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THE ROLE OF CONSUMERS' GENDER ON WEBSITE DESIGN

What role does consumers' gender play in the effect of website design on consumers' purchase intention in a Dutch online retail environment?

Name student: **Shivani Shalini Jharap**

Student ID number: **451532**

Supervisor: **Clément Bellet**

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Executive Summary

In this thesis, research towards consumer behaviour in an offline and online shopping environment is done. Specifically, it is researched what elements of website design are important to consumers, and what the role of consumers' gender plays in this. This is done using the following research question:

> *Research question: What role does consumers' gender play in the effect of website design on consumers' purchase intention in a Dutch online retail environment?*

This thesis can be useful for the Dutch online retail environment to create an appealing website as online sales are rising. Different papers have been used which explain what elements of an offline retail environment influence consumer behaviour. These elements were compared to the elements that play a role in the online retail environment and have an influence on consumer behaviour. Lastly, previous research has been used to find out what role gender plays in the purchase intention of consumers. With this information a model was created to find out how the background colour of a website, the layout of products on a website and the gender of model portraying products on a website had an influence on the purchase intention of consumers. Besides this, a second model was used to test if the gender of consumers had a moderation effect on the relationship of the first model. To test this, different images of a website portraying furniture, a gender-neutral product, has been shown to participants where they repeatedly had to choose between two different images. These images were made of the elements described in the first model. Using conjoint analysis different tests have been performed to research the significance of the variables in the two models. Exploratory research has also used to find out more about the differences between the two genders.

The results show that the background colour of a website, the layout of products, and the gender of a model portraying products all three play a significant role in the purchase intention of consumers. Consumers prefer background colours with a low brightness level, a horizontal layout of products and female models over male models. According to the conjoint analysis, the gender of consumers does not have a significant effect on their purchase intention. However, the exploratory research does show that female consumers are more likely to talk to others about a positive shopping experience. Furthermore, it shows that consumers prefer to buy furniture in an offline store rather than an online store.

Further research can research what products consumers prefer to buy in an offline store and the reason behind this. Further research can also make a distinction using other demographics such as other types of genders, different cultural backgrounds, and different age groups. In this way future research will build on the existing knowledge of website design and online buying behaviour by making use of the limitations of this thesis. As previous research mentions, there are many opportunities regarding the research of website design and the role gender plays in this.

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1. Introduction

In the Netherlands there are 800,000 new e-shoppers in only the span of three months (April, May, and June) in 2020, compared to 2019 (NOS nieuws, 2020). Consumers start to search more and more online for product information (Liaukonyte, Teixeira & Wilbur, 2015). This explosive search for information in an online environment can be called remarkable (Joo, Wilbur, Cowgill & Zhu, 2014). Nonetheless, it can be a challenge for firms to create a website design which fits the brand image of the company and their customer base. Even though managers acknowledge the importance of the physical surroundings of customers, empirical research focused more on pricing, promotion, and advertising (Bitner, 1992).

Besides the physical surroundings, the role of gender-based marketing in present times can be interesting to research. The perception of the role of women in modern-day society has changed and is still changing (Drake, 2017). As stereotypes regarding men and women are changing, it can be interesting to research if it affects the way both genders look at websites. Gender can be seen as something that is complicated but influences the behaviour of consumers and therefore has an influence on marketing. Products can be targeted and marketed specifically to men or women, or they can be targeted to both genders at the same time. Both strategies can lead to an increase in sales according to Peñaloza (1994).

When looking at advertisements for instance, more and more advertisements, targeted at women, have a theme of female empowerment (Drake, 2017). An example of this is the "Real Beauty" campaign of Dove. Dove is known for its empowering marketing messages targeting women. Women who saw advertisements, which included a female empowerment message, had a significantly higher positive attitude towards the advertisement. However, advertisements targeted at women did not affect the way women looked at their own gender role as a female consumer (Drake, 2017). If advertisements targeted at females are successful, does that mean websites which are targeted at women can also be successful?

According to Liaukonyte et al. (2015), a website could have two possible functions. A website could solely take on the function of selling products in an online environment. This can be done by providing the consumer with information and convincing the consumer to buy the product. A website could also fulfil other needs of consumers, such as lower transaction costs because they purchase something online. Transaction costs can be lower because people will not have to take the time and perhaps spend money to go to an offline store.

Generally, when an offline store is opened, the search and online sales of this store increases (Wang & Goldfarb, 2017). This is especially the case in areas where the store is not really known yet. If the retailer is already known online and opens an offline store, the search and online sales in that area decreases.

When looking specifically at the Netherlands, numbers of the Dutch national statistics office, Statistics Netherlands (CBS), showed that the amount of revenue of online purchases grew enormously in 2020 which can be seen in table 1. A reason for this could be the outbreak of covid-19 which lead lots of

consumers to buy products online for the first time (NOS nieuws, 2020). The lockdown started in March 2020 in the Netherlands. Stores were closed and people were advised to stay at home, which is why the amount of internet purchases rose in such a short amount of time according to CBS (2020). In the second quarter of 2020 (April, May, and June) Dutch consumers spend around 696 million euros in European web shops (CBS, 2020). That is a growth of 37% compared to the spending in European stores in the second quarter of 2019. The internet purchases in the Netherlands grew a lot in 2020 compared to 2019. The revenue of internet purchases increased with 55% in the second quarter of 2020 compared to the second quarter of 2019 (CBS, 2021a). This is the highest growth of revenue ever measured on internet purchases by CBS (2020). In the third quarter of 2020 (July, August, and September) the revenue of the internet purchases grew with 38% compared to the third quarter of 2019 (CBS, 2021a). When looking specifically at retailers who are only active in an online environment, their revenue grew with 31% in the third quarter of 2020 compared to the third quarter of 2019. The revenue of multichannel retailers, firms who sell their products in an offline and online environment, grew with 38% in the third quarter of 2020 compared to the third quarter of 2019.

Table 1: Revenue growth of internet purchases of retail stores in the Netherlands

	Revenue internet purchases of retail stores*	
Year	**Multi-channel stores****	**Total retail stores**
2015	22.0%	22.1%
2016	16.5%	20.1%
2017	22.2%	19.9%
2018	26.3%	17.9%
2019	21.3%	17.0%
2020	54.9%	43.6%

*Revenue growth of internet purchases in percentages compared to previous year

**Multi-channels stores which main activity is selling products offline

Source: CBS, 2021b

The behaviour of consumers and their responses can be influenced by several environmental factors. In physical settings these factors can differ from furnishings, wall décor and temperature, to lighting, colours and textures (Bitner, 1992). An interesting topic of research is if the factors that play a role in offline stores, also play a role in online stores, and can therefore influence consumers in their buying behaviour.

Gorn, Chattopadhyay, Sengupta and Tripatha (2004) explain that colours seen on a website, can influence the feelings of consumers. The three dimensions of colour (value, chroma and hue) each have a different effect on the feelings of a website user. It is found by Gorn et al. (2004) that colours can influence the level of relaxation of users while they are waiting for a website to load. People perceive

the quickness of the website to load differently when different colours are being used. These perceptions then influence the evaluation of the website and the willingness to recommend the website to others (Gorn et al., 2004). Lans, Pieters and Wedel (2021) explained that the layout of products on a website can also influence the online search behaviour of a consumer. People also have a preference of the type of gender they prefer to see in movies according to Holbrook and Schindler (1994). People feel different towards men or women depending on their gender according to Melnyk, van Osselaer and Bijmolt (2009).

Summarizing, in this thesis the different elements of the aesthetics of website designs are researched, such as background colour, layout of products and gender of models, to see if there is a difference between male and female consumers. This will be done using the following research question:

> *Research question: What role does consumers' gender play in the effect of website design on consumers' purchase intention in a Dutch online retail environment?*

Different sub-questions will be answered in this thesis to formulate an answer for the research question.

Firstly, the different components of an offline retail environment will be researched to see what components play a role in the buying behaviour of consumers. With this information it can be researched if the components of the offline retail environment, also play a role in an online retail environment. This will be researched with the first sub-question:

> *Sub-question 1: What is the difference between an offline retail environment and an online retail environment?*

Secondly, the different elements that make up a website design will be researched to see which elements have an impact on consumer behaviour. The different components that play a role in the online consumer buying behaviour will be analysed. This will be researched with the second sub-question:

> *Sub-question 2: What components of website design have an influence on the purchase intention of consumers?*

Thirdly, different papers will be compared and analysed to see what the difference is between the buying behaviour of male and female consumers. Current advertisements will also be analysed to see which visual components attract female and male consumers. Even though not everyone may feel represented by the gender male or female, previous literature which only talks about males and females is used to answer this research question. That is why it is chosen to only use the genders female and male in this thesis. The last sub-question will be:

> *Sub-question 3: What role does the gender of consumers play in their purchase intention?*

In terms of academic motivation, more research into the settings of physical consumption is needed according to Bitner (1992). Gorn et al. (2004) also mention the significance of researching the effects

of an online shopping environment where consumers are making different transactions and different visuals can be seen. Any kind of research into the role of different genders in the marketing field is useful, because of the lack of this research according to Peñaloza (1992). This is supported by Drake (2017) who thinks more research on the effect of visuals, such as advertisements, and focusing on different demographics, such as gender, is useful. What role gender plays in a shopping environment is always meaningful, as gender roles are continually changing (Drake, 2017). Melnyk et al. (2009) also underline the added value of exploring the differences between the two genders.

In terms of managerial motivation, this thesis researches if it is useful for companies to specifically target male and female consumers using their websites, or if companies should create a website which are targeted at both genders. This can be useful for retail stores who sell their products online and want to target a specific gender. With the progression of the perception of men and women over time, research on the role of gender-based marketing can be useful for current and future marketing strategies.

As the table 1 depicts, online shopping is becoming more and more popular. Previous research has been done to see what the differences are between a physical setting and an online setting. What makes this thesis different compared to previous research, is that components which are important in an offline shopping environment are analysed and are researched to see if they are also important in an online shopping environment. Another aspect that sets this thesis apart from previous research, is that different components of website designs are combined and used in one website design. This thesis combines the background colour of a website, the layout of a website and the type of model into one website design. By creating different combinations of website designs using the different components, the optimal website design can be found for a female or male consumer. This combines previous research of Gorn et al. (2004) about background colour. Lans et al. (2021) and Milosavljevic et al. (2011) about the layout of a website. Holbrook and Schindler (1994) about the type of gender people prefer to see. Peñaloza (1992), Durante et al. (2011), Durante et al. (2014), Melnyk et al. (2009), Zhang et al. (2014) and Drake (2017) about gender roles and difference in behaviour between the two genders. This thesis tries to combine the information of previous research and applies it in an online shopping environment, to add on the existing knowledge of the online buying behaviour of consumers.

Firstly, in the literature review, previous papers about consumer offline and online buying behaviour and any differences between genders are researched, and an overview of these findings are given in a summary table. Next, a conceptual framework and hypotheses are provided guide the statistical analyses. This is followed by the explanation how the data is gathered and the methods that are used in this thesis. Next off, the results of the statistical analyses and exploratory research are given. Lastly, the conclusion made up the answers of the hypotheses, sub-questions, and research questions are provided. This is all followed by the limitations of the research and recommendations for further research.

2. Literature review

2.1 Online buying behaviour

2.1.1 Decision-making process

Consumer behaviour can be described as: "The study of the processes involved when individuals or groups select, purchase, use or dispose of products, services, ideas or experiences to satisfy needs and desires." (Solomon, Russell-Bennett & Previte, 2012, p.35). According to Szmigin and Piacentini (2015) there are different stages when consumers are deciding to buy a product or service.

The first stage is *problem recognition*. In this stage the consumer has realised that a purchase is needed to solve a problem. In the second stage, *information search*, the consumer has been searching for information to help making a decision. After this comes the third stage, *alternative evaluation*. With the gathered information the consumer has been left with several options to choose from. In the fourth stage, *evaluation*, the consumer has been comparing different choice options with each other, and this can lead to an intention to purchase. The last stage, *outcomes of choice*, is about the consumer's post-purchase experience. This can be positive or filled with concerns, which can lead to sharing the whole buying experience with other consumers.

However, there is a difference when shopping in a physical store or when shopping online (Szmigin and Piacentini, 2015). When shopping in a physical store, the consumer is restricted by the area he or she lives in or the ability to shop somewhere else. This is not necessarily the case when shopping online, where a consumer can shop a product in any location (Häubl & Trifts, 2000). Besides this, when a consumer has been buying online, he or she can take all time needed when wanting to purchase an item.

The downside of shopping online is getting an information overload when searching for something on the internet (Szmigin & Piacentini, 2015). This makes it difficult for consumers to evaluate and compare all the available options (Häubl & Trifts, 2000). Face-to-face interaction or direct feedback is also different or not even possible in an online retail environment.

Summarizing, consumers go through different stages when wanting to buy a product or service. The experience of buying a product offline is different from shopping online.

2.2 Impact of aesthetics in an offline and online environment

2.2.1 Effect physical setting on consumers

Bitner (1992) explains that research of environmental psychology shows that the physical setting of an environment influences consumers, and that companies do not always realize the importance of this. Different elements of an environment, which consumers are in, can influence the way they act and behave. These elements differ from colours and textures to the layout of furniture or the temperature of the room.

However, not all these elements are present in an online environment. Visitors of a website cannot smell or feel anything, which is the case in an offline environment. Stores often make use of cues such as music and fragrance to influence their customers (Bitner, 1992). Consumers can also touch and feel the products they perhaps want to buy when they are in a physical store. These sensory elements influence the consumer and is therefore a very important aspect in their decision-making process and buying behaviour (Szmigin & Piacentini, 2015).

A challenge for offline stores is that they want to design the physical setting as such that customer experiences will be enhanced; their behaviour influenced and to encourage interactions between customers (Bitner, 1992). However, usually manufacturers rent a specific retail space (Jerath & Zhang, 2010), which makes it harder for offline stores to create the physical setting that thy want. It is therefore important that case retailers take charge in how they want their stores to be arranged. Nonetheless, the best possible design can differ per customer. This challenge can be overcome in an *online* environment, by personalizing the aesthetics of the website to each user's liking. By, for example, giving consumers the ability to change the order of the way they see products or can filter out products by characteristics such as size, colour, or price to search with more ease for a product. It remains important that companies determine who their target group is; what they look like and how they behave (Bitner, 1992). When knowing the behaviour of their target group, it becomes easier to create elements that attract and satisfy customers and creates customer loyalty.

2.2.2 Effect of product aesthetics on the perception of consumers

2.2.2.1 Product packages

Besides the impact which a physical setting can have on consumers, the aesthetics of product packages can influence the impression consumers have about the brand and the product (Bitner, 1992). The different elements of the visual appearance of a product can affect the way consumers see the worth, the esteem, the ease of use, and the durability of the product (Bloch, 1995). The product package can also catch the attention of a consumer or can cause positive feelings (Bloch, 1995). Besides these beliefs and reactions, product aesthetics can create, besides utilitarian value, additional value for the consumer.

The feelings that consumers receive from a product are on the other hand not always positive. Negative feelings can arise with consumers when certain elements in design, such as colour, form, and texture, do not fit the product or create the perception of negative associations such as low quality (Bloch, 1995).

Different factors play a role when perceiving a product, culture can be one of them (Bloch, 1995). Culture can influence the way people prefer certain designs, because of fashion trends and popular styles. Many designers and artists take part in these trends which leads to a mass promotion of designers, marketeers and mass media using the same trends. This can influence the preferences of consumers.

Gender still plays a role in these modern times in the marketing sector. It has become more complex than before (Peñaloza, 1992). Some products are specifically marketed at men or at women, such as razors and deodorants. Other products, such as food, do not specifically target a gender.

2.2.2.2 Visual saliency bias

When consumers are in an offline store, such as the supermarket, they must make decisions in a more rapid way compared to shopping in an online environment. They cannot leave items in their basket and look at it again the following day. This can however be the case in an online environment. Milosavljevic, Navalpakkam, Koch and Rangel (2011) talk about the existence of a visual saliency bias, which causes consumers to choose for more outstanding packages when they must make a rapid decision when they are shopping in an offline environment. Product packages which stand out more, salient items, are the cause of the visual saliency effect (Milosavljevic et al., 2011). They stand out more than others because of the brighter colour of the product package for example. Colour can have a positive influence on the visual attention of the consumer, it depends on surroundings how much that colour will stand out (Wedel & Pieters, 2008). Consumers look for a longer period of time at these salient items. This is because of the way the visual information is being processed in the brain.

According to Milosavljevic et al. (2011), this visual saliency bias exists when consumers are more likely to choose a more visually salient product. When consumers do not necessarily prefer a product, they still choose to purchase the more visually salient products, because of the way the store shelf is being lit or the attractiveness of the colour of the product. However, the current market creates products which are similar in many ways. This makes the possibility of the visual saliency bias to occur even higher according to Milosavljevic et al. (2011).

The aesthetics in general play a large role when consumers are buying a product. If consumers react to the aesthetics of a product, it is because of the design of the product or because (one of) the five senses are being stimulated. An aesthetic response is rarely from the function or the performance of the product (Bloch, 1995). Product design can even influence the way the functionality of the product is being processed by the consumer (Hoegg, Alba & Dahl, 2010). However, consumers can also face problems with product aesthetics (Deng, Hui & Hutchinson, 2010). When consumers are searching for a product to use for a long time, they tend to avoid product packaging with bright colours or a busy pattern (Buechel & Townsend, 2018). Since consumers believe the pattern to become irritating in the long run.

2.2.3 Effect of website aesthetics on consumer behaviour

2.2.3.1 Website aesthetics

A website design is made of different elements which can influence consumer behaviour. These are colour (Gorn et al., 2004), the layout of products (Lans et al., 2021; Milosavljevic et al., 2011), and the type of gender consumers like to see (Holbrook and Schindler, 1994). These elements also exist in an offline store, but consumers experience them in a different way as they can also touch and smell

products in an offline store (Bitner, 1992). These other sensory elements also have an influence on consumer behaviour (Szmigin & Piacentini, 2015).

2.2.3.2 Colour

Colour plays a big role in consumer behaviour. It can evoke certain feelings amongst users when they are exposed to a particular colour of a website design (Gorn et al., 2004). Research of Gorn et al. (2004) shows that participants who were shown a blue coloured background screen were feeling more relaxed than participants who saw a yellow or red coloured background screen. When the background colour of a website is being altered, it can affect the product choice of the consumer (Mandel & Johnson, 2002).

Aside from the feelings colours can bring out amongst users, colours can also influence the perceived quickness when for example downloading a file from a website (Gorn et al., 2004). Research of Gorn et al. (2004) has showed that participants who saw a blue background perceived the download to be quicker than participants who were shown a red background. Perceived quickness is very important, because when this is positive in the eyes of the user, it will affect the evaluation users will give to the website. It also influences the willingness of users to recommend the website to others.

2.2.3.3 Layout

The way a website is organized also plays a big role in the search efficiency of consumers. When products on a shopping website are organized by visual features in a horizontal way, it enhances the overall search efficiency of consumers (Lans et al., 2021). Images on a website are of high importance because consumers search for products based on images several times a day (Milosavljevic et al., 2011).

2.2.3.4 Model

When diving deeper into website design, it is also important to realize what exactly it is that consumers want to see and if there is a difference between what men want to see and what women want to see. Sometimes the portrayal of a gender causes positive feelings by women whilst causing negative feelings by men (Orth & Holancova, 2004). Holbrook and Schindler (1994) have researched what kind of movie stars men and women preferred to see. Females preferred to see male movie stars and men preferred to see female movie stars. It is the question if these findings can lead to the conclusion that this is also the case for the type of models consumers want to see whilst shopping online.

2.2.3.5 Gender

When designing a website, it is useful to keep in mind that women care more about the opinion of others than men do (Zhang, Feick and Mittal, 2014). That women often compete with other women is also something that Durante, Griskevicius, Hill, Perilloux and Li (2011) and Durante, Griskevicius, Cantú and Simpson (2014) have shown in their research. Women who were not ovulating were compared with women who were ovulating or near their ovulation. This was tested whilst female participants were

shopping in an online environment and were unaware of their ovulatory cycle. According to the research of Durante et al. (2011), women want to appear more enticing compared to other women when they are near the time to ovulate. In this period of time, they want to increase their status compared to other women (Durante et al., 2014) and are even altering their behaviour to achieve this. They do so by purchasing more revealing items like sexy clothing and accessories (Durante et al., 2011). So, their ovulation had indeed a direct influence on their buying behaviour.

Research of Durante et al. (2011) has also shown that when ovulating women notice an attractive woman, they are more likely to choose more daring clothing. When ovulating women were primed with an unattractive woman before shopping, this effect was not detected. This effect is also present when women were shown a picture of an attractive man. More items were chosen which could enhance their appearance. This effect was also not seen when an unattractive man was shown to the participants.

However, one must keep in mind that every culture is different. The level of focus on others or on oneself can differ per culture (Zhang et al., 2014). So, when a website is built, the culture of the country which will use the website must be taken into consideration.

