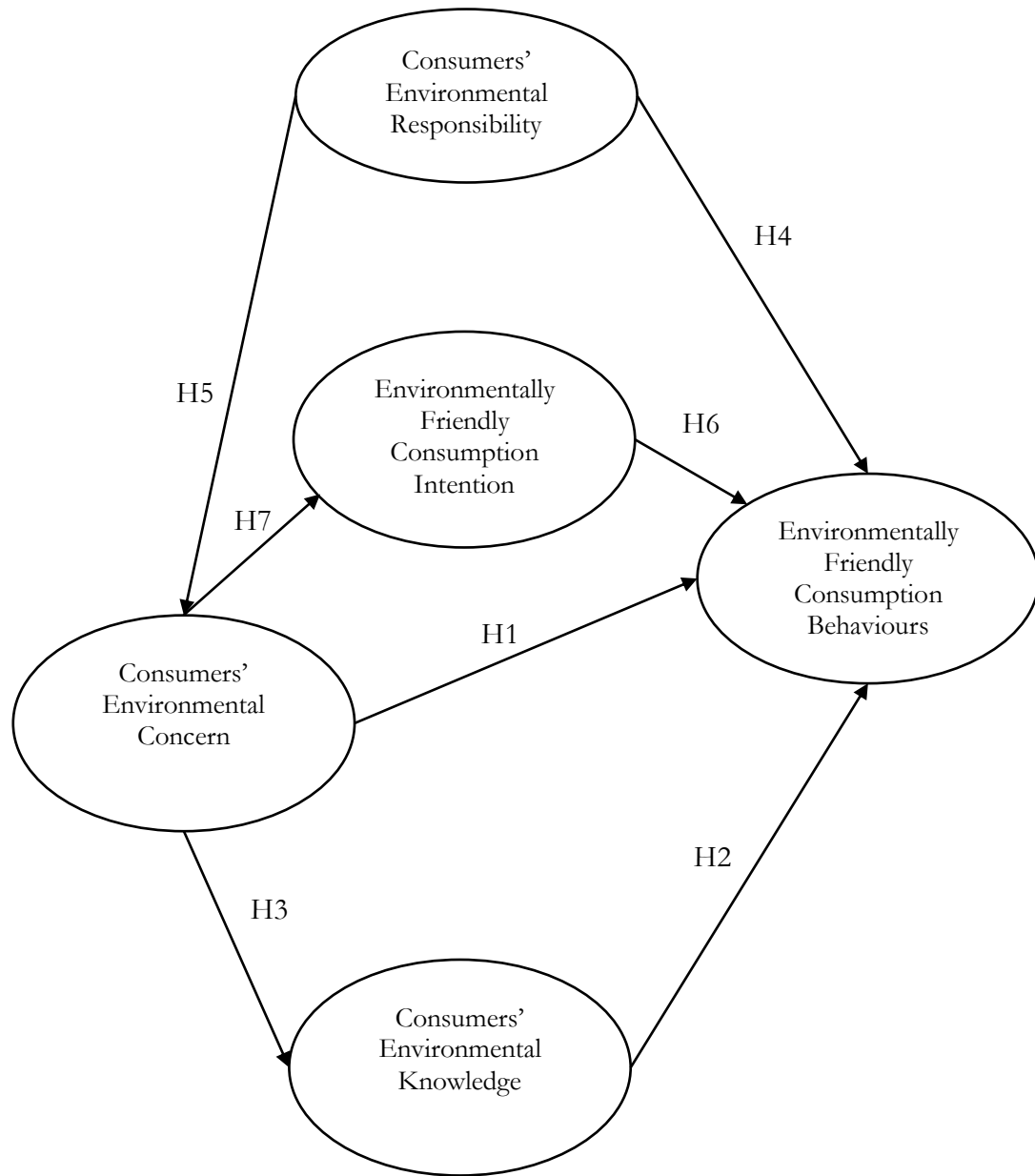
H4: Consumers' environmental responsibility has a positive and significant influence on environmentally friendly consumer behaviours.

H5: Consumers' environmental concern mediates the positive relationship between consumers environmental responsibility and environmentally friendly consumer behaviours.

H6: Consumers' intention to consume environmentally friendly products is positively associated with their environmentally friendly consumption behaviours.

H7: Consumers' intention to consume environmentally friendly products mediates the positive relationship between consumers' environmental concern and their environmentally friendly consumer behaviours.

Figure 1 - Research model and hypotheses



4. Methodology

4.1. Methodological approach

This study aims to examine the antecedents of fast-fashion consumers behaviours, specifically to determine the effects of: (i) Environmental Concern (EC), (ii) Environmental Knowledge (EK), (iii) Consumer Environmental Responsibility (CER), and (iv) Environmentally Friendly Consumption Intention (EFCI), consumers' Environmentally Friendly Consumers Behaviours (EFCBs).

To reach these objectives, a quantitative methodology was employed, following the approach of similar studies (e.g., Bamberg, 2003; Albloushy & Connell, 2019; Davidavičienė et al., 2019).

4.2. Procedure of data collection

To obtain the findings a questionnaire was elaborated and further on was available in Portuguese. The questionnaire was first written in English and then translated into Portuguese based on the literature to fit the local research context. To ensure the equivalence and reliability of the questionnaire responses from the two versions, a back-translation approach (Usunier, 1998) was applied. Before the questionnaire was released, to pre-test the questionnaire ten Portuguese individuals were requested to answer. Accordingly with their observations, after pre-testing, the questionnaire was refined to the final version.

To answer the questionnaire the respondents could access it using a weblink to google forms. The link was distributed through private contacts and was also published in social media platforms.

The participants responded accordingly with their opinions and their usual acts when purchasing a clothing item, including for instance the frequency of purchases, their level of concern for the environment, their preference when realizing a purchase, ending the questionnaire by replying to some demographic questions so that the sample could be characterized.

