Faceted Navigation in M-commerce

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Abstract

Online shopping, or electronic commerce, is to a great extent prevalent in Norway. However, despite the comprehensive use of mobile devices in today's society, the amount of completed purchases it not nearly as high on mobile devices as it is for desktop computers and laptops. The small screen size of smartphones and tablets is evidently causing different types of usability issues, causing hesitation among the consumers towards mobile commerce (m-commerce).

As apparel items are the most frequently purchased items online, the scope of this thesis is limited to apparel m-commerce. There will be a particular focus on faceted navigation as well as usability issues that might be caused by or somehow are related to it. By conducting an online survey, this thesis has investigated consumer attitude towards m-commerce, as well as their goals when visiting an online apparel store. Furthermore, a usability test including three of the most frequently visited online apparel stores in Norway was conducted in order to observe how users utilize facets when navigating an online apparel store. Additionally, different usability issues causing errors of varying severity were identified.

The results from this research support the assertion that there is a widespread skepticism among consumers towards m-commerce, primarily due to the limited screen size. Furthermore, the results imply that the amount of facets applied to simplify the navigation process depends on the user's goal. Finally, several usability issues related to navigation were identified on all of the websites included in the usability test.

Sammendrag

Netthandel er blitt et utbredt fenomen i Norge. Men til tross for den omfattende bruken av mobile enheter i dagens samfunn er andelen fullførte kjøp på mobile enheter ikke i nærheten av det som blir gjort via stasjonære PCer og laptoper. Den begrensede skjermstørrelsen på mobile enheter skaper tilsynelatende flere problemer relater til brukskvaliteten, som igjen gjør at forbrukerne er skeptiske til netthandel på mobile enheter.

Ettersom klær og sko er den produktkategorien som hyppigst blir kjøpt via netthandel, er omfanget til denne oppgaven begrenset til netthandel for klær og sko på mobile enheter. Det vil være et spesielt fokus på fasettert navigasjon, samt problemer ved brukskvaliteten som kan være forårsaket eller relatert til denne. Ved hjelp av en nettbasert spørreundersøkelse har denne studien undersøkt forbrukernes holdninger mot mobilhandel, i tillegg til hva målet til en gjennomsnittforbruker som regel er når han eller hun besøker en nettbutikk for klær og sko. Videre ble det gjennomført en brukertest som inkluderte tre av de mest besøkte nettbutikkene for klær og sko i Norge. Målet med denne brukertesten var å observere hvordan brukerne utnytter seg av de tilgjengelige filtrene under navigasjon på en nettbutikk for klær og sko. I tillegg ble alle observerte problemer ved brukskvaliteten notert.

Resultatene fra denne studien støtter oppunder påstanden om en utbredt skepsis mot mobilhandel blant forbrukerne, hovedsakelig grunnet den begrensede skjermstørrelsen på disse enhetene. Videre indikerer resultatene at bruken av filtre under navigasjonsprosessen er avhengig av hva slags mål brukeren har for å besøke nettsiden. I tillegg ble flere problemer ved brukskvaliteten på navigasjonen identifisert.

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1 Introduction

Electronic commerce (e-commerce) can be defined as "business that is transacted by transferring data electronically, especially over the Internet." (E-commerce 2015). E-commerce or online shopping is becoming increasingly prevalent in Norway. Statistics from Posten and Bring (2014) show that as many as 90 % of the Norwegian consumers are shopping online, with varying frequency. Clothing and footwear were found to be the most frequently purchased product categories, and according to Virke (2015), 70 % of the consumers of these product categories are women. However, despite the increasing prevalence of e-commerce, different usability issues have caused a substantial amount of users to cancel their purchases. According to Posten and Bring (2014), as many as 40 % of the consumers reported having canceled an online purchase within the last year, due to insufficient information or cumbersome payment processes. They further stress that the customer's satisfaction with the online store to a great extent will determine whether or not the customer will decide to return to the same store.

The usability challenges in e-commerce get even more evident on mobile devices such as smartphones and tablets. Though not being used nearly as much for online shopping as desktop computers and laptops, online shopping with mobile devices is increasing. The amount of completed purchases on mobile devices has increased from 5 % in 2014 to 9 % so far in 2015 (Posten and Bring 2015). Although the consumers frequently describe mobile devices as quick and accessible tools to use for online shopping, their small screen size causes usability challenges, explaining the low rate of online shopping on mobile devices. Among the most common mobile commerce (m-commerce) issues are difficulties with finding the product one is after, unsatisfactory search and filtering options, and cumbersome payment systems (Posten and Bring 2015). Additionally, Jakimoski (2014) argue that other device specific limitations, such as limited input modalities and limited connectivity are known to affect usability, as mobile users are very dynamic and often on the move when interacting with their devices.

Consumers want online shopping to be quick and easy. Better adapted websites and improved navigation can motivate the users to complete more purchases using a mobile device in the future, according to Posten and Bring (2014). Nielsen (2012) states that "the first law of e-commerce is that if users cannot find the product, they cannot buy it either". It is therefore of great importance to facilitate navigation that enables the users to quickly and easily locate what they are looking for. For larger quantities of products, faceted search

and sorting options has the potential of making the task of finding a product considerably more manageable for the users.