Moreover, the fact that some consumers are more self-centred or care about the opinion of others can also play a role in the way people consume. Research of Melnyk, van Osselaer and Bijmolt (2009) shows that women do not seem to be more customer loyal than men are. Their research shows that men are more loyal to groups, firms and organizations and women are more loyal to individual employees. This means that women are more loyal to individual service providers, compared to men. Women are also more likely to travel an extra mile to buy from a store with a single acquaintance, than to simply buy the product in a nearby store. Men are more likely to travel an extra mile to buy from a store with multiple acquaintances compared to women (Melnyk et al., 2009).

Summarizing, different elements in a physical setting has an influence on consumers. Different elements of product packaging also influence consumers, such as the visual saliency bias. Some of these elements are also present in an online environment, but not all of them like the ability to touch or smell products. Elements that do play a role in website aesthetics are colour, the layout of products and the type of gender consumers prefer to see. It is important to remember that female and male consumers do not think alike and have a different buying behaviour.

2.3 Impact of social interaction

2.3.1 Effect of social interaction on consumer behaviour

2.3.1.1 Unplanned purchases

There are some differences between an online and offline shopping environment. These differences are important to research as they can influence the purchase intention of consumers.

One of them is that a lot of unplanned purchases are being made when consumers are shopping in an offline environment. Streicher, Estes and Büttner (2020) explain that consumers use different kinds of visual attentional breadth when they are shopping in a store. Consumers make use of two kinds of visual attentional breadths. They make use of a more focused attentional breadth, also called a dispersed attentional breadth, when searching for products in a store. Research of Streicher et al. (2020) showed that when consumers use their dispersed attentional breadth, a lot more unplanned purchasing takes place. This dispersed attentional breadth can be the cause of an increase in the awareness set and can eventually lead to a broader choice set.

Streicher et al. (2020) showed that this unplanned purchasing has nothing to do with the lack of a shopping list whilst shopping; or the fact that consumers were surrounded by more people during their shopping period. It also has nothing to do with the mood manipulation of the consumers or that the consumers were satisfied with the products offered by the store. Streicher et al. (2020) showed that the unplanned shopping was solely based on the fact that consumers used their dispersed attentional breadth.

The four possible reasons mentioned above explain why consumers make unplanned purchases in an offline environment. Unplanned purchases can also happen in an online environment but are less likely to happen. The dispersed attention can make an increase in an online shopping scenario when products are being displayed in the shop. However, when consumers are shopping online, they search more targeted and can easily move away to another set of products. The shopping experience is different, compared to when a consumer stands in front of a single shelf area with limited physical movement (Streicher et al., 2020).

2.3.1.2 Social interactions

A second difference is that when consumers are shopping in an online environment, they cannot react to the behaviour of other customers, because there are no social interactions between consumers in an online environment (Bitner, 1992).

However, according to Chen, Wang and Xie (2011) it is possible to have social interactions with customers in an online environment. According to Chen et al. (2011) it can be beneficial for a firm to provide consumers with observational learning (OL). This type of information contains actions of previous consumers, such as purchases that they have made. This can send a positive signal towards future potential buyers because it is more reliable than word of mouth (WOM). WOM is often made up of information like recommendations and opinions of consumers. Moreover, consumers find the shown actions, given by OL, more trustworthy than WOM (Chen et al., 2011). It is important to keep in mind that companies should only make use of positive OL information as this is more influential than negative OL when consumers are about to decide what product to buy.

When companies want to come across as a firm which sells high-quality products, it is not necessary to stress this in advertisements according to research from Mayzlin and Shin (2011). When a company

chooses to withhold information about products to consumers, this gives consumers an incentive to search for the information themselves. Consumers can come across other types of information, like OL and WOM, besides the company's own advertisements. These other types of information can also inform consumers about the high-quality product the company sells (Joshi & Musalem, 2021). These two types of social interactions, OL and WOM, can be used simultaneously. If they are both complementary, large amounts of WOM can strengthen the OL given to consumers (Chen et al., 2011).

Even if OL and WOM state that the products are not of high-quality, it can still lead to consumers buying the product. This is because consumers can learn from the behaviour and actions of other consumers about the quality of a product. Learn in a sense that they observe the purchases which have been made by other consumers. Even though one would think that companies who sell low-quality products would only lead to consumers having negative experiences. This does not have to happen all the time because consumers who purchased products from the company, initially thought the products were worth the money (Joshi & Musalem, 2021).

Qiu, Chhikara and Vakharia (2021) found that there are differences in OL, depending on how well a person knows someone. The effect of OL from strangers is stronger when consumers look at the quality of product (vertically differentiated product) and not if the liking of the product depends on the personal taste of the person (horizontally differentiated product). The effect of OL from friends increases however for horizontally differentiated products. This can be because people often look at the opinions of others, they are close to (Huang, Aral, Hu & Brynjolfsson, 2020). Research of Qiu et al. (2021) also shows that the effect of OL becomes stronger when the number of interactions increases between friends. Examples of these are photos where you get tagged in or pictures you post on your social media platform. Therefore, it can be useful for companies to make use of social media platforms and encourage customers to share their purchased products and purchase experience.

However, this can also lead to negative word of mouth (NWOM). The results of research by Joshi and Musalem (2021) showed that when a consumer hears NWOM, it can still lead to a purchase. This is because consumers who are the source of the NWOM still thought the quality of the product was worthy enough to purchase the product. Zhang et al. (2014) contradict this and believe that it is highly important that NWOM should be avoided at all times. Zhang et al. (2014) explain that there are two drivers of NWOM, the image-impairment concern and the tie strength. People are reluctant to spread NWOM, because consumers do not want to harm their own image in the eyes of the person, they are spreading the NWOM towards. On the other hand, they can feel very close to the recipient of the NWOM and are therefore more likely to share negative evaluations with this person.

A difference between men and women was found by Zhang et al. (2014) in the way NWOM was spread. Research of Zhang et al. (2014) showed that for men there is no connection between the tie strength and the concern of hurting their own image. However, women have more concern of hurting their own image

when spreading NWOM towards someone they have weak ties with. Zhang et al. (2014) explains that the cause of this difference in behaviour is because females are more concerned with others and what others think. Men are more concerned about themselves.

2.3.1.3 Social advertising

Another way for companies to have social effects in an online environment is through social advertising. Social advertising is a broad term which entails the use of social cues in advertisements (Huang et al., 2020). These social cues can be used to engage consumers with the brand. Besides social cues, viral marketing is a form of social advertising where consumers who are currently using the product, service or experience are stimulated to spread word about it. Another form of social advertising is network marketing. With network marketing people are being approached who have a connection with a consumer who is already familiar with the brand. For example, consumer A buys products from firm X. Consumer A is friends with consumer B. Firm X tries to approach consumer B. Because of the connections people have on social media, a user is more likely to see the same advertisement as a friend than an advertisement seen by a stranger (Qiu et al., 2021). This means that there is more chance that consumer A and consumer B are exposed to the same advertisement. Companies can also make use of influencers who promote products for companies. In this way a large group is immediately introduced with a new product or new brand.

A theme which is more and more incorporated in marketing campaigns is the empowerment of females. Big brands such as Dove created a campaign called “Real Beauty” which promotes body positivity and wants to go against typical gender roles by showing different types of bodies of women in their campaigns (Drake, 2017). The reason for this strategy of Dove can be because of the changing position of women in this modern day and age. Women have more political and financial power than they did decades ago. This can also be seen in the way companies portray women in their advertisements. They are more often portrayed as courageous, self-sufficient, and self-reliant.

Participants who were shown advertisements which empowers females, perceived those advertisements and companies more positively. However, there are still lots of media who portray women in a stereotypical way. Drake (2017) states that this is an indicator that companies are (in)directly offending women, because they cannot find a way to relate to them. These stereotypes can come across as offensive, giving brands a negative image.

Online advertisement in general is of high importance. The market creates many products which look alike, and consumers do not necessarily prefer one over the other. This can lead to a lot of clutter in the eyes of the consumers, which leads to a longer searching time of finding the right product. Research showed that images of online advertisements can help reduce the searching time of consumers on cluttered websites by 25 percent (Lans, Pieters & Wedel, 2021). The reason for this decreased searching time is that consumers focus less on products of the competitors after seeing a product of a particular

brand in an advertisement. This reduced searching time, because of online advertising, also applies to websites which are organized for example by alphabet, or vertically. However, it must be mentioned that this only works when the products of the competitors have different looks compared to each other (Lans et al., 2021).

Summarizing, there are some differences in social interaction in an offline and online shopping environment. Unplanned purchases, social interactions and social advertising happen in a different way offline than online and therefore influences the consumer differently.

2.4 Summary table

In table 2 an overview is given of all the articles used in the literature review in the form of a summary table. The main findings of the articles about website design are given and compared to articles with related topics, but which dive deeper into the role gender plays within this topic. In this way the role of gender and the role it plays in different topics related to website design can be seen. The aim of this summary table is to show the role which gender plays in each aspect of website design. Moreover, the table shows in which fields there is still room for additional research in website design and where there is a lack of research regarding the role of gender.

Table 2: Summary table of literature review

Articles offline and online aesthetics	*Summary main findings*	*Gender related articles*	*Summary main findings*
2.1 Online buying behaviour			
Solomon, Russell-Bennett & Previte (2012) and Szmigin & Piacentini (2015)	Consumer behaviour and the different product or services buying stages		
Häubl & Trifts (2000)	Information overload in an online environment		
2.2 Impact of aesthetics in an offline and online environment			
2.2.1 Effect physical setting on consumers			
Bitner (1992) and Jerath & Zhang (2010)	Different elements of a physical setting can influence consumers such as a specific retail space		
2.2.2 Effect of product aesthetics on the perception of consumers			
Bloch (1995), Wedel Pieters (2008) and Hoegg, Alba & Dahl (2010)	Different elements of a product can influence the perception of the consumers about the product such as colour and the functionality of the product	Peñaloza (1992)	Some products are specifically marketed for men or women
Milosavljevic et al. (2011)	Visual saliency bias		
Deng et al. (2010) and Buechel & Townsend (2018).	Consumers can face problems with product aesthetics, such as bright colours or busy patterns		

2.2.3 Effect of website aesthetics on consumer behaviour			
Gorn et al. (2004)	Background colour of a website can influence behaviour of consumers		
Orth & Holancova (2004)	Portrayal of gender is important and feelings towards it can differ between men and women	Holbrook & Schindler (1994)	Women prefer to see male movie stars and men prefer to seem female movie stars
Lans et al. (2021) and Milosavljevic et al. (2011)	The way a website is organized (by alphabet or vertically) is very important		
		Durante et al. (2011)	Women purchase more sensual clothing when close to ovulating
		Durante et al. (2014)	When ovulating, women want to increase their status compared to other women
Zhang et al. (2014)	If a society is more self-centred or focused on others depends on the culture	Melnyk et al. (2009)	Women are more loyal on an individual level and men are more loyal towards groups, organizations, and firms

2.3 Impact of social interaction			
2.3.1 Effect of social interaction on consumer behaviour			
Streicher et al. (2020)	Unplanned purchases often occur in an offline environment		
Bitner (1992)	No social interaction takes place in an online environment		
Chen et al. (2011)	The role of social interactions like OL and WOM in an online environment	Zhang et al. (2014)	Women have more concern hurting their own image when spreading NWOM to someone with which they have weak ties. Women are more concerned of what others think and men are more concerned with themselves
Joshi and Musalem (2011)	Products can come across as high quality, even if they are not, because of OL and WOM		
Qiu et al. (2011)	The effect of OL Is stronger from strangers for vertically differentiated products and stronger from friends with horizontally differentiated products		

Mayzlin and Shin (2011)	Withholding information about a product can be beneficial because it can lead to consumers search for the product		
Huang et al. (2020)	The role of social advertising in an online environment to stimulate social interactions	Drake (2017)	Stereotypical gender roles are changing, and this can be seen in advertisements
Lans et al. (2021)	Online advertising can lead to more website visits		

2.5 Conceptual Framework

2.5.1 Hypotheses

Based on the information and knowledge form the articles described in the literature review, five hypotheses have been created to give guidance to the statistical analysis.

According to research of Gorn et al. (2004), certain feelings can arise with people whenever they look at a particular colour. Participants felt more relaxed when they were shown a website with a blue background colour compared to a red background colour. This leads to the first hypothesis:

> *Hypothesis 1: Websites with a red background colour have a negative effect on the consumer's purchase decision compared to websites with a blue background colour*

Besides the colour itself, the brightness of colours also plays a role in the purchase decision of consumers. Deng et al. (2010) point out that people prefer colours with a low brightness level. However, Milosavljevic et al. (2011) talk about the influence of the visual saliency bias on consumers who are shopping in an offline environment. When they must make rapid decisions, they are attracted to an outstanding package. Whenever consumers have to choose between two products, and have no preference, they choose the more visually salient one. The more salient product could be a product with a brighter package. The aim of the second hypothesis is to answer the question what role the visual saliency bias plays in an online shopping environment:

> *Hypothesis 2: Websites with bright background colours have a negative effect on the consumer's purchase decision compared to websites with less brighter background colours*

Lans et al. (2021) showed in their research that the way the products are organized on a website can influence the buying behaviour of consumers. Consumers can find products easier when products are organized in a horizontal way. With the third hypothesis this will be tested and researched if there is a difference in the preference of the production organization on a website:

> *Hypothesis 3: A horizontal layout of products on a website has a positive effect on consumer's purchase decision compared to a vertical layout of products on a website*

Research of Melnyk et al. (2009) say that women feel more loyal to a single female acquittance, which could mean that women prefer to see one female model. Durante et al. (2011) state that women have periods where they want to come across as more appealing compared to other women and start to compete with each other. This feeling reciprocates in an online environment where women buy more appealing clothing items. However, Holbrook and Schindler (1994) point out that males prefer to see female movie stars and vice versa. This leads to the fourth hypothesis:

Hypothesis 4: A website where female models are seen portraying the products have a positive effect on consumer's purchase decision compared to a website where male models are portraying the products

Peñaloza (1992) pointed out that some products are specifically marketed at female or male consumers. However, it is the question if gender also plays a role with products who are not specifically targeting a gender. This all leads to the last hypothesis where differences between male and female participants will be tested when different website designs are being shown to them and what part different elements, like colour, the layout of the website or the gender of the model play:

Hypothesis 5: The variable Gender has a moderating effect on the effect of Colour, Layout and Model on Purchase Decision

The main relationship which will be researched in this thesis is if the different aspects of website design, namely the background colour of a website, the layout of the products of a website, and the type of model that is portraying the products, has an influence on the purchase intention of consumers. All the different relationships and the expected effects on each other can be seen in figure 1.

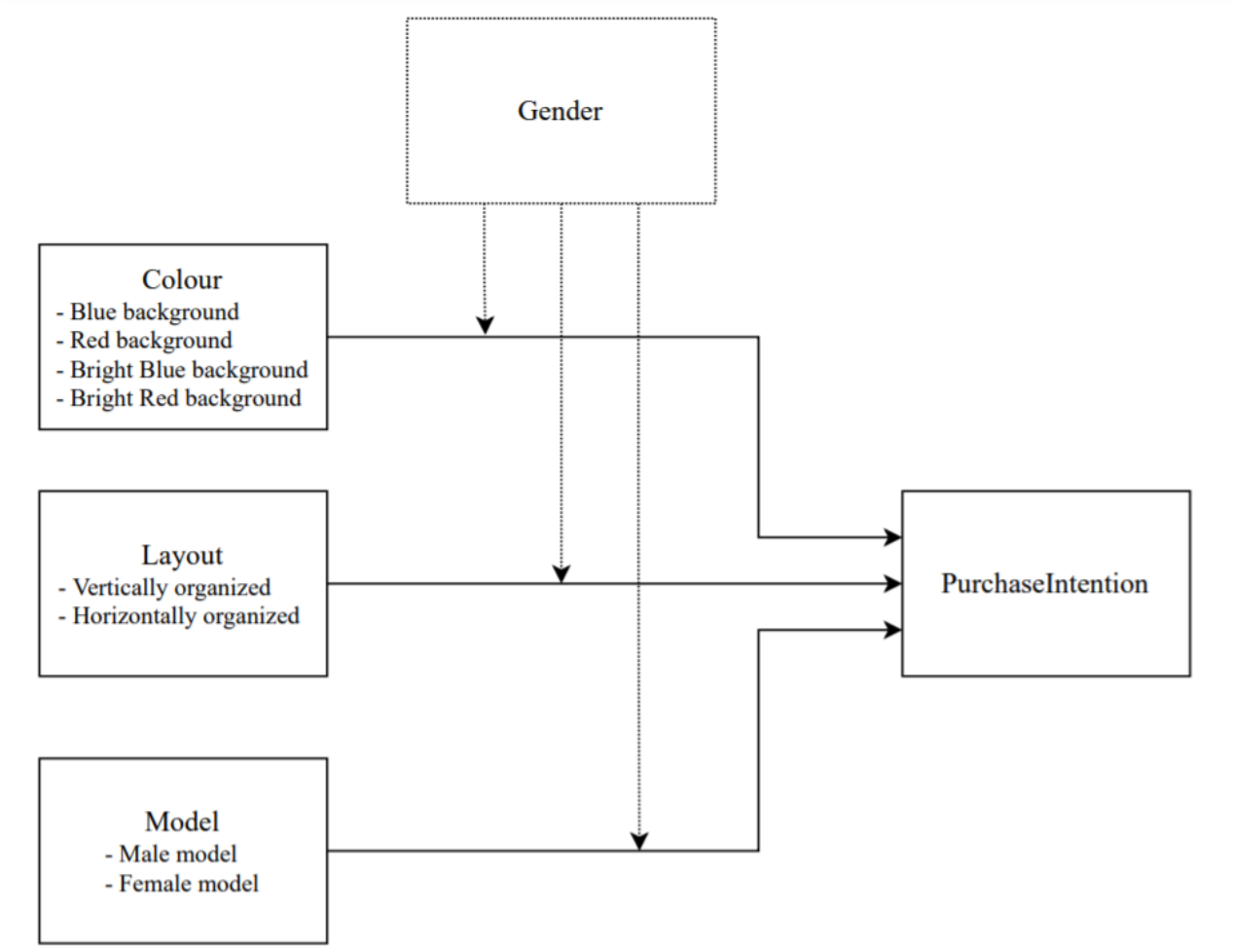

Figure 1: Conceptual framework

3. Data

The data was gathered using a Qualtrics survey conducted among 122 people. This number was chosen because there are three different attributes, and the aim was to have approximately 40 respondents per attribute. The goal was to have an equal number of male and female participants for the research to be representative of the Dutch population where the number of men and women are almost equal (CBS, 2021). The experimental design that was chosen for this thesis is a within-subject design. This means that every participant filled out the same questions. For this thesis males were compared to females, and they filled in the exact same questions, which makes the comparison more accurate. Another benefit about using within-subject design is that a smaller sample size is needed, because less respondents are required.

The respondents were chosen based on the fact if they had internet or not. The assumption was that everybody who received the survey through social media, wherefore an internet connection was needed, also had the option to buy products online. There was not a minimum age for participant who will filled out the survey. Even though the focus lies on the Dutch retail sector, not all the participants have a Dutch nationality. This is the case because most of the consumers all over the world can buy something from a Dutch retail store on the website and get it shipped to their home. Another reason is that not all consumers who are living in the Netherlands have a Dutch nationality but can still buy something from an online store.

Table 3 depicts the demographics of all the participants whose answers were analysed with statistical analysis and exploratory research.

Table 3 Demographics participants

Factor	Total sample	Factor	Total sample	Factor	Total sample
Gender	122	Age	122	Occupation	122
Male	42	<20	13	I am in school	3
Female	80	20 – 29	81	I am a student	65
		30 – 39	8	I am working full-time and/or part-time	46
		40 – 49	8	I currently have no job	7
		50 – 59	7	I am retired	1
		60 – 69	5		

4. Methodology

4.1 Qualitative research vs. Quantitative research

There are two types of research that can be done, qualitative research and quantitative research.

4.1.1 Qualitative research

The first type of research is qualitative research, which can be identified as exploratory research (Mazzocchi, 2008) or as a descriptive design (Malhotra, Nunan & Birks, 2017). Qualitative research originated from psychological, motivational, sociological, and anthropological research (Malhotra et al., 2017). Qualitative research uses evidence of what people write or explain to create theories or test existing theories (Field, 2013). Qualitative research can stand on its own or it can be used to support causal research design, descriptive designs, or quantitative research (Malhotra et al., 2017). Qualitative researchers are interpretivists and want to gather information about the reality of their participants (Malhotra et al., 2017). They try to understand them by observing them in their natural habitat or interact with them by speaking in the same way.