4.3. Measures

The measures used in this study were adapted from previous studies and were slightly modified (as follows) to meet the requirements of this study. All variables were rated on a five-point Likert scale. The variable environmental concern ranged from 1 to 5, being (1) “very unconcerned” and (5) indicating “very concerned”. The variables environmental knowledge and consumer environmental responsibility ranged from 1 to 5, being (1) “strongly disagree” and (5) indicating “strongly agree”. The variable environmentally friendly consumption intention was scaled from 1 to 5, being (1) “very unlikely” and (5) indicating “very likely”. Lastly, the dependent variable environmentally friendly consumption behaviours was scaled from 1 to 5, being (1) “never” and (5) indicating “always”.

Environmental Concern (EC) was measured using the original scale from Pagiaslis and Krontalis (2014), which contains five items: (1) *How concerned are you about the environment;* (2) *How concerned are you about pollution and with the consequences that pollution has on the environment;* (3) *How concerned are you about water and air pollution in your city;* (4) *How concerned are you about extravagant water usage in your city;* (5) *How concerned are you about the environment when making purchases.*

Environmental Knowledge (EK). To measure the environmental knowledge we followed and adapted to Portuguese the Mostafa (2007) a four-item scale, which includes: (1) *I know that I buy clothing that is safe for the environment;* (2) *I am very knowledgeable about environmental issues;* (3) *I understand the various symbols and terms related to the environment on clothing;* (4) *When I purchase, I always look to the symbols present on the clothing.*

Consumer Environmental Responsibility (CER). The four-items scale from Stern et al. (2011) was used and translated to Portuguese: (1) *My actions impact the health of the environment;* (2) *I have the power to protect the environment;* (3) *I can learn how to improve the environment;* (4) *I will work to make my surrounding environment a better place.*

Environmentally Friendly Consumption Intention (EFCI). It was measured by the three-items from Chan (2001), which were translated to Portuguese: (1) *Over the next one month, I will consider switching to other brands for ecological reasons;* (2) *Over the next one month, I plan to switch to a green version of a product (cloth);* (3) *Over the next month, if needed I will consider buying ecofriendly garment because they are less polluting.*

Environmentally Friendly Consumption Behaviours (EFCBs). It was measured by a five-items scale from Choi and Kim (2005), which were translated to Portuguese: (1) *I*

make a special effort to buy clothes that are made with recycled materials or materials that have a lower impact on the environment; (2) When I have a choice between two equal products, I purchase the one less harmful to the environment; (3) I have avoided buying a product because it had potentially harmful environmental effects; (4) I make a special effort to buy clothes that are environmentally friendly; (5) I have switched products/ clothes for ecological reasons.

Other variables. Several demographics were included and computed as dummy coded variables. The respondents were asked about their age, gender, education, monthly remuneration and current occupation. The age was computed in years. Dummy variables were used to code gender (0 = *female*, 1 = *male*) and education (0 = *without higher education*; 1 = *with higher education*). The monthly remuneration was computed with 4 intervals, where the minimum and medium wage served as reference points. And lastly the current occupation was computed with three options (namely: (i) *student*; (ii) *employed*; (iii) *unemployed*).

Table 1- Constructs for the research model

Construct	Items	Portuguese adaptation	Source
Shopping frequency (SF)	How often do you shop for new clothes?	Com que frequência comprar roupa nova?	(Ferraro et al., 2016)
Environmental concern (EC)			
EC1	How concerned are you about the environment?	Quão preocupado está com o meio ambiente?	(Pagiaslis and Krontalis, 2014)
EC2	How concerned are you about pollution?	Quão preocupado está com a poluição e com as consequências que a mesma pode provocar no meio ambiente?	(Pagiaslis and Krontalis, 2014)
EC3	How concerned are you about water and air pollution in your city?	Quão preocupado está com a poluição da água e do ar na cidade em vive?	(Pagiaslis and Krontalis, 2014)
EC4	How concerned are you about extravagant water usage in your city?	Qual é a sua preocupação como uso excessivo de água cidade em que vive?	(Pagiaslis and Krontalis, 2014)
EC5	How concerned are you about the environment when making purchases?	Quão preocupado é com o ambiente quando está a comprar roupas?	(Pagiaslis and Krontalis, 2014)
Environmental knowledge (EK)			
EK1	I know that I buy clothing that is safe for the environment	Eu sei que compro roupa que é produzida de forma segura para o ambiente.	(Mostafa, 2007)
EK2	I am very knowledgeable about environmental issues	Eu estou muito bem informado/a sobre os problemas ambientais.	(Mostafa, 2007)

Construct	Items	Portuguese adaptation	Source
EK3	I understand the various symbols and terms related to the environment on clothing	Eu entendo a simbologia que está presente nas etiquetas das roupas relativamente ao ambiente.	(Mostafa, 2007)
EK4	When I purchase, I always look to the symbols present on the clothing	Quando compro roupa nova olho sempre para a simbologia presente na etiqueta.	(Mostafa, 2007)
Environmentally friendly consumption intention (EFCI)			
EFCI1	Over the next one month, I will consider buying products because they are less polluting	Durante o próximo mês, considerarei a compra de produtos/roupas porque são menos poluentes.	(Chan, 2001)
EFCI2	Over the next one month, I will consider switching to other brands for ecological reasons.	Durante o próximo mês, considerarei a possibilidade de mudar para outras marcas por razões ecológicas.	(Chan, 2001)
EFCI3	Over the next one month, I plan to switch to a green version of a product.	Durante o próximo mês, se precisar, tenciono comprar roupas que sejam eco-friendly.	(Chan, 2001)
EFCI4	When making a purchase, I will take into account its environmental impacts so that I can do a more sustainable choice.	Durante o próximo mês, considerarei a compra de produtos/roupas porque são menos poluentes.	(Chan, 2001)
Consumer Environmental Responsibility (CER)			
CER1	My actions impact the health of the environment	As minhas ações impactam o ambiente.	(Stern et al., 2011)
CER2	I am aware that I have the power to protect the environment	Estou consciente que tenho poder para proteger o ambiente através das minhas escolhas.	(Stern et al., 2011)