4.1.1.1 Data collection

There are two categories within the qualitative research design field (Mazzocchi, 2008) to analyse the feelings, experiences, and behaviour of participants (Malhotra et al., 2017). The first one is direct methods and is used for collecting information in a way where the participants know what is going on and what the research is for. Examples of this type of research are panels, focus groups and in-depth interviews. The second type of research is indirect methods. In this type of research, the participants are not fully aware why the research is taking place and what the goal of the research is. Examples of indirect methods are projective techniques like construction (for example ink blot tests), completion of sentences, word associations and expressive techniques like role playing (Mazzocchi, 2008).

4.1.2 Quantitative research

The second type or research is quantitative research and is identified as confirmatory research (Mazzocchi, 2008). It is based on problem definition and a theoretical framework is needed to gain insight about the research problem. Quantitative researchers can be categorized as positivists (Malhotra et al., 2017) and when they develop a theory, they want to establish causality. This means that they want to find out if X increases the probability that Y happens.

4.1.2.1 Data collection

Data for quantitative research is collected through surveys (Malhotra et al., 2017). There are different survey methods which can be used to gather data. Traditional sampling methods like online surveys and telephone surveys or access panels like face-to-face surveys and postal surveys can be used. In this thesis an online survey was used to gather data, which can be found in Appendix A. Online surveys are currently the most used type of survey to gather information with (Malhotra et al., 2017). The data

gathered from online surveys are being statistically analysed after being filled out by participants (Field, 2013).

4.1.2.2 Disadvantages online survey

There are some disadvantages of conducting an online survey. It can be hard for the researcher to find out if the participant truly represents the target population and what the motivation of the participant is (Malhotra et al., 2017). That is why it was asked to state one's gender in the survey, so that participants who did not feel represented by the gender male or female were filtered out of the results. Not everybody in all parts of the world have access to internet or own a smartphone. If a sample is being researched who do not have any of these technologies, online surveys cannot be used. To solve this problem, the survey was sent through WhatsApp, so only people who were making use of the internet were able to fill out this survey. As this thesis researches online sales as well, it was necessary for participants to have internet. Lastly, there can be issues with the software or the hardware of the researcher or the participants which can lead to surveys which are not completed or surveys which are not clear for the participant. All uncompleted surveys were filtered out of the results. A pilot survey was conducted as well to make sure the questions were clear for the participants.

4.1.2.3 Advantages online survey

There are many advantages of making use of online surveys. It is a quick and low-cost way to gain insights compared to face-to-face surveys or telephone surveys. It can also be a more intriguing way for participants to maintain interest in the survey compared to real, paper surveys. Graphical, movable elements can be added to keep participants interested (Malhotra et al., 2017). When using online surveys, the interview bias is being removed as the interviewer is not present and cannot influence the participant. The quality of the gathered data can also be better, because questions can be personalized if needed. Participants think in their own time about possible open-ended questions. Participants can also feel more comfortable completing a survey whenever and wherever they want. The distribution of the survey is easier compared to face-to-face surveys. As almost everybody now has a smartphone, surveys can be distributed using social media platforms such as WhatsApp, Facebook, and Instagram.

4.1.2.4 Quantitative and exploratory research

Besides these advantages of online surveys, quantitative research in general is making use of a larger sample than qualitative research (Malhotra et al., 2017). Quantitative researchers believe the small samples that are being used for qualitative research are not representative enough for the target population and will lead to invalid results and conclusions (Malhotra et al., 2017). Another benefit of making use of quantitative research over qualitative research is to create similar research environments for all participants by them filling out the exact same survey. In this way the different gender groups can more accurately be compared to each other. That is why quantitative research was used in this thesis.

On the other hand, qualitative researchers sometimes believe that quantitative research is shallow and can be misleading because of the statistical methods that are being used (Malhotra et al., 2017). The primary quantitative data that is being collected can also be used for exploration, descriptive research, and experiments (Malhotra et al., 2017). That is why after the statistical analyses of the results of the quantitative research, some exploratory research was done to gain more in-depth insights about behaviour and thoughts of the participants.

4.2 Biases

There are a few biases which can occur when using quantitative research.

Sampling bias can occur when the obtained sample is not representative of the population which is being researched. This thesis examined specifically the retailing sector, which entails everyone who has access to internet and has money to buy products online. That is why there was no minimum age for participants to fill out this survey because non-adults can also buy products in an online environment. The only requirement is an internet connection.

Selection bias happens when the sample used in the research is not assigned randomly among the different conditions. This did not happen in this thesis as all participants filled out the same survey and answered the same questions.

Response bias can happen when participants fill in the survey untruthfully or wrongly. This was avoided by keeping the survey interactive; short and no personal question were asked so that participants would not lose interest in filling out the survey.

Interview bias can occur when the interviewer distorts the results of the survey (Malhotra et al., 2017). This can happen in the way the interviewer selects the participants. The participants, of this thesis, all came from different countries and grew up in different cultural households. This, and the variation in age would make the participants a diverse group which represented consumers who shop in a Dutch online environment.

Another way interview bias can exist, is if the participants do not understand the questions well enough (Malhotra et al., 2017). This could have occurred because the questions in the survey were asked in English, and that is not the first language for all the participants. To solve this possible issue, the questions did not contain any big or difficult words but was made up of basic English. With the use of ordinary words, the aim is to match the vocabulary level of the participants (Malhotra et al., 2017). Besides this, a pilot test of the survey was held amongst different participants to see if any questions were unclear. In this trial period possible errors were filtered out before distributing the survey among all participants. Another way interview bias can exist, is if examples are given in the survey which can influence the answers of participants (Malhotra et al., 2017). That is why no examples were given in the survey.

4.3 Two models

Two models were made to help answer research question. The first model did not include the moderation variable *Gender*, and the second model did include the moderation variable *Gender*. In this way the two different models were compared to each other, and it was analysed if *Gender* had a moderating effect. Effect coding was used which means that the sum of all attributes must be zero. A base attribute level was assigned, for each variable, where every attribute level was compared to. Therefore, this base attribute level was not included in both models.

The first model is the equation of the main effect without the moderation variable:

Model 1:

$$z_j = \beta_1 X_{j1} + \beta_2 X_{j2} + \beta_3 X_{j3} + \beta_4 X_{j4} + \beta_5 X_{j5} + \epsilon_{jn}$$

Where:

z_j is the z-score of website design j

β_1, β_2 and β_3 respectively capture the preferences of participants of the attribute *Colour* for the attribute levels *Blue, Bright Blue,* or *Red.* β_1, β_2 and β_3 capture the effect of *Blue*, *Bright Blue* and *Red* relative to the base attribute level, the excluded attribute level *Bright Red.*

β_4 respectively captures the preference of participants of the attribute *Layout*, for the attribute level *Vertical*. β_4 captures the effect of *Vertical* relative to the base attribute level, the excluded attribute level *Horizontal.*

β_5 respectively captures the preference of participants of the attribute *Model*, for the attribute level *Male*. β_5 captures the effect of *Vertical* relative to the base attribute level, the excluded attribute level *Female*.

X_{j1}, X_{j2} and X_{j3} respectively indicate for the attribute *Colour,* if the attribute level is *Blue, Bright Blue* or *Red* of website design j.

X_{j4} respectively indicates for the attribute *Layout if* the attribute level is *Vertical* of website design j

X_{j5} respectively indicates for the attribute *Model if* the attribute level is *Male* of website design j

ϵ_{jn} is the random error of the utility of website design j of participant n

The second model is the equation of the main effect including the moderation variable:

Model 2:

$$z_j = \beta_1 X_{j1} + \beta_2 X_{j2} + \beta_3 X_{j3} + \beta_4 X_{j4} + \beta_5 X_{j5} + \gamma_1 X_{j1} G_n + \gamma_2 X_{j2} G_n + \gamma_3 X_{j3} G_n + \gamma_4 X_{j4} G_n + \gamma_5 X_{j5} G_n + \epsilon_{jn}$$

Where:

z_j is the z-score of website design j

β_1, β_2 and β_3 respectively capture the preferences of participants of the attribute *Colour* for the attribute levels *Blue, Bright Blue,* or *Red. β_1*, β_2 and β_3 capture the effect of *Blue*, *Bright Blue* and *Red* relative to the base attribute level, the excluded attribute level *Bright Red.*

β_4 respectively captures the preference of participants of the attribute *Layout*, for the attribute level *Vertical*. β_4 captures the effect of *Vertical* relative to the base attribute level, the excluded attribute level *Horizontal.*

β_5 respectively captures the preference of participants of the attribute *Model*, for the attribute level *Male*. β_5 captures the effect of *Vertical* relative to the base attribute level, the excluded attribute level *Female*.

γ_1, γ_2 and γ_3 respectively capture the preferences of participants of the attribute *Colour* for the attribute levels *Blue, Bright Blue* or *Red,* including the gender of the participant. β_1, β_2 and β_3 capture the effect of *Blue*, *Bright Blue* and *Red* relative to the base attribute level, the excluded attribute level *Bright Red*.

γ_4 respectively captures the preference of participants of the attribute *Layout*, for the attribute level *Vertical*, including the gender of the participant. β_4 captures the effect of *Vertical* relative to the base attribute level, the excluded attribute level *Horizontal.*

γ_5 respectively captures the preference of participants of the attribute *Model*, for the attribute level *Male*, including the gender of the participant. β_5 captures the effect of *Vertical* relative to the base attribute level, the excluded attribute level *Female*.

X_{j1}, X_{j2} and X_{j3} respectively indicate for the attribute *Colour* if the attribute level is *Blue, Bright Blue* or *Red* of website design j.

X_{j4} respectively indicates for the attribute *Layout* if the attribute level is *Vertical* of website design j

X_{j5} respectively indicates for the attribute *Model if* the attribute level is *Male* of website design j

G_n measures the gender of participant n (0 = female; 1 = male)

ϵ_{jn} is the random error of the utility of website design j of participant n

For the attribute *Colour*, the base attribute level is *Bright Red*. For the attribute *Layout*, the base attribute level will be *Horizontal*. For the attribute *Model*, the base attribute level will be *Female*. These attribute levels were chosen as base attribute levels because they were expected to have the most significant effect of all the levels of their corresponding attribute. This expectation comes from previous research, which is mentioned in the literature review and summarized in the hypotheses.

4.4 Specification variables

PurchaseIntention is the dependent variable (Y) in this thesis. Two different website designs were presented to the participants multiple times, and they were asked to choose the website design where they would purchase something from, which indicated their purchase intention. *PurchaseIntention* is a nominal variable because there were two different website designs participants must choose from. Between these two designs, there is no measurable distance. Participants did not have to rank the different website designs but chose the one which they preferred out of the two designs which were presented to them. *PurchaseIntention* is a categorical variable because there is a finite amount of website designs where respondents could choose from. Three different attributes were used to make several combinations and turned them into website designs. The different website designs used in the survey can be found in Appendix A.

There are three different elements of website design which were used as independent variables (X).

The variable *Colour* is the first independent variable. The attribute *Colour* refers to the background colour of a retailing website. Gorn et al. (2004) have shown in their research that the background colour of a website can influence the feelings of consumers who are using the website. Gorn et al. (2004) mentioned that in further research other colours should be researched to see the levels of relaxation participants have with these different colours.

Milosavljevic et al. (2011) have explained that consumers choose more brightly coloured product when they are in a rush and must choose in a short amount of time. In this thesis, websites with four different colours were shown to participants and they had to choose which one they preferred. One website design had a blue background colour, as this would cause users to feel more relaxed, and the other website design was red which would create an opposite feeling compared to the blue background according to research of Gorn et al. (2004). Besides these two colours, a brightly coloured blue and a brightly coloured red was also used as the background of the website designs. The attribute *Colour* is divided

into four attribute levels, *Blue, Red, Bright Blue* and *Bright Red. Colour* is a nominal variable, because there are different classes, as there are four different colours, but without ranking. *Colour* is a categorical variable as it can only take a finite number of values, blue, red, bright blue and bright red. Effect coding will be used analyse the categorical effects of *Colour*.

The second independent variable *Layout* is about the way a website organizes its products. The attribute *Layout* refers to the paper of Lans et al. (2021) and their research of the importance of product organization on a website. This attribute will be used to research the level *Vertical* a vertical product organization, and the level *Horizontal* a horizontal product organization on a website. *Layout* is a nominal variable as there are different classes, but these were not ranked by the participants. It is a categorical variable as it can take a finite number of values when talking about product organization, namely vertical and horizontal. Effect coding was used to analyse the categorical effects of *Layout*.

The variable *Model* is also an independent variable and entails if the model portraying the products on a website is male or female. The last attribute *Model* refers to the paper of Holbrook and Schindler (1994) where they explain that men prefer to see female movie stars and women prefer to see male movie stars. This variable also refers to the paper of Durante et al. (2011) where the influence of an attractive woman or attractive man is shown to women which influences their buying behaviour. That is why the attribute *Model* is divided into a *Male* model portraying products and a *Female* model portraying products. This could then influence the *PurchaseIntention. Model* is also a nominal variable as there are different classes, a female model or a male model, but these were not ranked by the participants. *Model* is also a categorical variable as there are a finite number of values this variable can take, male or female. Effect coding was used with *Model* to analyse the categorical effects.

Besides the fact what effect these three independent variables had on the dependent variable, it was also tested what effect *Gender* played in this relationship. As can be seen in *Figure 1*, the moderation effect of the variable *Gender* was tested on each relationship of an independent variable on the dependent variable. *Gender* is a nominal variable because it can be divided into different classes, female, and male, but there is no ranking. There is also no measurable distance between the classes, there is not one better or worse. *Gender* is also a categorical variable because there is a finite number of values that gender can have in this thesis. Furthermore, each observation can be assigned to a certain group. In this thesis that was *Female* or *Male*. All the participants were asked what gender they feel represented by and in this way, they were classified as *Female* or *Male*. Participants had the option to choose "neither of the above" when asked about their gender. This category of answers was filtered out for the analytics part as the aim of this thesis is to seek if there is a difference between females and males. For the analytics part of this thesis effect coding was used to analyse the categorical effects of the variable *Gender*.

All the different attributes and their corresponding levels which were used to create different website designs can be seen in table 4.

Table 4 Attributes and attribute levels used in Conjoint Analysis

Attributes	Attribute levels			
Colour	Blue	Bright Blue	Red	Bright Red*
Layout	Vertical	Horizontal*		
Model	Male	Female*		

*Base attribute levels

4.5 Statistical tests

Conjoint analysis was used to analyse the data collected through the survey. This is because with a categorical dependent variable it is more convenient for respondents to show their preference of a website design as they can choose between two different ones. Conjoint analysis is based on the theory that every person prefers a combination of different attributes, and they want to maximize their utility. This utility theory states that every consumer's decision is based on the underlying utility of what the person gets from making that decision. Consumers evaluate every available choice option and choose the one that gives them the highest utility level.

The purchase intention of participants was tested using a discrete choice model. With discrete choice models the stated preference of respondents are being shown. In this way it can directly be seen what choice the participants made between the two different website designs. A discrete choice model was chosen because both the independent variables and the dependent variables are categorical. Using a continuous dependent variable in this thesis, and therefore a linear regression, was not useful as the dependent variable would then not be normally distributed since respondents had to choose between different website designs.

There are different types of discrete choice models. In this thesis a logit model was used. A logit model is a logistic regression where all independent variables are categorical, which is the case in this thesis. With this model the utility of preferring and therefore choosing one website design over another was measured. At the end of the analysis, the effect of the different attributes and attribute levels could be seen. Moreover, the impact of the effects of the attributes and attribute levels in the choices participants made could be seen. The simplified logit model was used in this thesis. Even though the dependent variable *PurchaseIntention* is categorical, the respondents could only choose between two alternatives each time, two different website designs.

The three attributes that were used in the logit model are *Colour, Layout and Model* and can be seen in table 4. These correspond with the three independent variables which can be seen in the conceptual model in figure 1.

With the use of these attributes and their levels, different images were created and shown to the participants in the survey. Participants chose between two different website images and clicked on the image they preferred. The website designs were created using Microsoft PowerPoint. Images from the furniture website www.kardiel.com were used, so that each design had the same models and same furniture. When using and combining all attribute levels, 16 different images were created, which can be seen in table B7. It was chosen to make use of furniture as items which are sold in retail stores as these can be seen as gender-neutral products compared to clothing for example.

However, in this thesis there was chosen to us a fractional factorial design. This entails that not all possible combinations were used in the survey but an orthogonal subset of the possible combinations. The fractional factorial design was chosen, so the participants would not get exhausted and overwhelmed by all possible choice sets that could be created with the 16 different website designs. By using an orthogonal subset, the estimation of the effect of each level could independently be tested. Eight choice sets with each time two website designs were presented to the participants. The participants were not allowed to skip a question. When moving on to the next question, the current question must be answered. Per choice set, two choice options will be given. Participants had to choose between two different website designs. Brief information about the website designs was provided, so participants knew that they were choosing a website design of a retailing website which they preferred. The program JMP was used to design and select the choice sets that were used in the survey. The order of the choice sets was randomized so that every participant saw the choice sets in a different order to prevent biased results.

4.6 Tests conjoint analysis

First, the data collected from the survey in Qualtrics was retrieved and exported into Microsoft Excel. In Microsoft Excel the text was converted into columns and the data reshaped. In total there were 128 responses. After this, the data collected from respondents who did not complete their survey was removed. In total 122 responses remained. The data from the respondents who did not identify as male, or female was also removed from the dataset as this thesis only researches the differences between men and women. All the respondents identified as either male or female, so the total responses remained 122.

After the data was reshaped and the data was reformed into information, all was copied and pasted in JMP. Here all the responses were stacked, so it was easier to see what choice each respondent chose (website 1 or website 2) in the choice sets.

After this was done, the stacked table was copied and pasted in Excel to create two different variables (Response1 and Response2) instead of one Response variable. Response1 would be 1 if website 1 was chosen by the respondent and otherwise it would have value 0. Response2 would have a value of 1 if website 2 was chosen and otherwise it would have a value of 0. This Excel table was then copied and pasted into JMP and again a stacked table was created to give each respondent 16 rows as there were 8 choice sets and 2 options per choice set. The choices made by the respondents were then copied and

pasted in another JMP table where then the choice sets were combined with the actual choices made. The variable *Gender* was also imported in the JMP table, so all the data was then gathered in a JMP table.

Different tests were used to analyse the data with the program JMP to see what the different attribute levels had for an effect on *PurchaseIntention.*

Firstly, the *Effects summary* was performed followed by the *Likelihood ratio test* to test the significance level of the attributes. Then, the *Parameter estimates* was performed to see what the partworth utility of each attribute level is. Furthermore, the Effect marginals test was performed to show which attribute is of most importance when consumers are deciding what product to buy. It can be seen which attribute brings the most change in the utility of consumers. This was done by looking at the range of the marginal utility of each attribute and compare these which each other. Lastly, the *Utility profilers* was performed which showed what the ideal combination of the different attributes were and what the likelihood of success for this combination was. This test was also used to see what the perfect combinations for specifically males were and what the perfect combination for specifically females were. These tests would run firstly without the variable *Gender* and then for a second time with the variable *Gender* to test what the effect of the moderation of *Gender* was on the other variables.

A significance level of 0.05 (alpha = α = 5%) was used to test if the variables were significant. This means that the null hypothesis is rejected when the p-value is higher than 0.05.

4.7 Exploratory research

After the conjoint analysis, some exploratory research was done using the questions about buying behaviour. These answers gave some insights about the underlying thoughts of participants about their offline and online buying behaviour. The different answers of female and male participants were compared to give some deeper understanding of the possible differences in buying behaviour between these two genders.

5. Results

First the analysis is given of Model 1. These tests exclude the variable *Gender* to analyse the main effects of the variables *Colour*, *Layout* and *Model*. After the results of Model 1 are given, the results of Model 2 are portrayed. This includes the variable *Gender*, besides the variable *Colour, Layout* and *Model*. This is done for each test, except the effects marginals, to test the moderation effect of the variable *Gender*.

5.1 Effects summary

Model 1

Table B1 shows that all three variables are significant considering an alpha of 5%. *Colour* has a p-value of 0.000, which is smaller than the alpha of 0.050 and significant. *Layout* has a p-value of 0.000 which is smaller than the alpha of 0.050 and significant. *Model* has a p-value of 0.002, which is also smaller than the alpha of 0.050 and therefore significant.

Model 2

As can be seen in table B1, the attributes *Colour* ($p = 0.000 < \alpha = 0.050$), *Layout* ($p = 0.000 < \alpha = 0.050$), and *Model* ($p = 0.002 < \alpha = 0.050$) are all three significant and have a significant impact on *PurchaseIntention*. The attributes *Gender*Colour* ($p = 0.364 > \alpha = 0.050$), *Gender*Layout* ($p = 0.835 > \alpha = 0.050$), and *Gender*Model* ($p = 0.515 > \alpha = 0.050$) are alle three not significant. This means there is no moderation effect caused by the attribute *Gender* on the relationship of *Colour*, *Layout* and *Model* on *PurchaseIntention.*

5.2 Likelihood ratio tests

Model 1

The results of the Likelihood ratio tests, see table B2, show that the attribute *Colour* is significant ($p = 0.000 < \alpha = 0.050$), the attribute *Layout* is significant ($p = 0.000 < \alpha = 0.050$) and the attribute *Model* is significant ($p = 0.002 < \alpha = 0.050$). Which entails that *Colour, Layout* and *Model* all have a significant impact on *PurchaseIntention.*

Model 2

Table B2 shows that the attributes *Colour* ($p = 0.000 < \alpha = 0.050$), *Layout* ($p = 0.000 < \alpha = 0.050$) and *Model* ($p = 0.002 < \alpha = 0.050$) are all three significant which means that *Colour, Layout* and *Model* have a significant impact on *PurchaseIntention*. The interaction variables *Gender*Colour* ($p = 0.364 > \alpha = 0.050$), *Gender*Layout* ($p = 0.835 > \alpha = 0.050$) and *Gender*Model* ($p = 0.515 > \alpha = 0.050$) are all three not significant. This means that there is no significant difference when looking at the purchase intention considering the two gender groups.

5.3 Parameter estimates

Model 1

According to the results of Effects summary and the Likelihood ratio tests, the three attribute levels *Colour, Layout* and *Model* are all three significant on a 95% significance level. Table B3 shows the confidence intervals for all attribute levels, except for the attribute levels which are being used as a base attribute level. When looking at the confidence intervals of the attribute levels *Blue*, *Bright Blue*, *Red*, *Vertical* and *Male*, 0 does not lie within the confidence intervals of any of these attribute levels. This indicates that the estimation of the attribute levels cannot be 0, which makes them all significant.

The partworth utility of the attribute level *Bright Red* is calculated with the following formula:

$$Estimate_{Bright\ Red} = -\beta_1 - \beta_2 - \beta_3$$

The sum of the estimates of all attribute levels of the same attribute must be 0, because effect coding was used.

This leads to the following calculation:

$$Estimate_{Bright\ Red} = -0.736 + 0.509 - 0.191 = -0.418$$

The partworth utility of the attribute level *Horizontal* is calculated with the following formula:

$$Estimate_{Horizontal} = -\beta_4$$

Which leads to the calculation:

$$Estimate_{Horizontal} = 0.551$$

The partworth utility of the attribute level *Female* is calculated with the following formula:

$$Estimate_{Female} = -\beta_5$$

Which leads to the following calculation:

$$Estimate_{Female} = 0.150$$

When analysing the attribute *Colour,* table B3 shows that the attribute levels *Blue* and *Red* give participants a higher utility level than the base attribute level *Bright Red*. The attribute level *Bright Blue* give participants a lower utility level compared to *Bright Red.* When looking at the attribute *Layout,* the attribute level *Vertical* gives participants a lower utility level compared to the base attribute level *Horizontal*. When looking at the attribute *Model,* the attribute level *Male* gives participants a lower utility level compared to the base attribute level *Female*.

Model 2

The Effects summary and the Likelihood ratio tests show that the attributes *Colour*, *Layout* and *Model* are significant, but the variables The variables *Gender*Colour*, *Gender*Layout* and *Gender*Model* are not significant. When looking at the confidence intervals of all the individual attribute levels, except for the base attribute levels, it can be seen in table B4 that the confidence intervals of the variables *Blue*, *Bright Blue*, *Red*, *Vertical* and *Male*, 0 does not lie in between this interval and thus these variables are significant. However, 0 does lie in the confidence intervals of the interaction variables *Gender*Blue*, *Gender*Bright Blue*, *Gender*Red*, *Gender*Vertical* and *Gender*Male*. This indicates that these variables are not significant.

For all these formulas, the estimated values are for the gender *Female* as gender = 0 is being used.

To calculate the partworth utilities of the base attribute levels, the following formulas are being used:

$$EstimateF_{Bright\ Red} = -\beta_1 - \beta_2 - \beta_3$$

$$EstimateF_{Horizontal} = -\beta_4$$

$$EstimateF_{Female} = -\beta_5$$

$$EstimateF_{Gender*Bright\ Red} = -\gamma_1 - \gamma_2 - \gamma_3$$

$$EstimateF_{Gender*Horizontal} = -\gamma_4$$

$$EstimateF_{Gender*Female} = -\gamma_5$$

This leads to the following calculations:

$$EstimateF_{Bright\ Red} = -0.695 + 0.476 - 0.196 = -0.415$$

$$EstimateF_{Horizontal} = 0.553$$

$$EstimateF_{Female} = 0.159$$

The following three partworth utilities describe the change in estimated value for males relative to females.

$$Estimate_{Gender*Bright\ Red} = -0.112 + 0.106 + 0.012 = 0.006$$

$$Estimate_{Gender*Horizontal} = -0.011$$

$$Estimate_{Gender*Female} = -0.033$$

To calculate the partworth utilities for males, the change in estimated values for males relative to females must be added to the estimated values of females. Which means that:

$$EstimateM_{Bright\ Red} = -0.415\ (EstimateF_{Bright\ Red}) + 0.006\ (Estimate_{Gender*Bright\ Red}) = -0.409$$

$$EstimateM_{Horizontal} = 0.553\ (EstimateF_{Horizontal}) - 0.011\ (Estimate_{Gender*Horizontal}) = 0.542$$

$$EstimateM_{Female} = 0.159\ (EstimateF_{Female}) - 0.033\ (Estimate_{Gender*Female}) = 0.126$$

The calculations of the other partworth utilities when gender = 1, so for males, can be found beneath table B4 in Appendix B.

5.4 Effects marginals

For the Effects marginals test, only Model 1 will be portrayed as no interaction coefficients are given in the results when adding the variable *Gender*.

Model 1

With the Effect marginals test, it can be seen which attribute level gives participants a negative or positive marginal utility. When looking at the attribute *Colour*, table B5 shows that only the attribute levels *Blue* and *Red* gave participants a positive marginal utility of 0.733 and 0.191. The colours *Bright Blue* and *Bright Red* gave participants a negative marginal utility of -0.509 and -0.418. When looking at the marginal utilities of the attribute *Layout*, the attribute level *Horizontal* gave participants a positive marginal utility (0.551) and *Vertical* gave participants a negative marginal utility (-0.551). Lastly, when looking at the attribute *Model*, the attribute level *Female* gives participants a positive marginal utility (0.150) and *Male* give participants a negative marginal utility (-0.150).

Figure B1 show that some attribute levels result in higher attribute levels than others. The attribute levels *Blue* followed by *Horizontal* result in the highest positive marginal utility level for participants. The attribute levels *Vertical* followed by *Bright Blue* result in the highest negative marginal utility level for participants.

To measure the attribute importance of each attribute, the range of the utility of each attribute will be calculated. This will be done by using the following formula:

$$Range = MarginalUtility_{max} - MarginalUtility_{min}$$

By extracting the attribute level which has the lowest Marginal utility from the attribute level which has the highest Marginal utility, the range of the Marginal utility for each attribute can be calculated.

The Marginal utility range of *Colour* is 0.736 + 0.509 = 1.245.

The Marginal utility range of *Layout* is 0.551 + 0.551 = 1.102.

The Marginal utility range of *Model* is 0.150 + 0.150 = 0.300.

The Marginal utility range of the attribute *Colour* is the highest which means that this attribute has the most impact on *PurchaseIntention*.

The importance of each attribute can also be calculated using the following formula:

$$Importance\ of\ Atttribute = \frac{Range\ Attribute}{Sum\ of\ Ranges}$$

The sum of all the Marginal utility ranges is 1.245 + 1.102 + 0.300 = 2.647.

Importance of Atttribute $Colour = \frac{1.245}{2.647} = 0.470$

Importance of Atttribute $Layout = \frac{1.102}{2.647} = 0.416$

Importance of Atttribute $Model = \frac{0.300}{2.647} = 0.113$

These results, depicted also in table B6 and figure B2, show that the attribute *Colour* is of most important when participants chose between different website designs.

5.5 Utility Profilers

Model 1

Utility Profilers were used to find the optimal combinations of the attribute levels. When looking at the general sample, without including the variable *Gender*, it can be seen in figure B3 that the combination of the attribute levels *Blue*, *Horizontal* and *Female* gave consumers the highest utility level of 1.44. In table B8 all the different combinations of website designs that can be made with the attribute levels are shown with the utility that participants gained. The variable *Gender* was not included in this model.

When looking at each attribute in figure B3, for the attribute *Colour* brighter background colours (*Bright Blue* and *Bright Red*) gave participants less utility than less brighter colours as *Blue* and *Red*. When looking at the attribute *Layout*, participants gained a higher utility level when looking at products which are organized in a horizontal way compared to products which are organized in a vertical way. A slight difference in utility level can be seen for the attribute *Model*, as participants had a slightly higher utility level from seeing a female model compared to a male model.

Model 2

The optimal website design combining the attribute levels which generate the most utility for participants is slightly higher for female than male participants, as can be seen in figures B4 and B5.

When looking at the utility profilers, the optimal website design gives female participants a utility of 1.486 as can be seen in figure B4. The optimal website design gives male participants a utility of 1.327 as can be seen in figure B5. The optimal website design is made of the attribute levels *Blue*, *Horizontal* and *Female* for both female and male participants. Bright background colours lower the utility level for both female and male participants. Both groups also prefer to see a horizontal layout of products instead of a vertical layout of products. A female model gives male participants a slightly higher utility level compared to female participants. The most preferred website designs for female participants can be seen in table B9. The most preferred website designs for males can be seen in table B10. The website design that gives female participants the second highest utility level is the combination of the attribute levels *Blue, Horizontal* and *Male* and has a utility level of 1.233. For male participants this is the combination of the attribute levels *Red, Horizontal* and *Female* and has a utility level of 0.963.

5.6 Exploratory Research

Besides the statistical analysis, some exploratory research was conducted. Participants had to answer a few other questions besides choosing which website design they prefer. This was done to gain more insight into the offline and online buying behaviour of consumers.

The first question about buying behaviour that was asked, was if they could name a furniture company which sells furniture online. The answers of the participants were used to create a word cloud, which can be seen in figure C1. It clearly shows that participants could think of lots of different furniture companies. Ikea is, mentioned the most by participants. Only 3 out of the 122 participants (2.5%) answered with “No” and could not think of a furniture company which sells furniture online.

Next, participants were asked to indicate, on a scale from zero to ten, their preference of buying furniture in an offline store or online store. When looking at all 122 participants, 34% of the participants chose zero, which can be seen in figure C2, and thus preferred to buy furniture in an offline store. Moreover, when looking at table 5, 66% of the participants (34% + 16% + 16%) chose zero, one or two, what shows that more than the half of the participants preferred to buy furniture in an offline store. Only 2% of the participants preferred to buy furniture online and taking the scale points eight, nine and ten into consideration, only 8% (6% + 0% + 2%) of the participants preferred to buy furniture online. In total, 7% of the participants were indifferent between buying furniture online or in a store.

When making a distinction between the female and the male participants, the female participants preferred to buy furniture in a store. The scale points zero, one and two were chosen by 65% of the female participants. The scale points eight, nine and ten were chosen by 6% (5% + 0% + 1%) of the female participants thus, these female participants preferred to buy furniture online. Of the female participants, 10% were indifferent in buying furniture online or in a store. When looking at the male participants, they also preferred to buy furniture in an offline store. 67% of the male participants chose

scale point zero, one or two. The scale points eight, nine and ten were chosen by 9% of the male participants. Of the male participants,12% were indifferent in buying furniture in a store or online.

Table 5 Overview results survey question 5

Scale point(s)	Females and Males	Females	Males
0 + 1 + 2	66%	65%	67%
5	7%	10%	12%
8 + 9 + 10	8%	6%	9%

To learn more about the differences in buying behaviour between buying in a store and buying online, the question was asked if participants would recommend a store to other friends and family members if they had good buying experience there. The results in figure C3 shows that 94% of the participant were willing to do so. When making a distinction between female and male participants, 96% of the female participants would recommend a store to friends and family members as to a comparing 90% of the male participants.

When participants answered the question with "Yes", they were asked when for the last time they have recommended a store to someone. The answers can be seen in figure C4. Most of the participants, 52%, recommended a store last year. When making a distinction between female and male participants, 49% of the female participants have recommended a store last year compared to 58% of the male participants. Of all participants, 30% have recommended a store last month to friends or family members and 17% did so last week. When making a distinction between female and male participants, 51% (35% + 16%) of the female participants have recommended a store in the last month or last week. With male participants this is a slightly lower percentage, namely 42% (21% + 21%).

Next, the participants were asked if they would recommend a website to friends and family if they had a good shopping experience there. 91% of the participants answered with "Yes", which can be seen in figure C5. A difference can be seen between the answers given by female participants and male participants. Of the female participants, 94% would recommend a website to friends and family members. The proportion of male participants who would recommend a website to friends and family members is 86%.

Table 6 Overview results survey questions 6 and 7

Recommendation	All	Female participants	Male participants
Recommend store	94%	96%	90%
Recommend website	91%	94%	86%

Lastly, they were asked when for the last time they recommended a website to a friend or family member. Figure C6 show that the majority, 45% of the participants have recommended a website in the past month. When looking at the different answers of the female participant and the male participants, the largest group of the female participants, 48%, have recommended a website last month. This percentage of male participants who have recommended a website in the last month is much lower, namely 39%.

6. Conclusion

6.1 Hypotheses

With the results from the different tests of the conjoint analysis the five hypotheses can be answered.

> *Hypothesis 1: Websites with a red background colour have a negative effect on the consumer's purchase decision compared to websites with a blue background colour*

In both models the variable *Colour* was significant, which is the outcome of the *Effects summary* and the *Likelihood ratio tests*. The *Parameter estimates* showed that the variables *Blue*, *Bright Blue* and *Red* were all three significant. It also showed that the colours *Blue* and *Red* both had a positive effect on the consumers purchase decision. However, the colours *Bright Blue* and *Bright Red* both had a negative effect on consumer's purchase decisions. This means that hypothesis 1 can be rejected. The results of the *Parameter estimates* did show that *Blue* has a bigger effect on consumer's purchase decision compared to *Red*. This was also supported by the *Effect marginals* where the Marginal utility of the variable *Blue* is higher than the Marginal utility of *Red*. This supports the research of Gorn et al. (2004) that a blue background colour is preferred by consumers compared to a red background colour, because blue has a more relaxing effect on consumers than red.

When comparing the two variables *Bright Blue* and *Bright Red* it can be seen from the *Parameter estimates* that *Bright Blue* had a negative bigger effect on consumer's purchase decision than *Bright Red*. This was also supported in the *Effects marginals*, where it can be seen in table B5 that *Bright Red* has a higher level of marginal utility than *Bright Blue*. This does not support the research of Gorn et al. (2004) that a blue background colour is preferred over a red background colour. It can therefore be concluded that the results of the research of Gorn et al. (2004) does not apply to brightly coloured website designs in this thesis.

> *Hypothesis 2: Websites with bright background colours have a negative effect on the consumer's purchase decision compared to less websites with less brighter background colours*

When looking at both Model 1 and Model 2, the variables *Blue* and *Red* had a positive effect on purchase intention of consumers based on the *Parameter estimates*. The variables *Bright Blue* and *Bright Red* both had a negative effect on the purchase intention of consumers. These findings can also be seen in the *Effects marginals*, where the variables *Blue* and *Red* had a higher Marginal utility level compared to the variables *Bright Red* and *Bright Blue*. This means that hypothesis 2 can be accepted. The acceptance of hypothesis 2 supports the research of Deng et al. (2010) that consumers prefer colours with a low brightness level, as the colours *Blue* and *Red* are preferred over the colours *Bright Blue* and *Bright Red*. However, it does not support the visual saliency bias which is talked about by Milosavljevic et al. (2011). It does not automatically mean that the visual saliency bias is non-existent, but this thesis shows that it does not apply for website design as it does for product packaging. This can be because products need

to stand out for consumers to notice them between all the available alternatives. This is not needed with a background colour, as this thesis shows.

Hypothesis 3: A horizontal layout of products on a website has a positive effect on consumer's purchase decision compared to a vertical layout of products on a website

The results of *Effects summary* showed that the variable *Layout* is significant. Both models tested in the *Likelihood ratio tests* that the variable *Layout* is significant. This is also supported by the confidence intervals of the variable *Vertical* in the *Parameter estimates*. When looking at the *Parameter estimates* the variable *Vertical* had a negative effect on the purchase intention of consumers. However, the variable *Horizontal* had a positive effect on the purchase intention of consumers. This was also supported by the *Effects marginals* where the Marginal utility of the variable *Horizontal* had a larger value than the Marginal utility of the variable *Vertical*. This means that hypothesis 3 can be accepted. This supports the research of Lans et al. (2021) who said that consumers prefer a horizontal organisation of products, because then they can find products easier.

Hypothesis 4: A website where female models are seen portraying the products have a positive effect on consumer's purchase decision then a website where male models are portraying products

The results of the *Effects summary* showed that the variable *Model* is significant. This was also the result of the *Likelihood ratio tests*. The confidence intervals of the *Parameter estimates* showed that the variable *Male* is also significant. When looking at the *Parameter estimates* the variable *Male* had a negative effect on the purchase intention of consumers and that the variable *Female* had a positive effect on the purchase intention of consumers. In the *Effects marginals* it can also be seen that in both models the Marginal utility is higher for females than for males. All this information combined leads to acceptation of hypothesis 4. This supports the research of Holbrook and Schindler (1994) that males prefer to see females but does not support the findings that females prefer to see males. The acceptance of hypothesis 4 also supports the research of Melnyk et al. (2009), which states that women are more loyal to a single acquittance and not a group of women. This can be the reason why they prefer to see one female portraying the furniture. Another reason why female consumers prefer to see female models, is that female consumers compare themselves to the female models and want to buy the products the female model is portraying. The female consumers feel threatened by the female models as Durante et al. (2011) mention in their research.

Hypothesis 5: The variable Gender has a moderating effect on the effect of Colour, Layout and Model on Purchase Decision

When looking at the interaction variables *Gender*Colour, Gender*Layout* and *Gender*Layout* in the *Effects summary, Likelihood ratio tests,* and the confidence intervals of the *Parameter estimates* of the variables *Gender*Blue, Gender*Bright Blue, Gender*Red, Gender*Vertical* and *Gender*Male* they are

all not significant. The variables *Colours, Layout* and *Model* do remain significant in Model 2 compared to Model 1. This shows that *Gender* has no moderation effect on the relationships of *Colour, Layout* and *Model* on the purchase intention of consumers. This leads to the rejection of hypothesis 5. Therefore, this finding does not support the research of Peñaloza (1992) that gender plays a role for consumers as this is not the case with furniture in this thesis. A reason for this can be that furniture can be seen as a gender-neutral product and that the website design therefore does not have to be specifically targeted to female or male consumers.

6.2 Exploratory research

The answers of the word cloud in figure C1 show that participants are aware that furniture stores are (also) selling their furniture online, as they participants can mention different stores. This means that the awareness level of participants that furniture can also be bought online, is very high as only 2.5% of the participants could not come up with a store which sells furniture online.

Furthermore, the results of the exploratory research showed that participants preferred to buy furniture in an offline store compared to buying furniture online. A small difference between female and male participants can be spotted when looking at the distribution of the chosen scale points. Male participants had a strong preference in buying furniture in a store than online, a few preferred to buy furniture online (9%) which resulted in a spike at scale point eight. Female participants also strongly preferred to buy furniture in an offline store, but more female compared to male participants chose scale points between five and eight. Which indicated a slight preference towards buying furniture online. This overall preference of buying furniture in a store instead of online, could be because the information overload when buying products online (Szmigin & Piacentini, 2015). This can make it hard to choose between all the options (Häubl & Trifts, 2000). It could also be because it is a big purchase the consumer will use for a long period of time. The consumer wants to feel and see the product in real life (Szmigin & Piacentini, 2015).

The questions on recommendation of an offline or online store to friends and family members give some insight about WOM of consumers. Overall, it shows that females are more likely to talk about a positive shopping experience than male participants, although both gender groups were eager to share a positive shopping experience with friends and family members. This information can be useful for furniture companies, as WOM can strengthen OL and therefore can have positive influence on the buying behaviour of consumers (Chen et al. 2011).

When asking participants when they have last positively recommended a store, more female participants indicated to have done this recently compared to the male participants. This also indicates that female participants are more eager to share their positive shopping experiences. When comparing the willingness of participants to recommend a physical store or a website, participants have recommended websites more recently than physical stores. Meaning that participants have talked more recently about

their shopping experiences on websites than of physical stores. This can be concluded as 65% (45% +20%) of the participants recommended a website in the past month or week compared to 48% (31% +17%) of the participants recommending an offline store.

6.3 Sub-questions

Three sub-questions were created to help answer the research question.

> *Sub-question 1: What is the difference between an offline retail environment and an online retail environment?*

According to Bitner (1992), different components of a physical setting in a store can affect the behaviour of consumers. This can be the products themselves, as many elements of a product affect the perception of consumers about the product (Bloch, 1995). This can also be because of the visual saliency bias, which can occur when visiting a store according to Milosavljevic et al. (2011). But colour combinations can also affect the way consumers perceive products (Deng et al., 2010). Besides this, in an offline retail environment consumers can touch and smell the products which can influence consumers (Bitner, 1992).