Construct	Items	Portuguese adaptation	Source
CER3	I can learn how to improve the environment through my choices	Eu posso aprender como melhorar o ambiente através das minhas escolhas.	(Stern et al., 2011)
CER4	I will work to make my surrounding environment a better place by doing more eco-friendly choices	Eu vou trabalhar para melhorar o ambiente e a sua envolvente ao optar por escolhas mais ecológicas e sustentáveis.	(Stern et al., 2011)
Environmentally friendly consumption behaviour (EFCB)			
EFCB1	I make a special effort to buy clothes that are made with recycled materials or materials that have a lower impact on the environment	Faço um esforço especial para comprar roupas que sejam feitas com materiais reciclados ou matérias que tenham um impacto menor no ambiente.	(Choi and Kim, 2005)
EFCB2	When I have a choice between two equal products, I purchase the one less harmful to the environment.	Quando posso escolher entre dois produtos iguais, compro aquele que é menos prejudicial ao meio ambiente.	(Choi and Kim, 2005)
EFCB3	I have avoided buying a product because it had potentially harmful environmental effects.	Já evitei comprar um produto porque ele tinha efeitos ambientais potencialmente prejudiciais.	(Choi and Kim, 2005)
EFCB4	I make a special effort to buy clothes that are environmentally friendly.	Faço um esforço especial para comprar roupas que sejam amigas do ambiente.	(Choi and Kim, 2005)
EFCB5	I have switched products/ clothes for ecological reasons.	Eu já troquei de produtos/roupas por razões ambientais.	(Choi and Kim, 2005)

4.4. Sample

A total of 408 responses were gathered and 402 corresponds to the final sample of complete responses that remained for the analysis. Table 2 presents the characteristics of the sample.

Table 2 - Respondent Demographics (N=402)

Item	Classification	N	Percentage (%)
Gender	Male	138	34,3%
	Female	262	65,2%
	Rather not answer	2	0,5%
Age	18-29	242	60,2%
	30-39	36	9,0%
	40-49	36	9,0%
	50 and above	88	21,9%
Education	With higher education	277	68,9%
	Without higher education	125	31,1%
Monthly Remuneration	0-300€	95	23,6%
	300€-705€	54	13,4%
	706€-1360€	182	45,3%
	More than 1360€	71	17,7%
Current occupation	Student	124	30,8%
	Employed	255	63,4%
	Unemployed	23	5,7%

As it is possible to confirm in the table above, from the total of 402 respondents, 65,2% were female and 34,3% were male, the remaining percentage of respondents (0,5%) preferred to not reveal their gender. As shown, 60,2% of participants were aged between 18 and 29, while 21,9% of the participants were aged 50 or older, which indicates that these two intervals accounted for a total of 82,1% of the participants. Regarding education, most respondents, (68,9%) have higher education and only 31,1% do not have a graduate degree. Most respondents were employed (63,4%) and many (45,3%) reported an average monthly income between 706€ and 1360€.

4.5. Data analysis

To perform the statistical analysis the SPSS 27, Excel and Smart PLS 3 tools were used. Two statistical procedures were run sequentially. Firstly, several confirmatory factor analyses (CFA) were performed to ascertain the validity and reliability of the measures used. Secondly, structural equation modelling (SEM) was used to test the proposed hypotheses and determine the relationship between the independent and dependent variables. In this study the independent variables are: (i) Environmental Concern, (ii) Environmental Knowledge, (iii) Consumer Environmental Responsibility, and (iv) Environmentally Friendly Consumption Intention. Environmentally Friendly Consumption behaviour is the main dependent variable.

5. Results

5.1. Reliability and validity analysis

Table 3 presents the items used in the computation of the main research variables (following the CFA) and their respective reliability, determined by the alfa of Cronbach, average variance extracted (AVE) and composite reliability (CR).

To access and test the reliability and validity of this study the Cronbach's coefficient of each part of the variables were examined. In most cases, the minimum required is 0.7 which was possible to confirm in all of the variables. The following table shows that the all Cronbach's coefficients are higher than 0.7, which confirms that the reliability of the measurements was acceptable. To measure the internal consistency of the variables, the CR must be approximately or exceed 0.7, which all variables exceed since the minimum CR obtained for the measures was 0.852, representing already a good internal consistency (Pestana, & Gageiro, 2003). Lastly, the convergent validity is usually assessed through the average variance extracted (AVE). Since the AVEs of all five constructs exceeded 0.5 it is possible to ensure the convergent validity of all measures used.

In the light of this preliminary analysis, the composite measures used in the present research, which were also employed in previous research (Chan, 2001; Choi and Kim, 2005; Mostafa, 2007; Stern et al., 2011; Pagiaslis and Krontalis, 2014) are adequate to the sample.