On the other side, the aesthetics of a website also influences the behaviour of consumers. Results of this thesis show that bright background colours have a negative effect on the purchase intention of consumers. Which is supported by research of Gorn et al. (2004) which explained that the background colour of a website can have an influence on consumers. It can also be because the website is organized by alphabet, horizontally or vertically according to Lans et al. (2021) and Milosavljevic et al. (2011). This is also confirmed in this thesis as the purchase intention of participants increased when they saw a website design with a horizontal layout of items compared to a vertical layout of items.

Social interaction can also play a big part when purchasing an item. This can, for instance, be a shop assistant to help you make decisions in a physical store, which is not the case when making a purchase online. There is hardly any social interaction in an online environment according to Bitner (1992). On the other hand, Chen et al. (2011) explain that OL and WOM are considered social interactions and can influence consumers buying behaviour. Social interactions in an online environment can be stimulated even more when making use of social advertising (Huang et al., 2020). This thesis shows that participants were eager to share online shopping experience and 65% of the participants have done so in the past month. 48% of the participants have recommended a physical store in the past month.

> *Sub-question 2: What components of website design have an influence on the purchase intention of consumers?*

As said before, the aesthetics of a website design can influence the behaviour of consumers. Research of Gorn et al. (2004) show that colour can play a big part in this. A blue coloured background screen relaxes consumers compared to a red background screen colour. This thesis shows that both a blue and a red background colour of a website had a positive effect on the purchase intention of participants. A

blue coloured background colour had a slightly bigger effect on participants than a red background colour. Participants disliked a bright blue and bright red background colour compared a blue and red background colour, which had a negative effect on their purchase intention.

Another component that can have an influence on the purchase intention is the layout of items on the website. The results of this thesis show that a horizontal layout is preferred by participants compared to vertical layout of items. This is supported by research of Lans et al. (2021) who show in their research that portraying items on a website in a horizontal way enhances the efficiency of the consumer.

Holbrook and Schindler (1994) showed in their research that men preferred to see female movie stars and women preferred to see male movie stars. However, the results of this thesis show that female models who are portraying the furniture are preferred over male models by both the male and female participants. This shows that preferences for movie stars cannot be compared to preferences for models as these preferences differ.

Sub-question 3: What role does the gender of consumers play in their purchase intention?

Research of Zhang et al. (2014) show that men and women think differently. Men care less about the opinion of others compared to women. However, the results of the conjoint analysis show that the interaction variables including *Gender* are not significant. This means that *Gender* has no moderation effect on purchase intention. Nonetheless, the results of the exploratory research show some differences in the behaviour between female and male participants. More female than male participant preferred to buy furniture online. Female participants were also more willing to share a positive shopping experience with others compared to the male participants. More female participants have done so in the last month compared to the male participants.

6.4 Research question

The following research question was used for the research in this thesis:

Research question: What role does consumers' gender play in the effect of website design on consumers' purchase intention in a Dutch online retail environment?

To answer this research question, the difference between an offline and online retail environment was researched.

Summarizing, colours influence consumers in an offline as an online retail environment. The difference lies in the layout of items on a website. The whole aesthetics of a website in general can be changed to the liking of the customers or target group in a quick way, which is not the case in an offline store. The type of social interaction is also different in an offline store compared to an online store.

There are several components of the design of website which can influence the purchase intention of consumers, such as the colour of the background of a website; the layout of the items on a website; and the type of model portraying the items.

In conclusion, to answer what impact gender of a consumer has on the purchase intention of a consumer leads to contradicting answers. According to the conjoint analysis done in this thesis *Gender* has no influence on the purchase intention of consumers. Contrary to the articles described in the literature review and the exploratory research, which say that female consumers prefer buying furniture online and are more eager than male consumers to spread word about a positive shopping experience.

6.5 Limitations and recommendation future research

There are some limitations to this thesis, and it is recommended that these limitations are used for research in the future.

First, there are some limitations to the images that have been shown to the participants during the survey. In this thesis it was chosen to be consistent with the models portraying the furniture. The same male and female model has been shown throughout the images to create consistency. However, the participants may not feel represented by these two models. This could be because of their skin colour, ethnicity, clothing, or other factors of their appearance. In future research this could be solved by having more models which represent more cultural groups, ethnicities, or genders. This can, for example, be done by asking participants what their ethnicity is and show them images with models who match their ethnicity.

Regarding gender, in this thesis it was chosen to only research two genders, males and females. However, there are consumers who do not feel represented by either one. This can be taken into consideration in future research, so that perhaps more type of genders can be portrayed as models in the images. Or more type of genders can be researched in their decision making and therefore buying behaviour to see if there is a difference between these types of gender. Besides this, the ratio female and male participants in this thesis was not equal and therefore does not fully represent the Dutch population. Future research could strive to have a larger number of participants with a more equal distribution of female and male participants.

Besides the gender of participants, culture can influence the way consumers perceive a product (Bloch, 1995) or define if they are focused on others or only on themselves (Zhang et al., 2014). This can be a point of research in the future. Future research can ask the ethnicity or cultural background of participants and research if this factor plays a role in the way participants make decisions. This can be done within a country or countries could even be compared to each other to see if a difference is found. Another demographic factor of participants that can play a role in the way they perceive products, is age. Different age groups can be made by asking participants what their age is. With this data, it can be researched if age influences the decision-making process.

Aside from several types of gender, cultures or age groups, other variables can also be added to the existing variables researched in this thesis. The variable *price* can be introduced in future research by portraying the price of furniture or other items in the images. Besides *price*, the variable *price discount* can be researched to see what the impact of a discount has on participants. Another variable that can be altered is *layout*. Future research can seek different types of layouts such as order products by alphabet or most purchased items. By portraying different prices and different layouts and making the participants choose the preferred combination of variables, it can be researched if price or a different layout plays a role in the decision making of consumers and if there is a difference between participants with different genders, cultures, or age groups in this.

Besides this, in this thesis the subject of research is furniture. However, it is possible that participants feel different towards other items. Perhaps they are more willing to buy smaller items online, like clothing or accessories. Besides the size of the products, it can be interesting to research products which are specifically targeted at female of male consumers, which is not the case with furniture, as this is a gender-neutral product.

In the exploratory part of this thesis, participants were asked if they would tell others about their positive shopping experience. It can be interesting to research if people would behave the same when they are asked if they would share a negative shopping experience. Future research could therefore research the WOM of a negative shopping experience. Even though NWOM is less influential to other consumers, according to Chen et al. (2011), it can still lead to a purchase according to research of Joshi and Musalem (2021). Therefore, it can also be interesting to research consumer behaviour after hearing NWOM or WOM, instead of only asking if they would share it. Zhang et al. (2014) found a difference in the way female and male consumers spread NWOM, this could also be an interesting topic for research. Perhaps there is not only a difference between the different genders, but also between different cultural or age groups. Besides further quantitative research, future qualitative research can also be performed to find out why consumers prefer to buy furniture in an offline store instead of an online store.

In conclusion, it is recommended that companies pay attention to the different elements of website design, as they play a significant role in the purchase intention of consumers. The elements that influence consumers in a physical setting also play a role in website design. The same can be said for the elements of products aesthetics. However, no evidence is found that companies should create websites to target a specific gender. Even though this thesis has not found any statistical evidence that the gender of consumers plays a role in the way they look at a website, future research is needed to find out if this is perhaps the case for other items that are being sold. With that being said, there is still a lot to research opportunities regarding the role of consumers' gender on website design.

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Appendix A

Survey

Everything written in bold, or italics could not be seen by the participants whilst filling out the survey.

Demographics

Question 1: What is your gender?

- Female
- Male
- Other

Question 2: What is your age?

- Under 20 years old
- 20 – 29
- 30 – 39
- 40 – 49
- 50 – 59
- 60 – 69
- 70+

Question 3: What is your current occupation?

- I am still in school
- I am a student
- I am working full-time and/or part-time
- I currently have no job
- I am retired

Buying behaviour

Question 4: Can you name one store who sells furniture online?

- *Open-ended question*

Question 5: On a scale from 0 to 10, do you prefer to buy furniture in a store or online?

- *Slider question, 0 = In a store and 10 = Online*

Question 6: Would you recommend a **store** to a friend or family member if you had a good shopping experience there?

- Yes
- No

If answer of question 6 is "Yes", display question 6.1

Question 6.1: When was the last time you recommended a **store** to a friend or family member?

- Last week
- Last month
- Last year

Question 7: Would you recommend a **website** to a friend of family member if you had a good shopping experience there?

- Yes
- No

If answer of question 7 is "Yes", display question 7.1

Question 7.1: When was the last time you recommended a **website** to a friend or family member?

- Last week
- Last month
- Last year

Website design

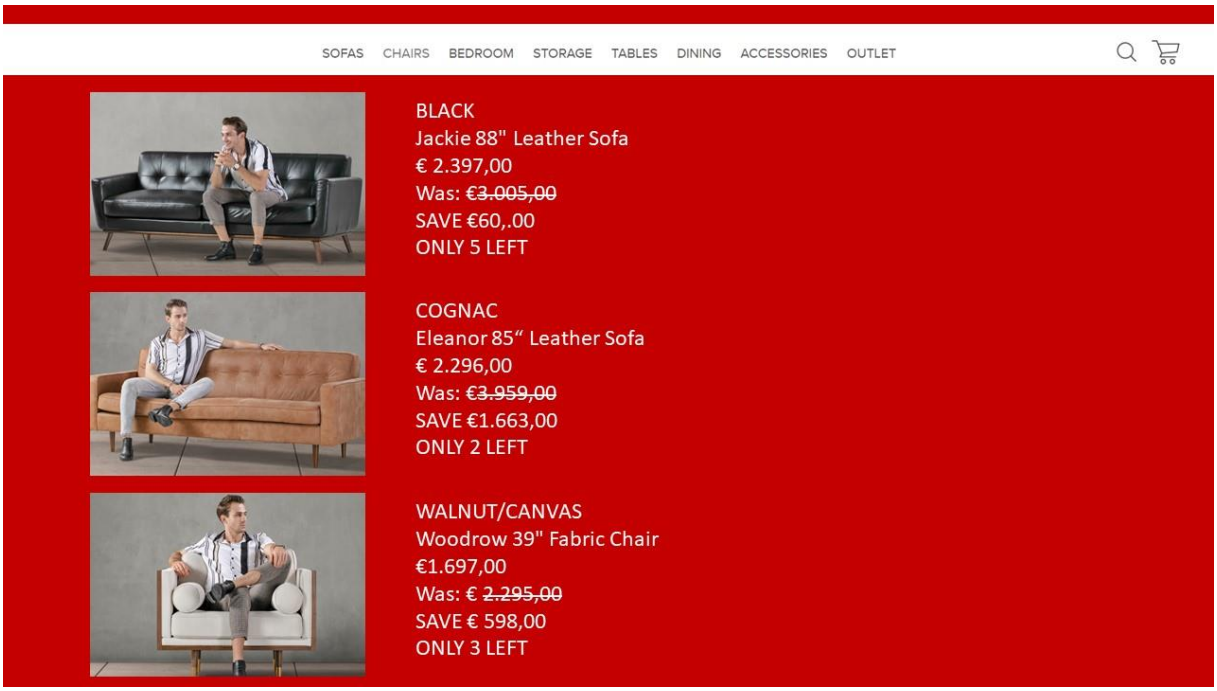
Provide participants with eight different choice sets in a random order whilst asking each time the following question:

On which website would you prefer to buy furniture (such as a couch or a lounge chair)?

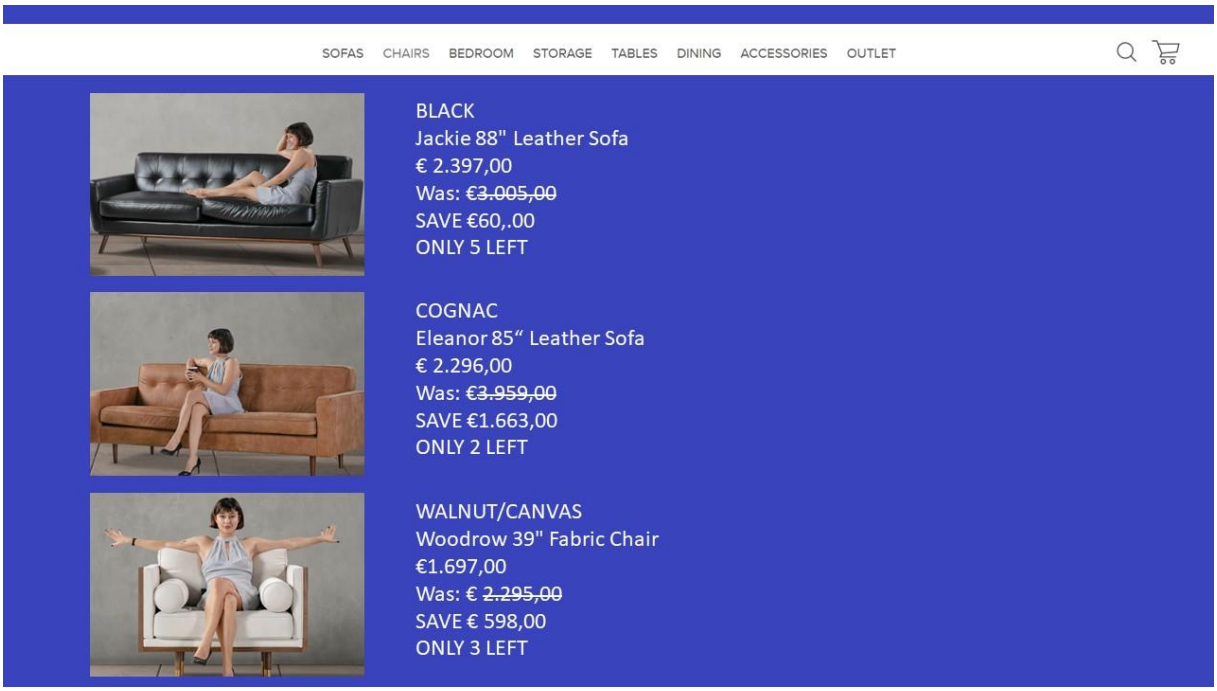
Choice set 1

Red/Vertical/Male - Blue/Vertical/Female

Website 1



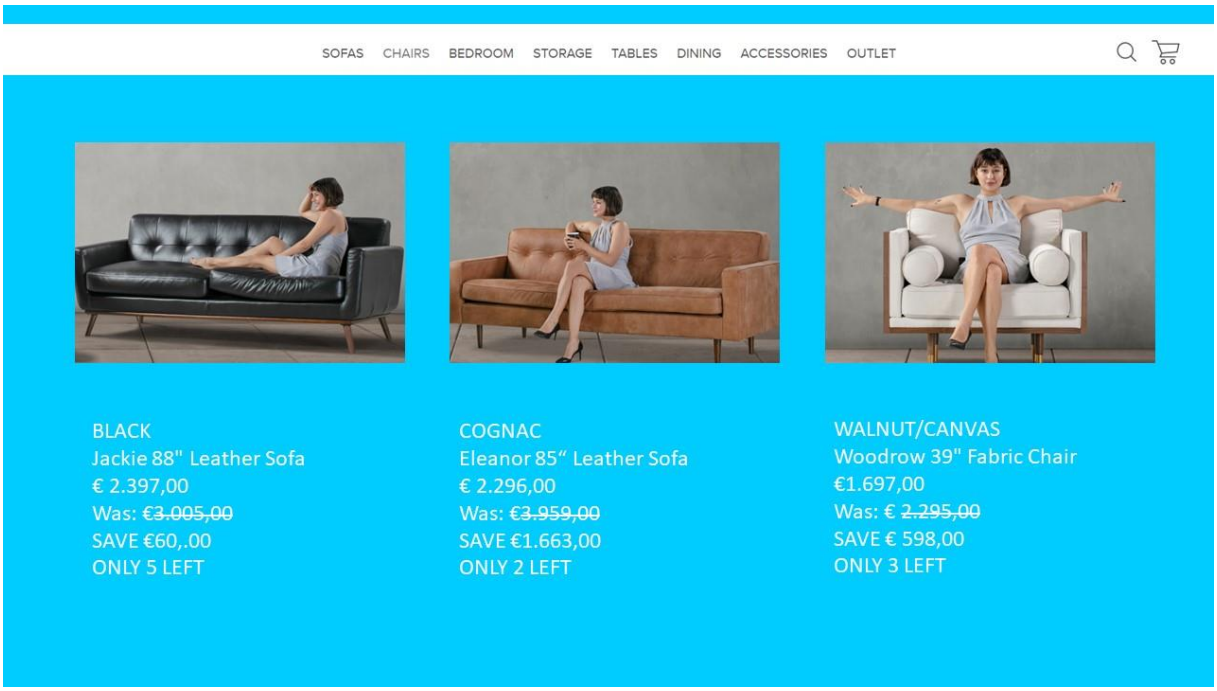
Website 2



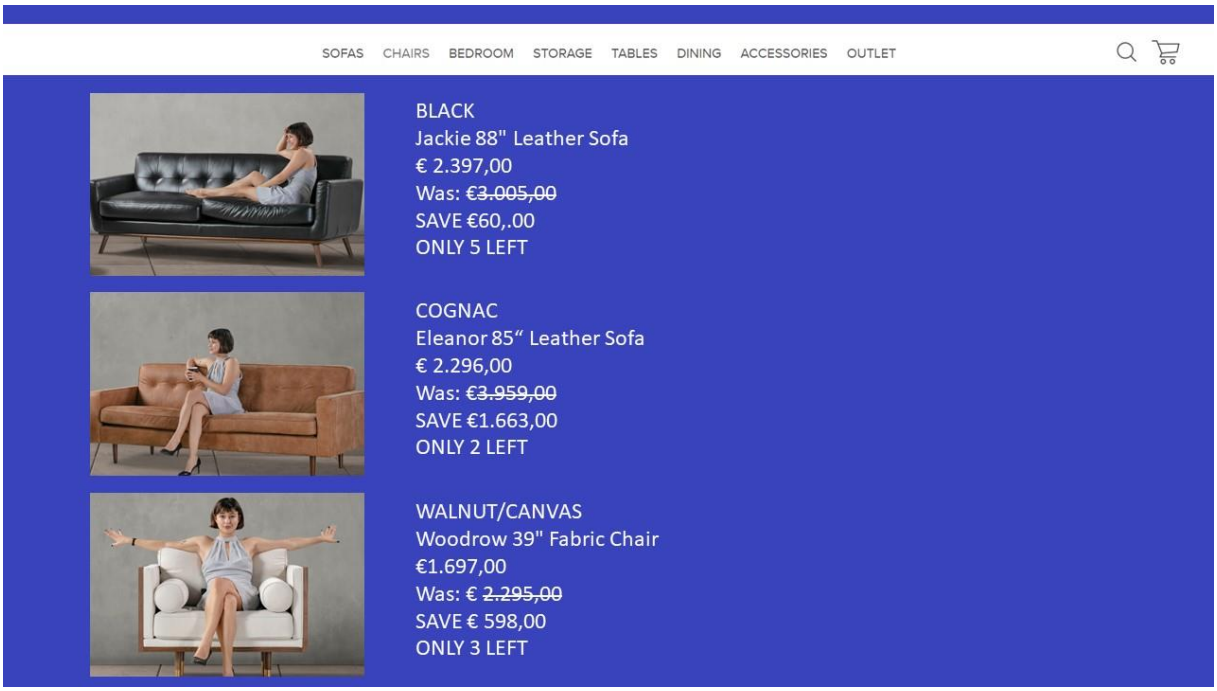
Choice set 2

Bright Blue/Horizontal/Female - Blue/Vertical/Female

Website 1



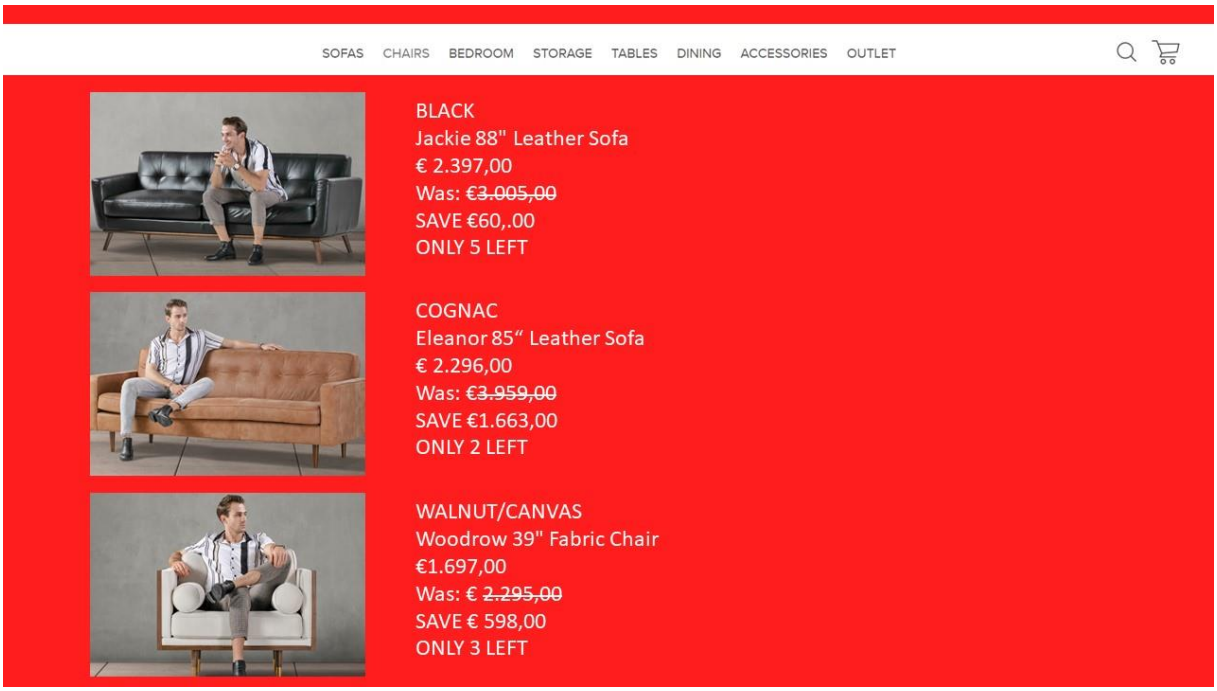
Website 2



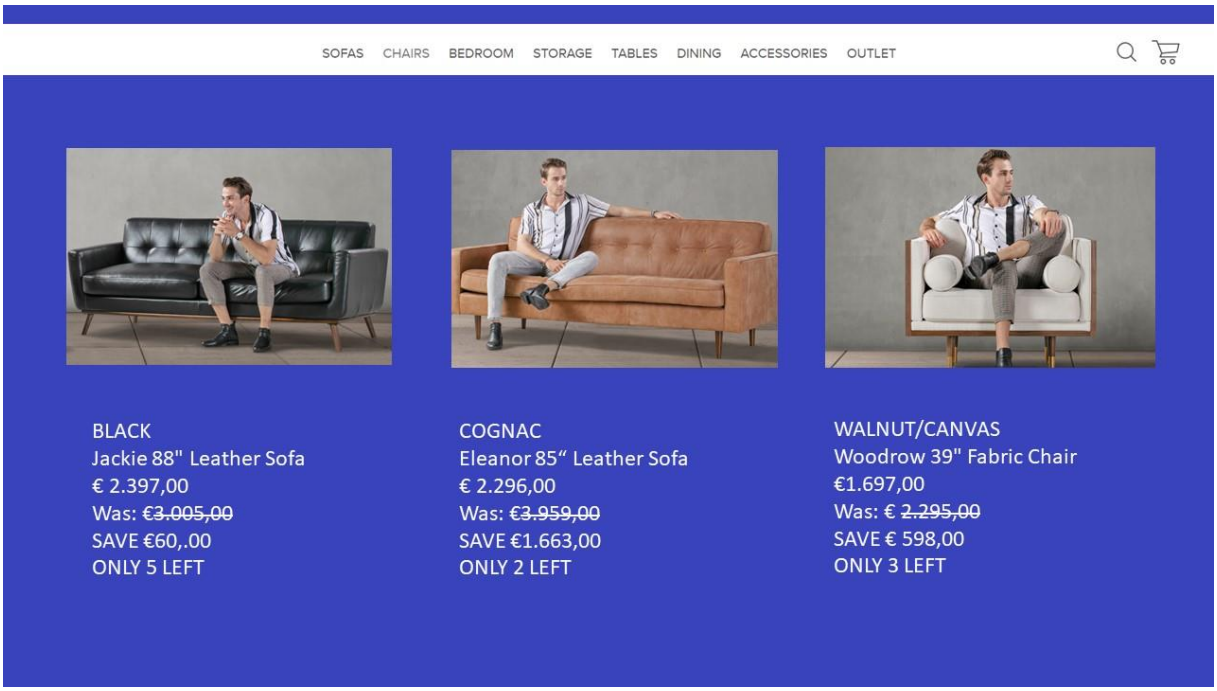
Choice set 3

Bright Red/Vertical/Male – Blue/Horizontal/Male

Website 1



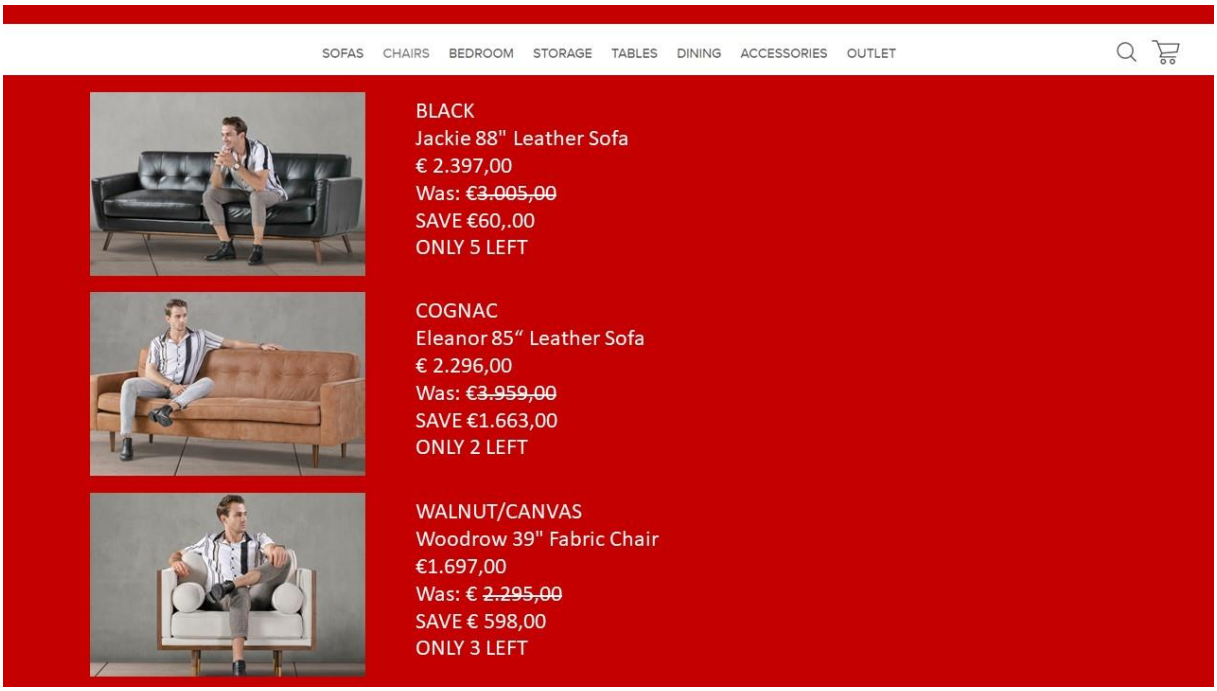
Website 2



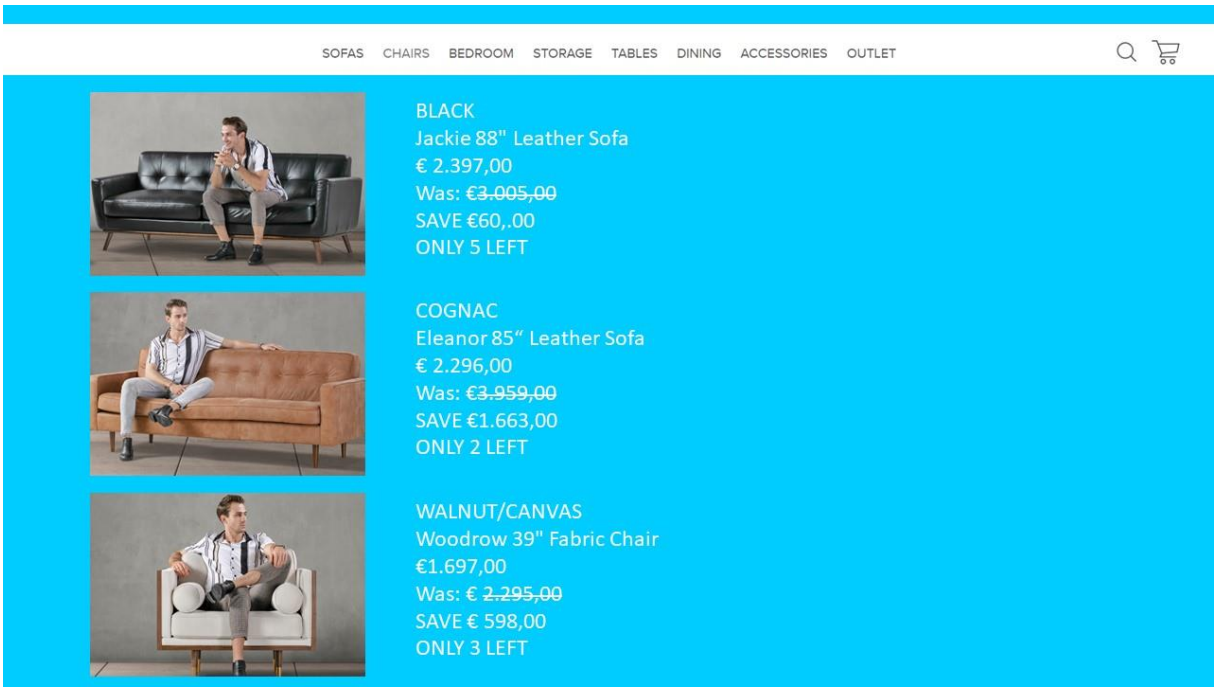
Choice set 4

Red/Vertical/Male – Bright Blue/Vertical/Male

Website 1



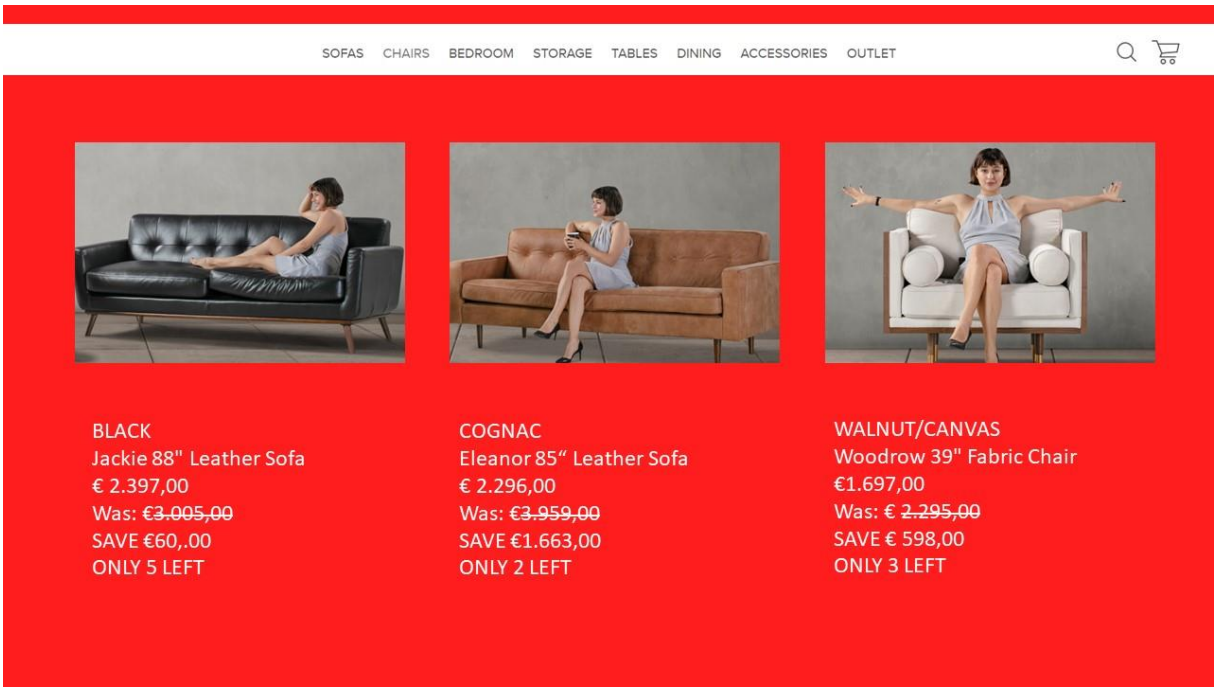
Website 2



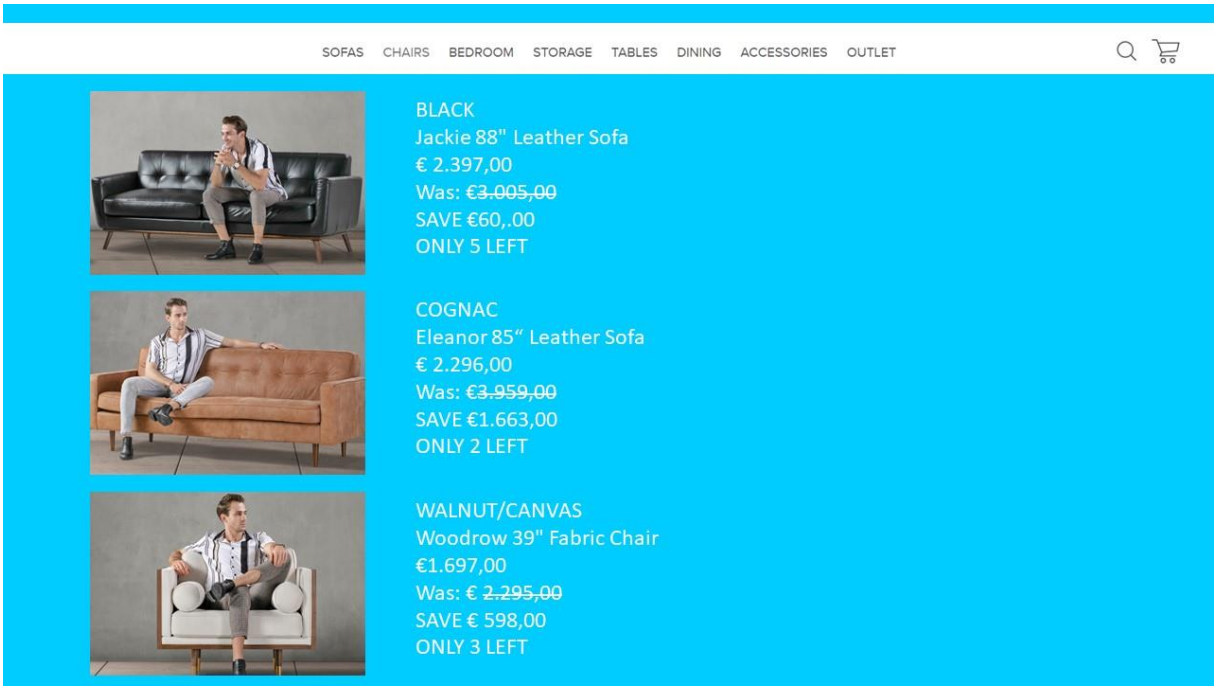
Choice set 5

Bright Red/Horizontal/Female – Bright Blue/Vertical/Male

Website 1



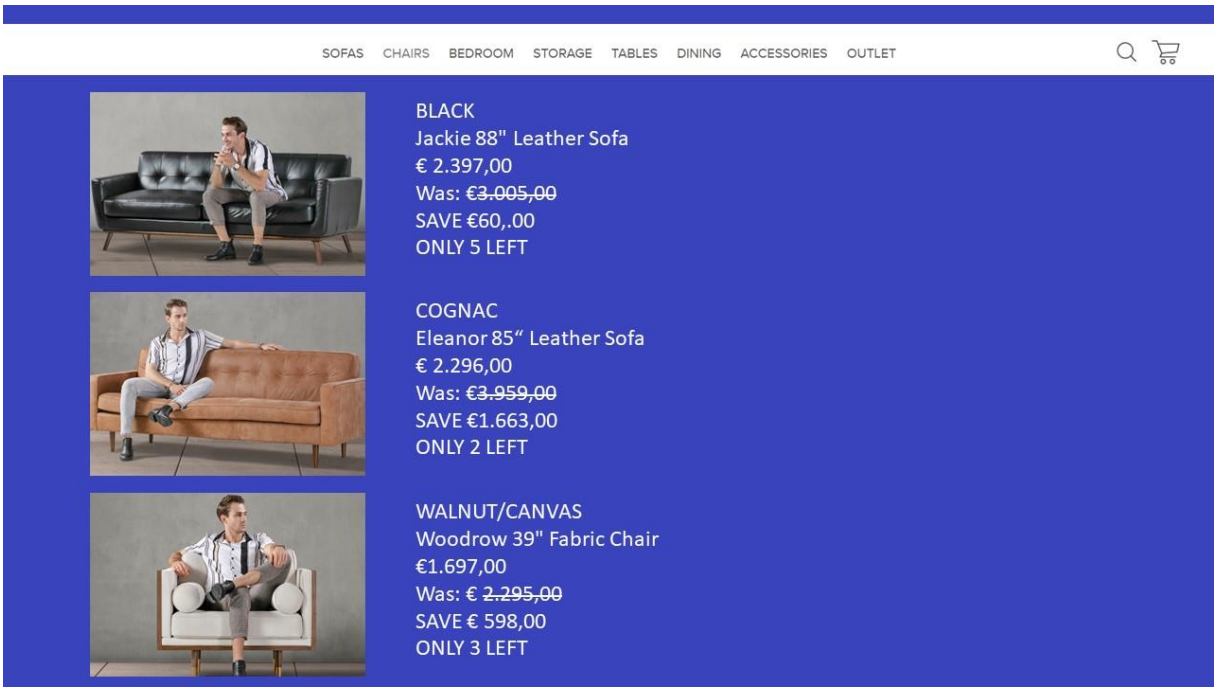
Website 2



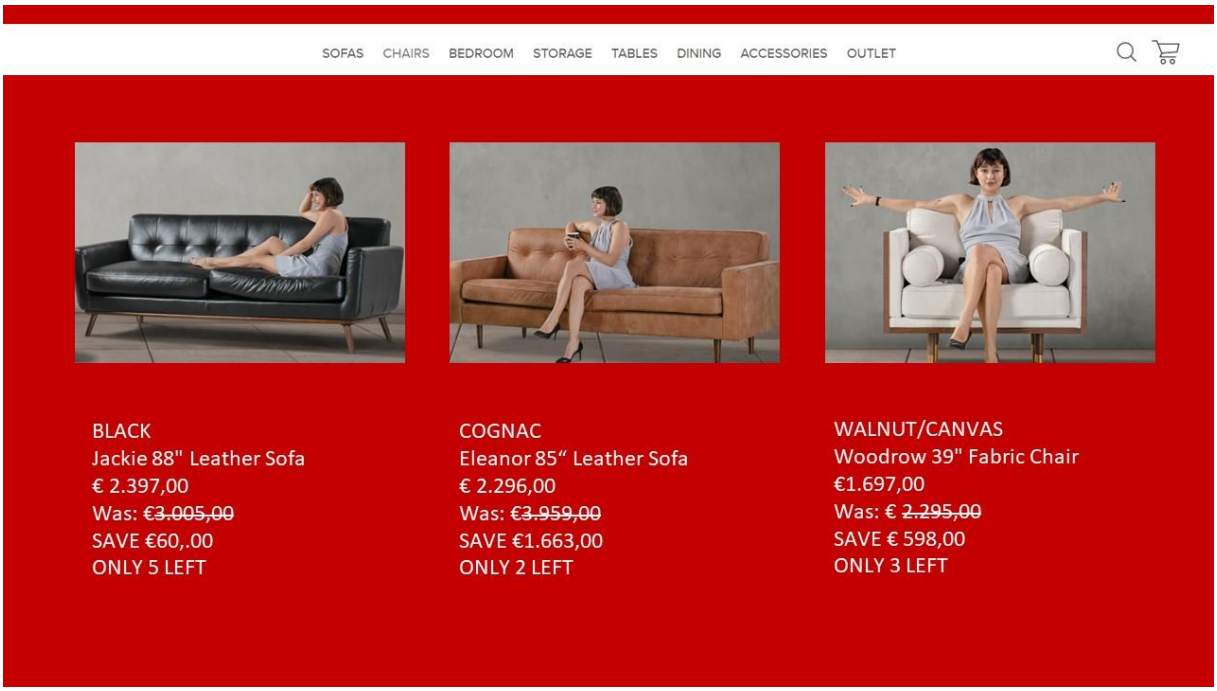
Choice set 6

Blue/Vertical/Male – Red/Horizontal/Female

Website 1



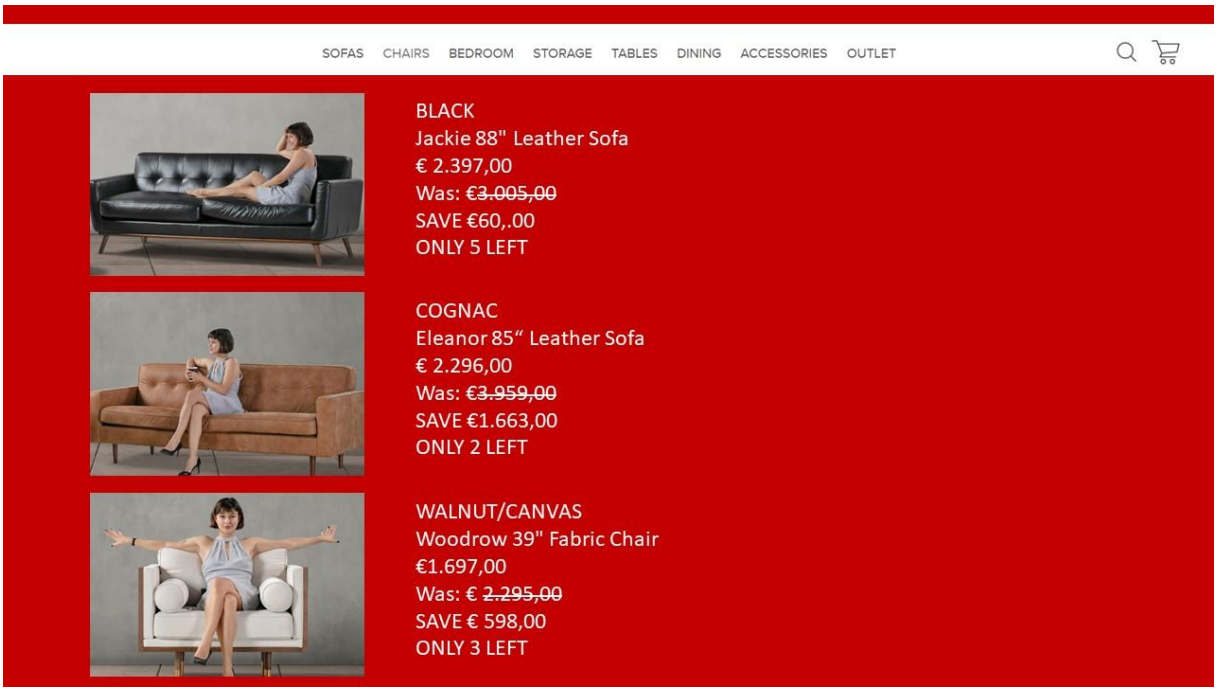
Website 2



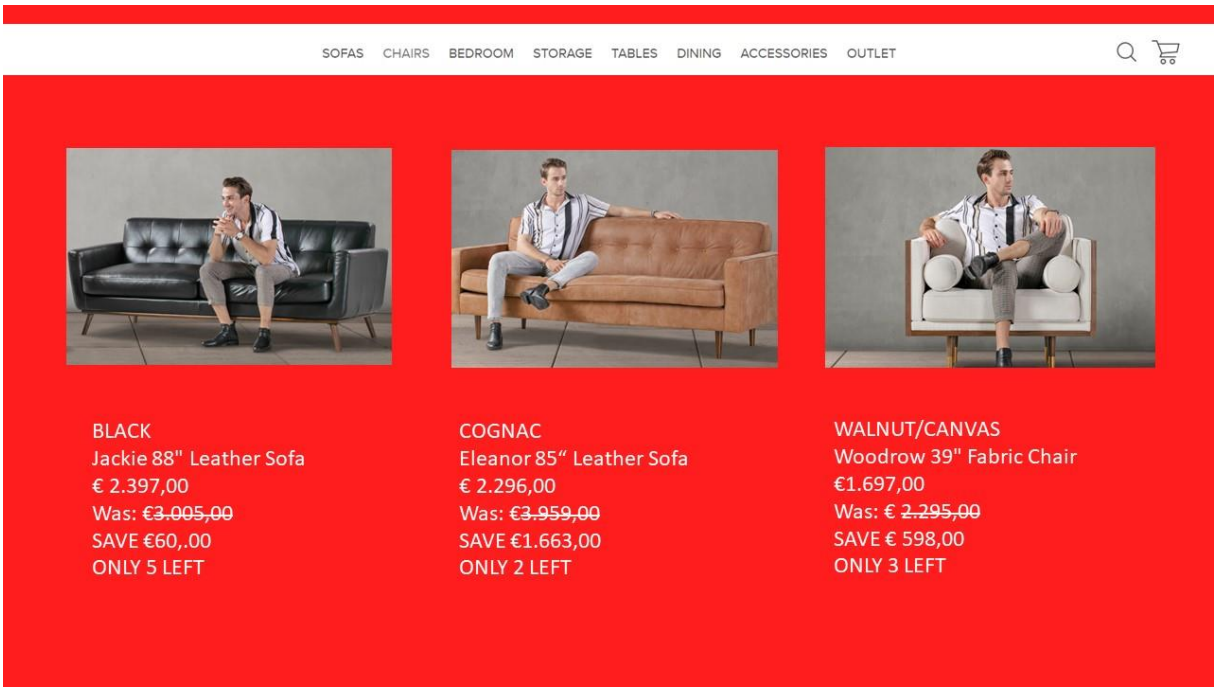
Choice set 7

Red/Vertical/Female – Bright Red/Horizontal/Male

Website 1



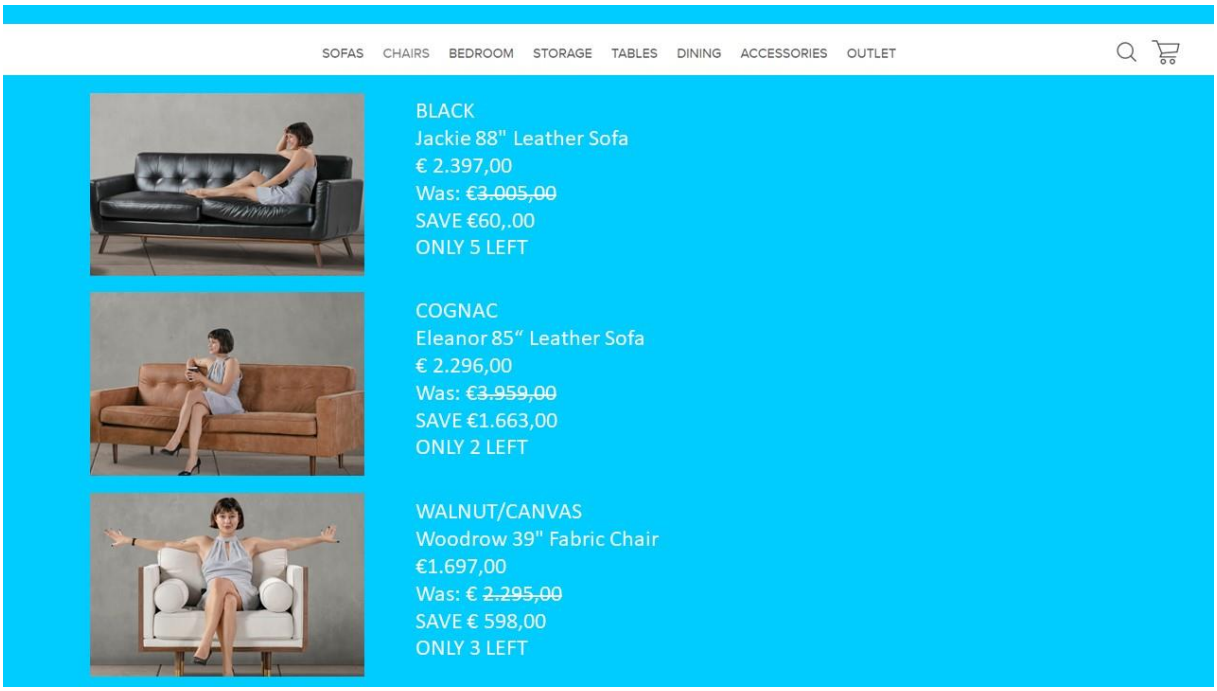
Website 2



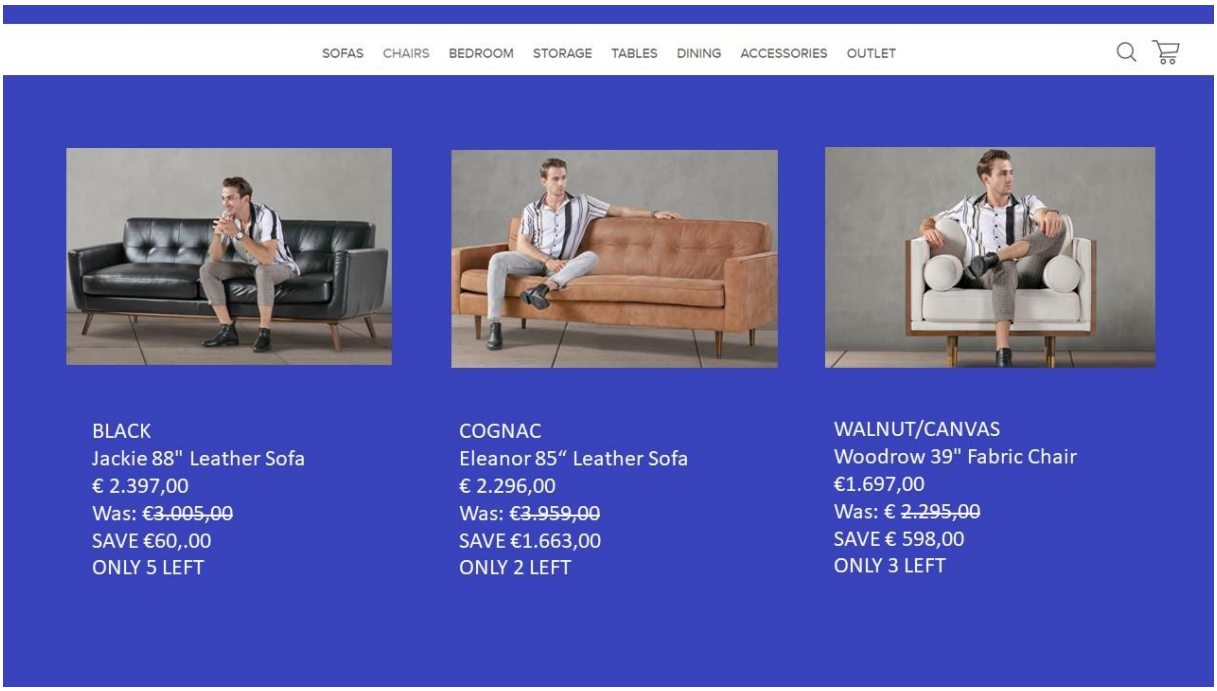
Choice set 8

Bright Blue/Vertical/Female – Blue/Horizontal/Male

Website 1



Website 2



Appendix B

Results conjoint analysis

Table B1 Effects summary

	Model 1		Model 2	
Variable	LogWorth	*p*-value	LogWorth	*p*-value
Colour	27.028	0.000	22.326	0.000
Layout	33.163	0.000	31.469	0.000
Model	2.700	0.002	2.791	0.002
Gender*Colour			0.288	0.364
Gender*Layout			0.439	0.835
Gender*Model			0.078	0.515

Table B2 Likelihood ratio tests

	Model 1		Model 2	
Variable	L-R Chisquare	Prob > ChiSq	L-R Chisquare	Prob > ChiSq
Colour	129.124	< 0.000	107.056	< 0.000
Layout	147.266	< 0.000	139.518	< 0.000
Model	9.555	0.002	9.941	< 0.002
Gender*Colour			3.184	0.364
Gender*Layout			0.043	0.835
Gender*Model			0.423	0.515

Table B3 Parameter estimates model 1

	Model 1			
Variable	Estimate	Std Error	Lower 95%	Upper 95%
Blue	0.736	0.085	0.058	0.907
Bright Blue	-0.509	0.082	-0.671	-0.350
Red	0.191	0.076	0.041	0.341