Table 3 - Measurements items and reliability analysis

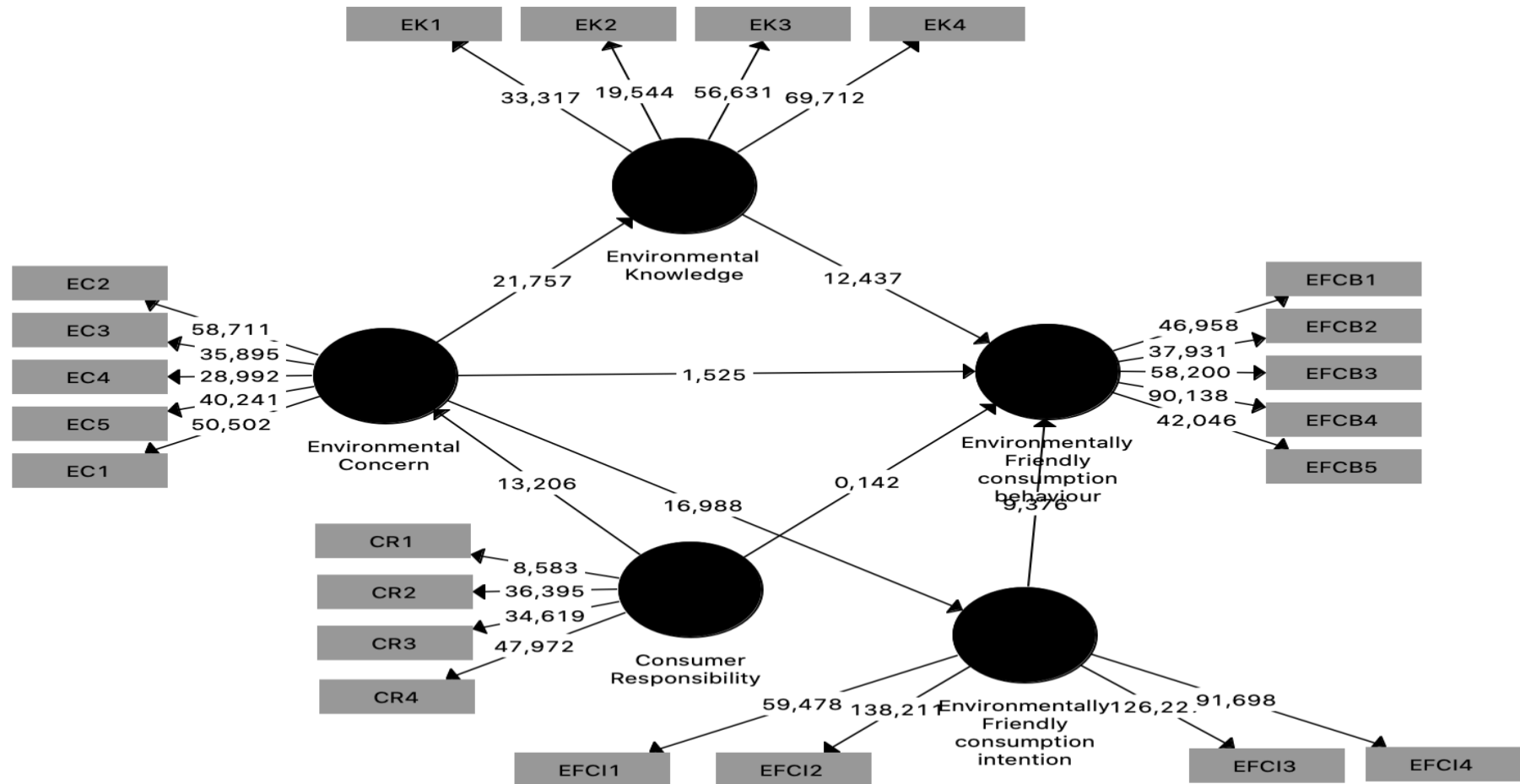
Constructs and scale items	FL	Cronbach's alfa	α	Mean	SD	CR	AVE
Environmental Concern (EC)		0.93	0.861	3.911	0.755	0.907	0.660
How concerned are you about the environment?	0.848			4.070	0.846		
How concerned are you about pollution and with the consequences that pollution has on the environment?	0.858			4.240	0.828		
How concerned are you about water and air pollution in your city?	0.808			4.150	0.88		
How concerned are you about extravagant water usage in your city?	0.769			4.030	0.935		
How concerned are you about the environment when making purchases?	0.776			3.060	1.181		
Environmental Knowledge (EK)		0.85	0.809	3.024	0.927	0.874	0.636
I know that I buy clothing that is safe for the environment	0.796			2.790	1.119		
I am very knowledgeable about environmental issues	0.659			3.730	0.942		
I understand the various symbols and terms related to the environment present on clothing	0.858			3.130	1.269		
When I purchase new clothes, I always look to the symbols present on the clothing	0.861			2.440	1.290		
Consumer Environmental Responsibility (CER)			0.759	4.212	0.672	0.852	0.596
My actions impact the health of the environment	0.540			4.09	1.029		
I am aware that I have the power to protect the environment	0.823			4.30	0.822		
I can learn how to improve the environment through my choices	0.841			4.37	0.792		
I will work to make my surrounding environment a better place by doing more eco-friendly choices	0.842			4.09	0.863		
Environmentally friendly consumption intention (EFCI)		0.83	0.940	3.427	1.111	0.957	0.848

(continue)

Constructs and scale items	FL	Cronbach's alfa	α	Mean	SD	CR	AVE
Over the next one month, I will consider buying products because they are less polluting	0.874			3.400	1.240		
Over the next one month, I will consider switching to other brands for ecological reasons.	0.943			3.500	1.207		
Over the next one month, I plan to switch to a green version of a product.	0.942			3.440	1.268		
When making a purchase, I will take into account its environmental impacts so that I can do a more sustainable choice.	0.924			3.370	1.194		
Environmentally friendly consumption behaviour (EFCB)		0.83	0.906	2.802	1.178	0.931	0.730
I make a special effort to buy clothes that are made with recycled materials or materials that have a lower impact on the environment	0.849			2.760	1.222		
When I have a choice between two equal products, I purchase the one less harmful to the environment.	0.824			2.860	1.357		
I have avoided buying a product because it had potentially harmful environmental effects.	0.864			2.330	1.428		
I make a special effort to buy clothes that are environmentally friendly.	0.910			3.370	1.306		
I have switched products/ clothes for ecological reasons.	0.822			3.250	1.329		

Notes: FL= Factor loading, SD = standard deviation, AVE = average variance extracted, CR = composite reliability.