Bright Red**	-0.418			
Vertical	-0.551	0.051	-0.654	-0.453
Horizontal**	0.551			
Male	-0.150	0.049	-0.247	-0.055
Female**	0.150			

**Base attribute levels

Table B4 Parameter Estimates Model 2

	Model 2					
Variable	EstimateF [+]	Estimate [++]	EstimateM[+++]	Std Error	Lower 95%	Upper 95%
Blue	0.695		0.807	0.087	0.530	0.870
Bright Blue	-0.476		-0.582	0.086	-0.645	-0.310
Red	0.196		0.184	0.080	0.040	0.353
Bright Red[#]	-0.415		-0.409			
Vertical	-0.553		-0.542	0.053	-0.659	-0.452
Horizontal[#]	0.553		0.542			
Male	-0.159		-0.126	0.051	-0.260	-0.059
Female[#]	0.159		0.126			
Gender*Blue		0.112		0.086	-0.050	0.291
Gender*Bright Blue		-0.106		0.086	-0.272	0.063
Gender*Red		-0.012		0.080	-0.168	0.145
Gender*Bright Red[#]		0.006				
Gender*Vertical		0.011		0.052	-0.092	0.116
Gender*Horizontal[#]		-0.011				
Gender*Male		0.033		0.051	-0.067	0.133
Gender*Female[#]		-0.033				

[#]Base attribute levels

[+]Estimated value of female participants

[++] Estimated value of males relative to females.

[+++]Estimated value of male participants

Calculations for the estimates of the male participants:

$$EstimateM_{Blue} = 0.695\ (EstimateF_{Blue}) + 0.112\ (\Delta Estimate_{Gender*Blue}) = 0.807$$

$$EstimateM_{Bright\ Blue} = -0.476\ (EstimateF_{Bright\ Blue}) - 0.106\ (\Delta Estimate_{Gender*Bright\ Blue}) = -0.582$$

$$EstimateM_{Red} = 0.196\ (EstimateF_{Red}) - 0.012\ (\Delta Estimate_{Gender*Red}) = 0.184$$

$$EstimateM_{Vertical} = -0.553\ (EstimateF_{Vertical}) + 0.011\ (\Delta Estimate_{Gender*Vertical}) = -0.542$$

$$EstimateM_{Male} = -0.159\ (EstimateF_{Male}) + 0.033\ (\Delta Estimate_{Gender*Male}) = -0.126$$

Table B5 Effects marginals

	Model 1	
Variable	Marginal probability	Marginal utility
Blue	0.458	0.736
Bright Blue	0.132	-0.509
Red	0.266	0.191
Bright Red	0.144	-0.418
Vertical	0.249	-0.551
Horizontal	0.751	0.551
Male	0.425	-0.150
Female	0.575	0.150

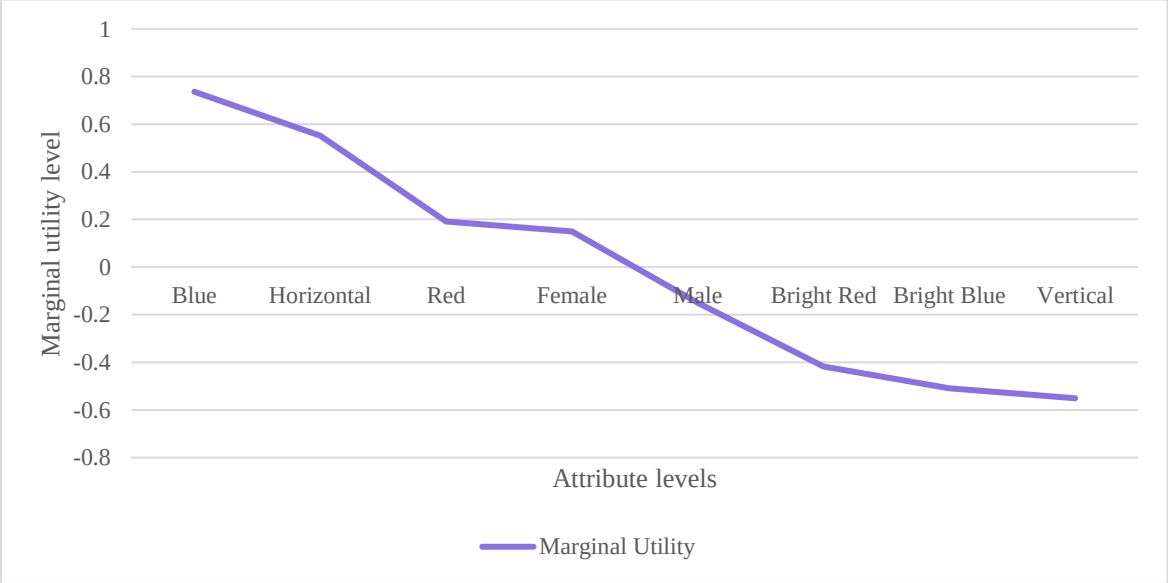


Figure B1 Marginal utility model 1

Table B6 Marginal utility range

Variable	Model 1	
	Marginal utility range	Importance of attribute
Colour	1.245	0.470
Layout	1.102	0.416
Model	0.300	0.113