Figure 2 - Illustration of the structural model test results



5.2. Descriptive and correlation analysis

5.2.1. Shopping frequency

Figure 3 shows the second-hand shopping frequency of the respondents that participated in this study. It is possible to confirm that despite consumers' high levels of environmental concern, a large amount (73,7%) of the sample has never purchased a second-hand piece of clothing. This does not indicate that the respondent does not usually reflect his concerns by purchasing environmentally friendly products, it just indicates that the consumer does not often recur to this option.

Figure 3- Second-hand shopping frequency pie chart

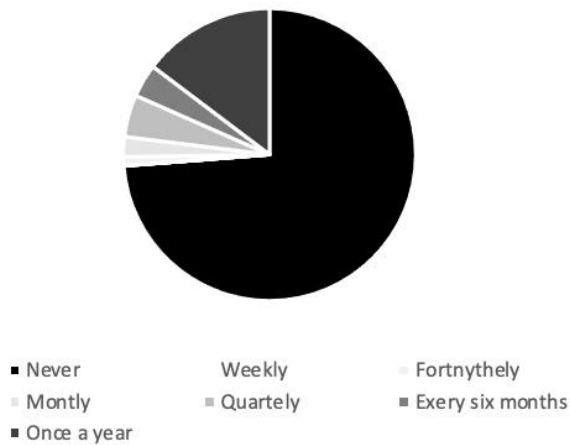


Table 4 presents the results obtained for each item of the variable environmental Concern. Through the table it is possible to view that 70,4% of the sample presents higher levels of environmental concern.

Table 4 - Environmental Concern descriptive statistics

	EC1	EC2	EC3	EC4	EC5	Mean	%
1	3	2	1	5	43	10,8	2,7%
2	14	14	19	25	83	31	7,7%
3	71	46	66	65	138	77,2	19,2%
4	135	161	147	166	82	138,2	34,4%
5	179	179	169	141	56	144,8	36,0%

Table 5 shows the shopping frequency of new clothes and the shopping frequency of second-hand clothes.

Table 5 – Clothing shopping frequency

Frequency	New clothes	%	Second-hand clothes	%
Weekly	7	1,7%	1	0,2%
Every 2 weeks	7	1,7%	4	1,0%
Monthly	109	27,1%	9	2,2%
Quarterly	129	32,1%	18	4,5%
Every six months	82	20,4%	15	3,7%
At least once a year	68	16,9%	59	14,7%
Never	0	0,0%	297	73,9%

According to the data available in table 4 and table 5, when respondents were asked to respond in accordance with their environmental concern level, 34,4% (138 respondents) responded that were concerned and 36,0% (145 respondents) answered that were very concerned, which indicated that most of the respondents, namely 70,4%, a total of 283 respondents indicated that their level of concern was considerable to higher. However, when questioned regarding the purchase of a second-hand piece of garment, which is an option of sustainable consumption, 73,7% of the respondents revealing a clear majority of the respondents, answered that they never acquired a piece of second-hand cloth. It is important to mention once again that this percentage includes and reflects the behaviour of the respondents who demonstrated in the beginning of the questionnaire a certain level of environmental concern. Hence this demonstrates a certain incongruency of behaviours, it reflects that although they might be concerned with the environment when realizing a purchase, they don't opt for this way of sustainable consumption (second-hand market).

5.2.2. Means analysis

Table 6 - Means Analysis

Variables	Gender			
	Female		Male	
	Mean	SD	Mean	SD
EC	4.038	0.730	3.673	0.750
EK	3.152	0.934	2.775	0.870
CER	4.350	0.576	3.955	0.760
EFCI	3.638	1.099	3.031	1.088
EFCB	2.993	1.122	2.442	1.076

Tables 6 presents the mean analysis for all variables. According to the results obtained, through the comparison of the means, it is possible to observe that in this sample, females present higher levels of environmental concern, environmental knowledge and consumer environmental responsibility than males. Therefore, for instance it is possible to state that in this sample the female respondents demonstrated higher levels of concern than males regarding the environmental issues. Furthermore, the females environmentally friendly consumption intention is superior than males intention to interact with friendly consumption behaviours, which can indicate that its more likely that females will engage in environmentally consumption behaviours. This situation is also verified in the results, since the environmentally friendly consumption behaviours mean is as well higher for females than for males.

5.2.3. Correlation analysis

Table 7 presents the correlation analysis for all variables.

Table 7 - Correlation analysis

Variables	EC	EK	CR	EFCB	EFCI
EC	1	0.634*	0.482*	0.617*	0.607*
EK	0.634*	1	0.374*	0.751*	0.567*
CER	0.482*	0.374*	1	0.414*	0.513*
EFCB	0.617*	0.751*	0.414*	1	0.711*
EFCI	0.607*	0.567*	0.513*	0.711*	1

Notes: *Correlation is significant at the 0.05 level, p value < 0.05

As it is demonstrated in the table above, all the constructs for the level of significance of 5% were found to have a significant correlation with each other. The higher correlation value obtained is between the variables of environmental knowledge and environmentally friendly consumption behaviour ($r=-0.751$; $p<0.05$). Indicating that people who are informed regarding the environmental problems are more likely to engage in environmental friendly consumption behaviours. The variables with the lower correlation are environmental knowledge and consumer responsibility ($r=-0.374$; $p<0.05$), although the correlation is highly significant.

5.3. Test of hypotheses

To examine the direct relationship between consumers' environmental knowledge, environmental concern, consumers responsibility and environmentally friendly consumer intention on environmentally friendly consumer behaviour, a regression analysis was conducted using SPSS 27. The present study intends to measure the direct influence between the constructs. Table 8 summarizes the results obtained in this study and shows that all the hypotheses were supported.

Table 8 - The results of the main effect analysis

Hypothesis	Path	SPC	Coefficient (T-value)	R ²	Results
H1	EC → EFCB	0.617	15.671	0.380	Supported
H2	EK → EFCB	0.751	22.775	0.565	Supported
H4	CER → EFCB	0.414	9.094	0.171	Supported
H6	EFCI → EFCB	0.711	20.230	0.506	Supported

Notes: SPC= Standardized Path Coefficients, all p values < 0.05

The results showed in Table 8 demonstrate that all the predictors (environmental concern, environmental knowledge, consumer responsibility, environmentally friendly consumption intention) have a favourable and significant influence on environmentally friendly actual consumption behaviour.

The findings indicate that hypothesis 1 is accepted which suggests that environmental concern is positively related to environmentally friendly consumption behaviours, this predictor influences consumers to run towards a more sustainable consumption ($\beta_{EC \rightarrow EFCB} =$

0.617, $p < 0.05$). The hypothesis 2 proposed that environmental knowledge has a positive and significant influence on the consumer behaviour towards consuming eco-friendly garment, the results show that this variable has in fact a significant impact on environmentally conscious behaviours ($\beta_{EK \rightarrow EFCB} = 0.751$, $p < 0.05$). Thus, the H2 is supported. Furthermore, the hypothesis 4 proposed that the consumer environmental responsibility has a positive and significant influence on the consumer behaviour towards purchasing eco-friendly garment, through the results it is possible to confirm that this hypothesis is as well accepted, ($\beta_{CER \rightarrow EFCB} = 0.414$, $p < 0.05$).

Since hypothesis 1, 2, and 4 were supported this indicates that consumers who are environmentally concerned, environmentally knowledgeable and have as a pillar consumer responsibility are more likely to reflect those concerns and responsibilities in their consumption habits and intentions, and therefore are more likely to pursue an environmentally friendly consumption behaviour.

The hypothesis 6 proposed that the consumer environmentally friendly consumption intention is positively associated with the environmentally friendly consumption behaviour, hence the results confirm these association, which indicates that consumers who have the intention to purchase are more likely to turn that intention into actual behaviour, hence hypothesis 6 is accepted ($\beta_{EFCI \rightarrow EFCB} = 0.711$, $p < 0.05$).

Table 9 - The results of the mediating effect analysis

	Path	Original Sample (O)	Sample Mean (M)	SD	Coefficient (T-value)	P Value s	Bias corrected 95 % CI	
							Lower	Upper
H3	EC $\rightarrow$ EK $\rightarrow$ EFCB	0.310	0.311	0.030	10.314	0.000	0.255	0.372
H5	CER $\rightarrow$ EC $\rightarrow$ EFCB	0.035	0.035	0.023	1.498	0.134	-0.01	0.079
H7	EC $\rightarrow$ EFCI $\rightarrow$ EFCB	0.242	0.244	0.030	8.189	0.000	0.188	0.302

Table 10 - The results of the mediating effect analysis

Hypotheses	Path	Coefficient (T-value)	Results
H3	EC → EK → EFCB	10.314	Supported
H5	CER → EC → EFCB	1.498	Not Supported
H7	EC → EFCI → EFCB	8.189	Supported

To examine the indirect relationship between the construct's environmental knowledge, consumer responsibility, environmental concern and environmentally friendly consumption behaviour and test for mediation effects a bootstrapping analysis was preformed using the Smart PLS 3 tool. The bootstrapping method is recommended to test the mediation and moderation effects (Preacher and Hayes, 2008). A bias-corrected bootstrap approach was used specifically to estimate indirect effects at the 95 percent confidence interval from 1,000 bootstrap samples in order to determine the total indirect effects and individual indirect effects for the dimensions of this study. The mediation effect is regarded as statistically significant when the confidence interval does not include zero.

The results of the analysis of the mediation effects of environmental knowledge and consumer responsibility on environmentally friendly consumption behaviour are presented in table 9. According to table 9, through the results it is possible to confirm that consumers' environmental knowledge mediates the positive relationship between consumers' environmental concern and environmentally friendly consumption behaviour. Since the bias-corrected 95% confidence interval does not include zero, hence H3 is supported.

In addition, according to the results it is possible to confirm that consumers' environmentally friendly consumption intention mediates the positive relationship between environmental concern and environmentally friendly consumption behaviour. The bias-corrected 95% confidence interval does not include zero, thus H8 is supported. Moreover, for both paths the p value is lower than 0.005 which indicates that the mediation is significant.

On other hand, since the bias-corrected 95% confidence interval included zero for the mediation effect of consumer responsibility, this indicates that consumer responsibility does not mediate the effects that environmental concern has on environmentally friendly consumption behaviour. Moreover, it is possible to confirm that the p value is higher than 0.005 in that path which indicates that the mediation effect is not significant. Hence, in the light of these findings, H5 is not supported.

6. Discussion

The current study aimed to understand and examine whether the consumer's environmental concern, environmental knowledge, consumer responsibility and environmentally friendly consumption intention impact the environmentally friendly consumption intention and behaviour.

Seven hypotheses were tested with a Portuguese sample of 402 consumers, and the following Table summarizes the main results.