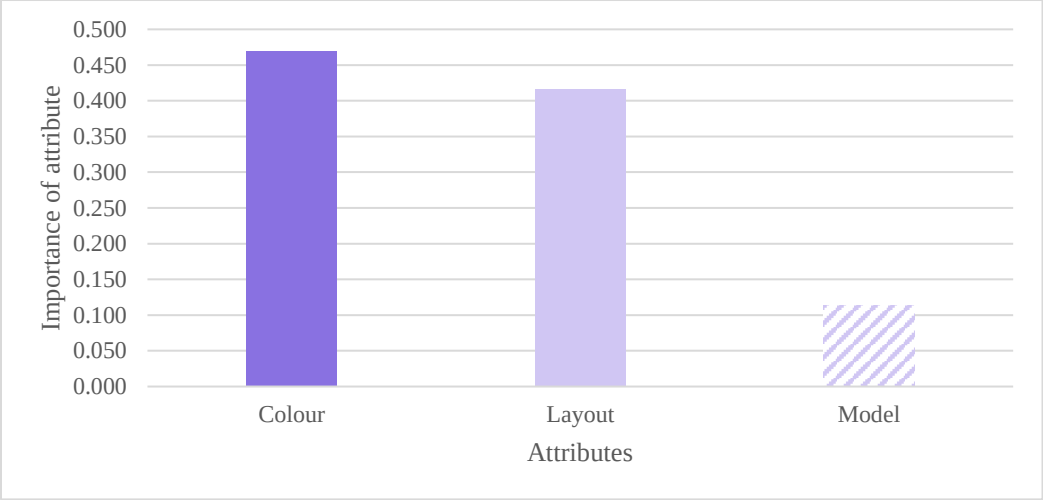


Figure B2 Importance of attribute model 1

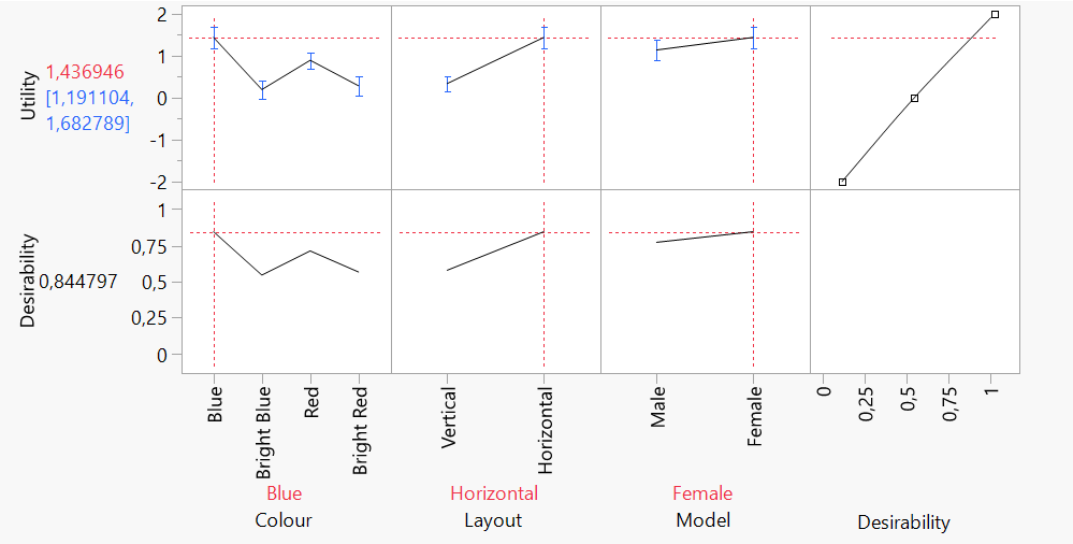


Figure B3 Utility profilers model 1

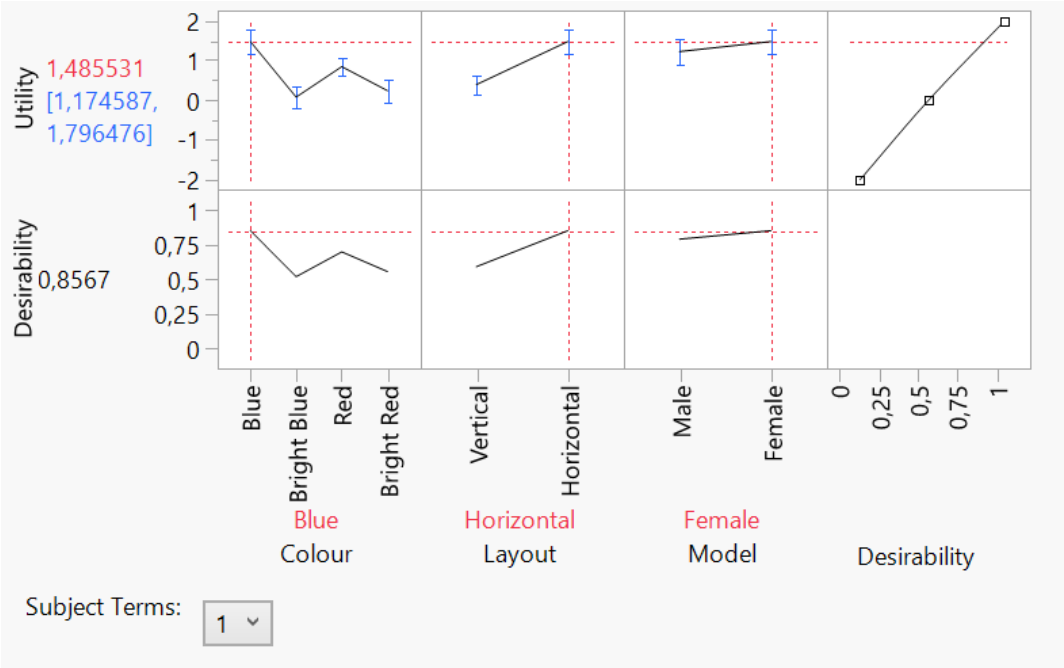


Figure B4 Utility profilers model 2 – Female

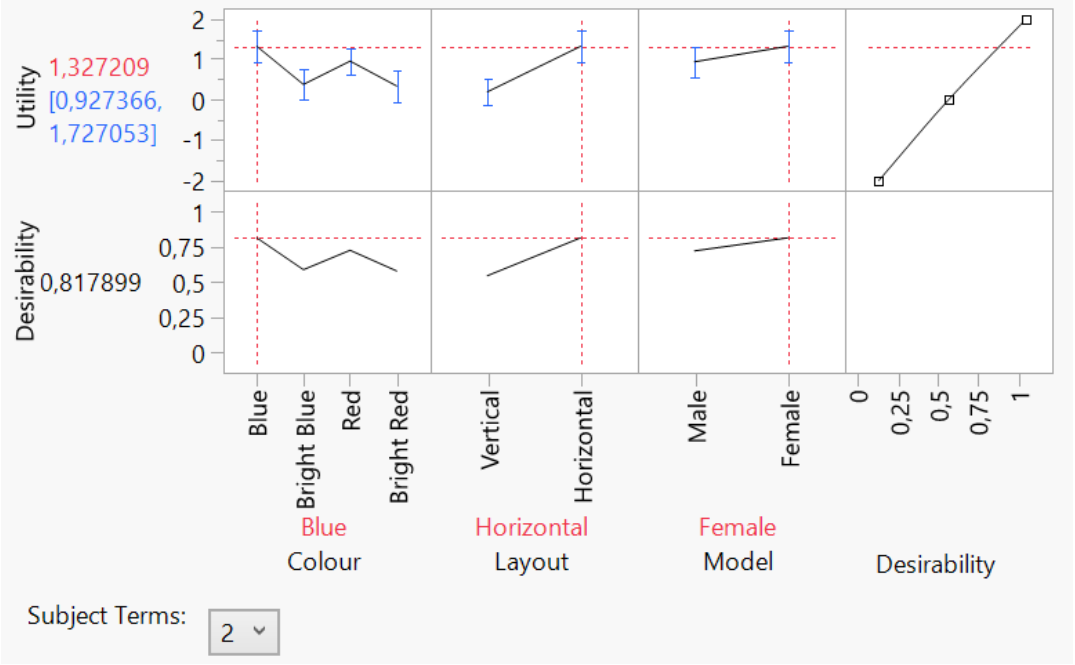


Figure B5 Utility profilers model 2 – Male

Table B7 Website designs

Website Design	Colour	Layout	Model
1	Blue	Vertical	Male
2	Blue	Vertical	Female
3	Blue	Horizontal	Male
4	Blue	Horizontal	Female
5	Bright Blue	Vertical	Male
6	Bright Blue	Vertical	Female
7	Bright Blue	Horizontal	Male
8	Bright Blue	Horizontal	Female
9	Red	Vertical	Male
10	Red	Vertical	Female
11	Red	Horizontal	Male
12	Red	Horizontal	Female
13	Bright Red	Vertical	Male
14	Bright Red	Vertical	Female
15	Bright Red	Horizontal	Male
16	Bright Red	Horizontal	Female

Table B8 Output grid table model 1 – All participants

Website Design	Model 1			
	Colour	Layout	Model	Utility
4	Blue	Horizontal	Female	1.437
3	Blue	Horizontal	Male	1.136
12	Red	Horizontal	Female	0.892
11	Red	Horizontal	Male	0.591
2	Blue	Vertical	Female	0.335
16	Bright Red	Horizontal	Female	0.283
8	Bright Blue	Horizontal	Female	0.193
1	Blue	Vertical	Male	0.035
15	Bright Red	Horizontal	Male	-0.018
7	Bright Blue	Horizontal	Male	-0.108
10	Red	Vertical	Female	-0.209
9	Red	Vertical	Male	-0.510
14	Bright Red	Vertical	Female	-0.818
6	Bright Blue	Vertical	Female	-0.909
13	Bright Red	Vertical	Male	-1.119
5	Bright Blue	Vertical	Male	-1.210

Table B9 Output grid table model 2 – Female

Website Design	Model 2			
	Colour	Layout	Model	Utility
4	Blue	Horizontal	Female	1.486
3	Blue	Horizontal	Male	1.233
12	Red	Horizontal	Female	0.853
11	Red	Horizontal	Male	0.601
2	Blue	Vertical	Female	0.402
16	Bright Red	Horizontal	Female	0.247
1	Blue	Vertical	Male	0.149
8	Bright Blue	Horizontal	Female	0.087
15	Bright Red	Horizontal	Male	-0.005
7	Bright Blue	Horizontal	Male	-0.166
10	Red	Vertical	Female	-0.231
9	Red	Vertical	Male	-0.483
14	Bright Red	Vertical	Female	-0.837
6	Bright Blue	Vertical	Female	-0.997
13	Bright Red	Vertical	Male	-1.089
5	Bright Blue	Vertical	Male	-1.249

Table B10 Output grid table model 2 – Male

Website Design	Model 2			
	Colour	Layout	Model	Utility
4	Blue	Horizontal	Female	1.327
12	Red	Horizontal	Female	0.963
3	Blue	Horizontal	Male	0.945
11	Red	Horizontal	Male	0.580
8	Bright Blue	Horizontal	Female	0.385
16	Bright Red	Horizontal	Female	0.344
2	Blue	Vertical	Female	0.200
7	Bright Blue	Horizontal	Male	0.002
15	Bright Red	Horizontal	Male	-0.034
10	Red	Vertical	Female	-0.164
1	Blue	Vertical	Male	-0.182
9	Red	Vertical	Male	-0.547
6	Bright Blue	Vertical	Female	-0.724
14	Bright Red	Vertical	Female	-0.783
5	Bright Blue	Vertical	Male	-1.125
13	Bright Red	Vertical	Male	-1.165

Appendix C

Results exploratory research

Figure C1 Results survey question 4 word cloud

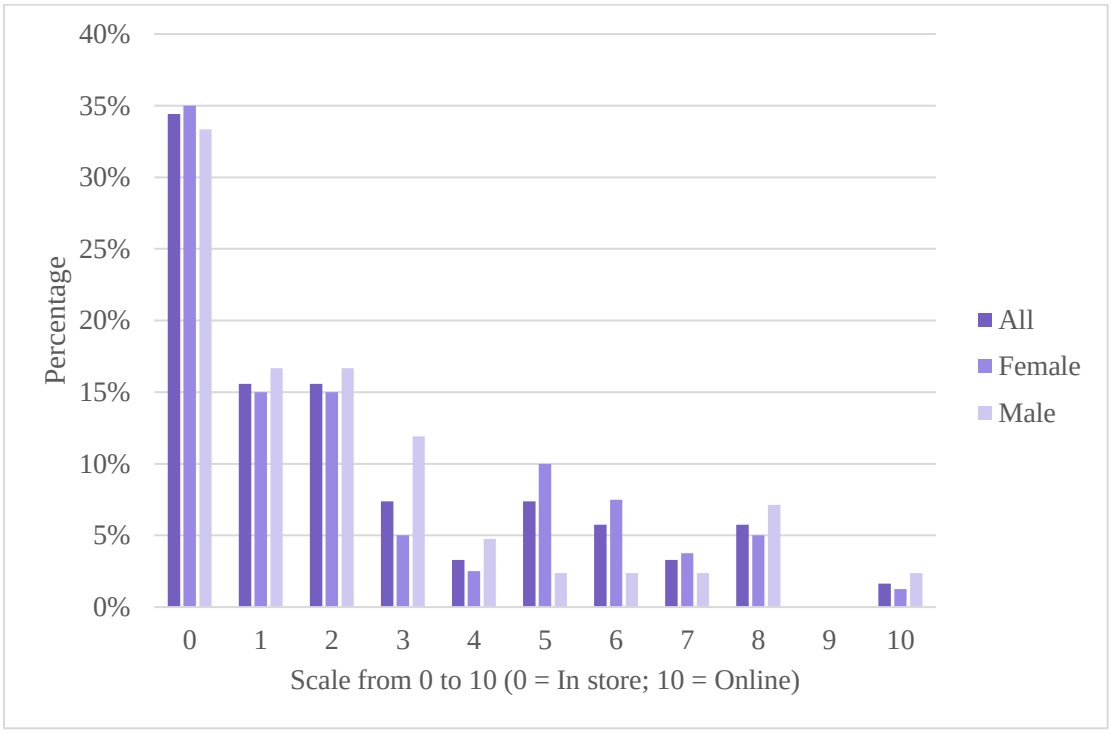


Figure C2 Results survey question 5

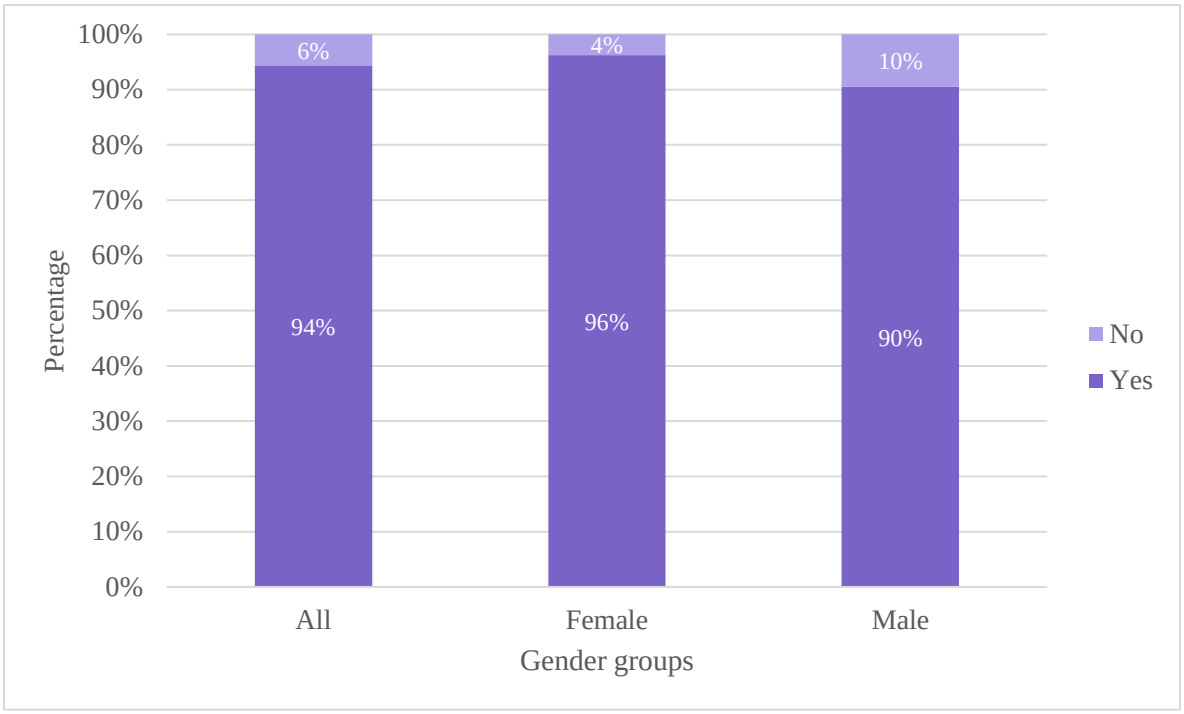


Figure C3 Results survey question 6

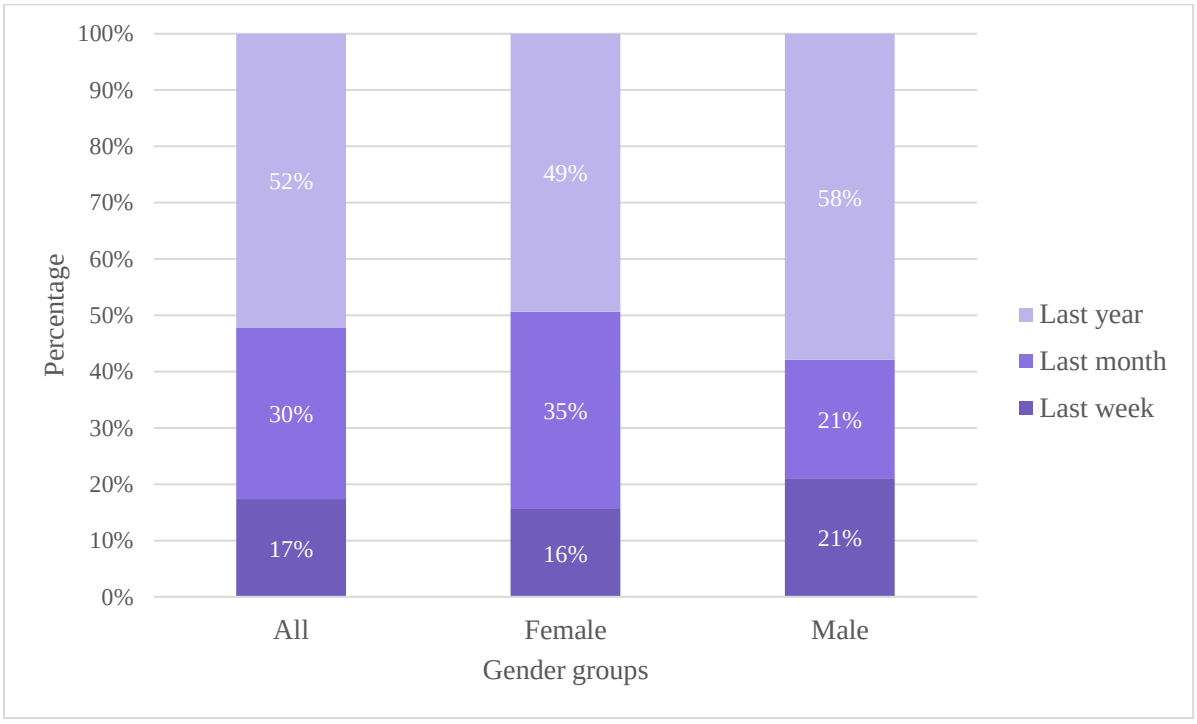


Figure C4 Results survey question 6.1

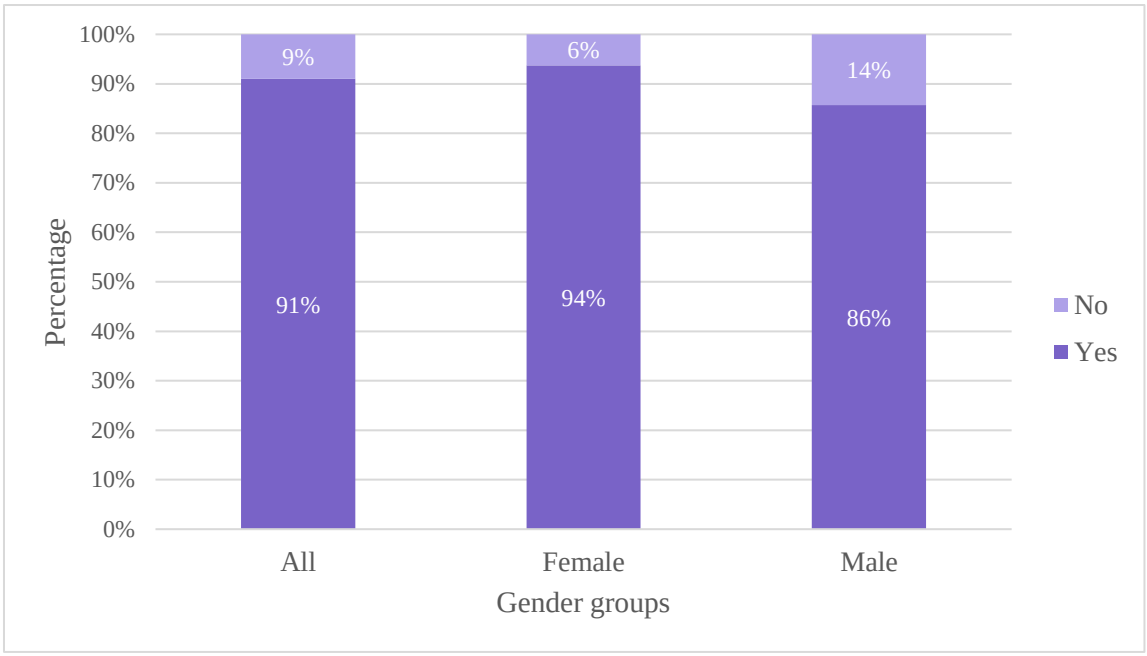


Figure C5 Results survey question 7

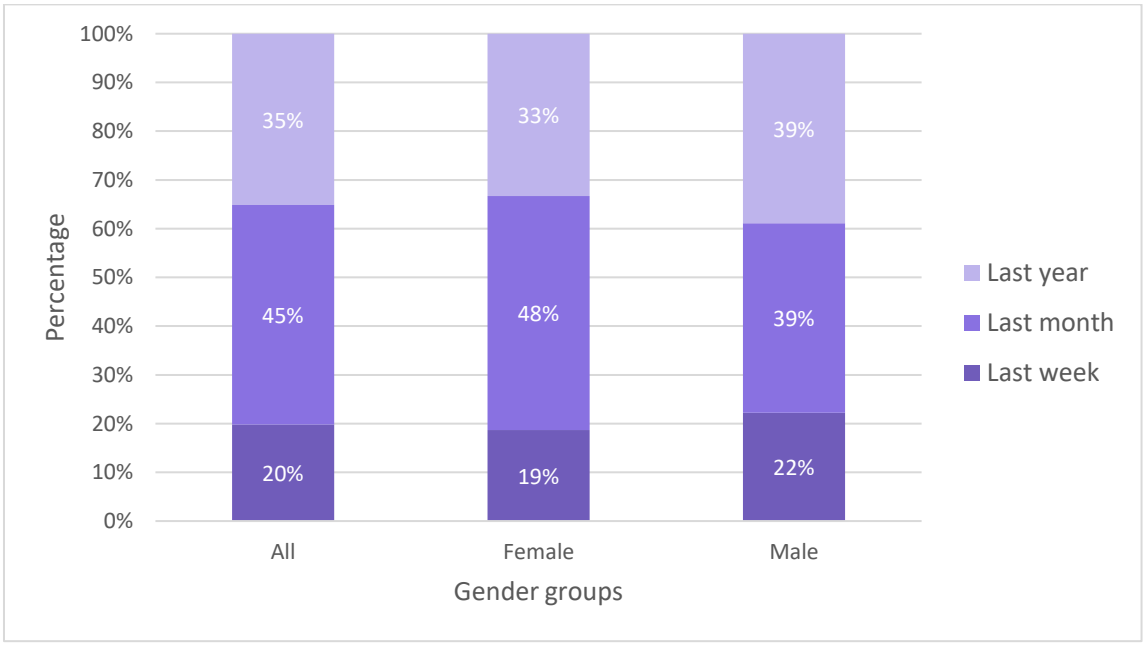


Figure C6 Results survey question 7.1