Table 11- Overall results from the hypotheses' test

Hypotheses	Description	Result
H1	Consumers' environmental concern is positively associated to their environmentally friendly consumer behaviour.	Supported
H2	Consumers' environmental knowledge is positively associated to their environmentally friendly consumer behaviour.	Supported
H3	Consumers' environmental knowledge mediates the positive relationship between consumers' environmental concern and their environmentally friendly consumer behaviour.	Supported
H4	Consumers' environmental responsibility is positively associated to their environmentally friendly consumer behaviour.	Supported
H5	Consumers' environmental concern mediates the positive relationship between consumers responsibility and environmentally friendly consumer behaviour.	Not Supported
H6	Consumers' intention to consume environmentally friendly products is positively associated with their environmentally friendly consumption behaviour.	Supported
H7	Consumers' intention to consume environmentally friendly products mediates the positive relationship between consumers' environmental concern and their environmentally friendly consumer behaviours.	Supported

As shown in Table 11, almost all of the hypotheses were supported with the exception of one, namely H5. Overall, consumers environmental concern is positively associated with their environmentally friendly consumer behaviour. The results reveal that consumers who present environmental concern are more likely to be interested in purchasing sustainable options than those who are not concerned with the environmental issues, which

is consistent with prior research (Bamberg, 2003; Kim & Choi, S., 2005; McNeill & Moore, 2015, Mohd, 2016; Yadav, R. & Pathak, S., 2016).

The results reveal as well that consumers' environmental knowledge has a positive impact in their environmentally friendly consumer behaviour. It is as well suggested that the increase of environmental education can impact behaviours towards a pro-environmental behaviour, consumers who have a higher level of information tend to engage more in sustainable fashion and that is reflected as well in consumers' concerns. This is consistent with the findings of previous research on the deception that the increase of knowledge enables changes in behaviours towards a more sustainable consumption, which shows the influence of environmental knowledge on the consumer behaviour (Zsóka et al., 2012; Molina et al., 2013; Yadav, & Pathak, 2016, Bong Ko, S., & Jin, B., 2017).

In addition, the results show that environmental knowledge plays the role of mediator in the positive relationship between environmental concern and ecologically friendly consumption behaviour, indicating that a consumer has environmental concern because he was first acknowledged about the environmental issues and therefore this awareness potentiated his environmental concern which could influence the way he would pursue a more sustainable fashion consumption. This findings consistent with earlier research that confirmed that the environmental knowledge would indeed play a mediator role between environmental concern and consumers environmentally friendly purchase intention (Newton et al., 2015).

Moreover, according to the results consumers' environmental responsibility has a positive influence on environmentally friendly consumer behaviour, indicating that customers who feel more environmentally responsible and have on a daily basis those responsibilities aligned are more inclined to engage in sustainable consumption behaviours. These results seem consistent with prior research (Stern et al., 1999).

Furthermore, and contrary with the predictions, the findings of this study suggest that consumers environmental concern does not mediate the positive relationship between consumer responsibility and environmentally friendly behaviour. However, this is not consistent with previous research that indicated that the environmental concern played a partial mediator role (Yue, B. et al., 2020).

Additionally, and according with the predictions, consumers who have the intent to engage in environmentally friendly consumption are more likely to act in accordance. This study results demonstrate that the consumer environmentally friendly consumption intention

is positively associated with the environmentally friendly consumption behaviour. Hence, these findings are consistent with the Theory of Planned Behaviour (Ajzen, 1991) who suggested that consumers who show that they have intention of purchasing a product will exhibit higher purchasing rates than those who have demonstrated no intention of buying it. Generally speaking, the more strongly an action is intended to be performed, the more likely its performance should be (Ajzen, 1991; Ariff, 2014; Widayat, W. et al., 2021).

In addition the results suggest that the intention acts as a link between environmental concern and environmentally friendly consumption behaviour. According to the study's findings, environmental concern has an indirect effect on pro-environmental behaviour through intention. A person's intention to behave in accordance with expected behaviour will be established considering the overall environmental concern that the consumers have.

6.1. Limitations and future research

This study, like all, is subject to certain limitations. This study used a cross-sectional approach instead of using a longitudinal approach. This suggests that the focus has been significantly higher on observing and analysing consumers behaviours instead on observing changes in consumer behaviours. Thus, if possible further research should do more longitudinal research that focus on tracking and observing actual changes in consumers behaviours over time. This way it would be interesting to provide another perspective and valuable insight to increase the knowledge in this area.

Another recommendation would be to pursue an experimental study, it would be interesting to confirm if the actual behaviour is similar to the intention on a real-world situation. This way it would provide stronger empirical evidence that these variables have in fact an impact on consumers behaviours.

One methodological limitation pertains to the sample, which was limited to Portuguese residents available to answer an online survey. While this approach might have limited the findings to a segment of younger and highly educated respondents, it has been commonly by similar findings. Future research might further examine other moderators, such as other cultures, samples with lower educated respondents as well as explore the boundary conditions affecting consumers behaviours. This will expand our understanding of how to promote sustainable consumption.

This study assumed that the respondents were correctly aware on what a green consumption behaviour consists of, although that does not always reflect the reality, a certain

percentage of the population may not be aware of what really is a eco-friendly consumption behaviour, this implies that with the fact that they are not fully aware on what really is the results might be different than what if they were. The term greenwashing applies to this situation and it brings a false eco-friendly behaviour leading people to believe that they are doing the right thing. For future research it would be recommended to provide the accurate knowledge, in order to perceive if the findings would still be in accordance. It is expected that more knowledge in these themes would be important to really change consumer behaviours.

The results obtained demonstrated that environmental concern, environmental knowledge, consumer environmental responsibility and intention would in fact influence consumers' behaviours towards a more environmentally friendly consumption behaviour. It was possible to state as well that consumers would not opt for a specific sustainable option, in this case, second-hand clothing, even though they presented high levels of environmental concern. For additional research it would be interesting to conduct an experimental study in which consumers were given the choice between three options: fast fashion, sustainable fashion, and second-hand clothing, while taking into account these variables. Considering that the last two options have lower environmental impact it would be a way to confirm if the true intentions and concerns of consumers are indeed translated into real behaviours.

It is recommended for future research to explore more deeply these relationships, to better understand the perceived barriers and include other potential perceived barriers that may affect the consumer participation and engagement in sustainable consumption. Some examples can be the lack of financial resources, the low availability of product choices, the accessibility of sustainable products. It would be important for companies and retailers that further studies look into ways to overcome these barriers, exploring methods to make consumers go towards a more sustainable consumption and promote and environmentally consumption purchasing behaviour.

6.2. Theoretical Contributions

The findings of the present study extend the research of consumers' environmentally friendly consumption behaviour in important ways. First, this study extends existing research on the relationship between consumers' environmental concern, environmental knowledge, consumer responsibility, consumers environmentally friendly consumption intention and consumers environmentally friendly consumption behaviour. This study focused on the

influence of the aforementioned variables on environmentally friendly consumption behaviours and as well on the three relevant mediation effects that were not previously studied simultaneously. This research contributes to past studies by investigating and highlighting the importance of these predictors for consumers towards a green consumption behaviour.

There is a growing body of literature exploring the link between environmental responsibility and green consumption, but the majority of the research has a higher focus on factors influencing organisational strategies and therefore the focus is on corporate environmental responsibility (CER). Hence, this study focusses on the consumers' responsibilities, knowledge and concerns and if those factors impact and affect consumers' purchasing consumption.

This study specifically demonstrates that environmental concern, consumers environmental responsibility and environmental knowledge operate as important drivers in boosting green consumption, which specifically reveals a favourable effect on consumers' environmentally friendly consumption intention and behaviour. On the contrary of the findings of previous research, the environmental concern does not play a mediating role between consumer responsibility and environmentally friendly consumption behaviour (Yue, B. et al., 2020), indicating that the discussion of this mediating effect should be further explored.

This study provides as well empirical evidence that environmental knowledge has a mediating role and a favourable effect of environmental concern on environmentally friendly consumption behaviour. This is applicable as well to the mediating role of intention between the relationship of consumers' environmental concern and environmental consumption behaviour. The result is consistent with prior research that support the positive impact of intention towards the performance of a behaviour (Ajzen, 1991; Ariff, 2014)

Additionally, this study findings contribute to body of the literature by demonstrating that even though consumers were mainly concerned with the environment when they could opt for a sustainable option as it is the second-hand industry the results showed that few were the ones that eventually purchased second-hand clothes. This does not indicate that when purchasing clothes, they would not opt for sustainable choices, it just adds to the research that in what regard to a specific sustainable option (second-hand clothing) the adherence is minimal. This information and addition to the literature can be useful to perceive and understand new ways to change these consumption behaviours.

6.3. Managerial Implications

The findings of this research present managerial implications marketeers, company managers policymakers, manufacturers. To marketeers the findings can be useful to develop and create marketing strategies to attract new consumers into purchasing sustainable fashion clothing. For instance, to attract and retain new customers, marketers can, while promoting their products, use environmental information to show environmental concerned consumers why that sustainable piece of clothing is better and less harmful to the environment than the ones who are presented by the competition. With this approach, it is more likely that consumers who are worried with the environment will choose to purchase the green clothing option.

For managers to develop new strategies, the findings of this study can provide a new perspective and valuable information. To do so effectively they need to understand consumers' behaviours. By comprehending consumers' behaviours and what drives those behaviours it will be easier to create strategies to boost sustainable consumption and attract customers to the green consumption market.

The insights of this study can be helpful to boost sustainable consumption, this way policymakers can incorporate environmental education into the national educational system to foster the environmental value of managing the interaction between humans and nature appropriately, which would increase green consumption. For instance, by increasing consumers knowledge in what regards environmental issues it is more likely that they will make environmentally friendly purchases.

Finally, the findings have practical implications for manufacturers, this information can be as well useful to promote greener processes, it is important to perceive that these are real issues and consumers' awareness is increasing day by day, so it would be a good opportunity for manufacturers to enhance processes while reducing their negative effects on the environment and at the same time satisfy the needs and meet the expectations of consumers.

7. Conclusion

This study drawn upon the signaling literature on environmentally friendly consumption behaviours and its predictors. The mediation effects between the variables were also investigated in this study.

This research begun by contextualizing and introducing sustainability and the respective literature review considered relevant for the study, next the relevant constructs for the study were presented and explored, namely: (i) environmental concern; (ii) environmental knowledge; (iii) consumer responsibility and (iv) environmentally friendly consumption intention, which have been often reported as significant predictors of environmentally friendly consumption behaviours. To obtain the findings a questionnaire was made available, and the data collected enabled the creation of a model that was therefore properly analysed to understand the underlying connections between the constructs.

In conclusion, this study demonstrated the important role of the predictors of environmentally friendly consumption behaviours. Consumers' environmental knowledge, concern and responsibility enable consumers to be more aware of the environmental issues that are provoked by this polluting industry which often leads to, and is reflected on, the consumers purchasing and consumption behaviours. The findings of the current study are consistent with previous studies, indicating that these aforementioned variables have in fact a positive correlation with environmentally friendly consumption behaviours (e.g., Zsóka et al., 2012; Molina et al., 2013; Yadav, R. & Pathak, S., 2016, Bong Ko, S., & Jin, B., 2017, Widayat, W. et al., 2021).

From a managerial standpoint, the findings of this study can be helpful to understand the impact of the constructs on the environmentally friendly consumption intention and actual consumption. To understand the impacts and implications marketers can work and boost efforts to increase consumer behaviours towards a green consumption. It can be as well helpful for sustainable fashion brands to understand that the increase of consumer awareness and education through marketing can be useful to influence consumers attitudes regarding a sustainable fashion consumption and the movement towards a more sustainable fashion system. Additionally, it is encouraged to promote both formal and informal environmental education to foster a more sustainable conduct and behaviour.

In the light of the urgency of consumers to comply with the needs of the environment and walk to a better industry or at least a less polluting one it is important for fashion brands, sustainable brands, consumers, and other stakeholders to implement good practices and promote more sustainable behaviours. This should not be seen as a limitation but rather as a good and promising opportunity.

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