Faceted search, or faceted navigation, lets the users narrow down the results by applying filters, ensuring that the results meet certain criteria (Whitenton 2014). This type of search is now commonly being provided by e-commerce websites (Whitention 2015). However, Holst's (2015) usability study of 19 of the leading e-commerce desktop websites in the US, found that the filtering performances of these websites was barely acceptable. Additionally, a study conducted by Raphaeli et al. (2014) compared web session browsing behavior differences between e-commerce and m-commerce by using web server logs to record usage data. Among their findings was a higher frequency of scenarios where users fail to find the information they need in mobile sessions (around 30 %) compared to stationary sessions (close to 0).

As a further contribution to the field of e-commerce research, this thesis is based on a qualitative study targeted on users' navigation strategies within m-commerce. The main object of the study will be the usability and utilization of faceted navigation on mobile devices. The results are expected to provide useful data on how users utilize faceted navigation on mobile devices. This includes obtaining some indication of the most frequently used facets within apparel m-commerce. Furthermore, the study will aim to identify common usability issues caused by or related to faceted navigation. As previously mentioned, clothing and shoes has been identified as the most frequently purchased products. The scope of the topic is thus limited to *apparel* m-commerce. Initially, an online survey was conducted to acquire information on people's habits and attitudes towards e-commerce and m-commerce. Furthermore, a usability test was conducted to observe how the participants utilized facets on three different online apparel stores using mobile devices.

1.1 Research Questions

This research will aim to answer the following research questions:

1. How do users utilize facets when visiting an online apparel store using a mobile device?
   a) when looking for a specific type of product
   b) when looking for information about a specific product
   c) when exploring the website to see if they discover any items of interest?

2. Are there any tendencies of errors that are caused by or related to faceted navigation in apparel online stores?

2 Theoretical Background

This section includes a description of e-commerce and previous research within this field. Moreover, the concept of faceted navigation as well as previous research on faceted interface versus baseline interfaces will be dicussed.

2.1 E-commerce

The following sections includes a description of the concept of e-commerce and its prevalence in Norway, as well as previous research on e-commerce and m-commerce usability.

2.1.1 E-commerce in Norway

E-commerce is a rapidly growing segment of the Scandinavian business market. According to Posten and Bring (2014), business to customer (B2C) e-commerce transactions in Norway had a 17 % increase in 2013. However, despite the growth of Norwegian e-commerce, there is no corresponding development in the number of consumers — as approximately 90 % of Norwegian consumers are already shopping online. The Norwegian e-commerce market is maturing, and as a result the consumers have become more experienced and are thus expecting more from the retailers. Posten and Bring's (2014) study finds evidence that consumers want e-commerce websites to be simple and informative, in turn making online shopping a quick and easy affair. Furthermore, they found that the main reason why customers return to the same e-commerce retailers is that they found the website easy to use. This is further underpinned by the fact that a total of 40 % of the consumers who participated in the study reported having cancelled an e-commerce purchase within the last year, due to insufficient information or demanding payment processes. The usability of online retailers' websites is therefore an important aspect, affecting how satisfied and thus how likely to return the customers are. Clothing and footwear were found to be the most frequently purchased product categories, further supported by Virke (2015) where it is added that 70 % of these consumers are women. Moreover, the majority of the consumers prefer to find product information directly from the online retailer's website before making a purchase.

Another tendency observed by Posten and Bring (2014) is the increased use of mobile devices for online shopping. But despite the increase in use, the small screen size of mobile devices still poses some design challenges which in turn affects usability. When the participants in their study were asked about motivating factors that could persuade them

to complete more purchases using a mobile device in the future, the most frequent answers were “better adapted websites” and “better navigation”.

During the work on this thesis, Posten and Bring published the results from their 2015 consumer study. The resulting statistics are based on a large scale online survey, with responses from over 6000 Scandinavian consumers. Posten and Bring’s (2015) report on Norwegian e-commerce reveals that the use of smartphones for gathering product information before purchasing has increased from 3 % in 2014 to 23 % in 2015, while the amount of purchases completed on smartphones has increased from 5 % in 2014 to 9 % in 2015. The amount of purchases completed on tablets is reported to have a similar development, though no specific numbers are provided for these devices. Nonetheless, the amount of completed purchases on smartphones being almost doubled during the last year, the importance of facilitating a good user experience is more apparent than ever. Additionally, the increase in completed purchases on mobile devices are considerably higher for impulse purchasing. The majority of the respondents from Posten and Bring’s survey reports that when using their mobile device for online purchasing it is most frequently due to it being the most available device in their context. Furthermore, mobile devices was frequently described as a quick and easy tool to use for online shopping. However, there are some aspects of mobile devices that complicates the process of purchasing for the consumers. The most obvious obstacle is the small screen size of these devices, though they increasingly are being developed with bigger screens. The small screen size leads to issues such as complicated payment solutions and insufficient search and filtering options, causing the process of locating products to be more difficult.

2.1.2 Previous Research on E-commerce and M-commerce Usability

Petre, Minocha and Roberts (2011) developed an e-commerce evaluation instrument to measure the total customer experience, called E-SEQUAL (E-Service Quality). E-SEQUAL is a set of heuristics and sub-heuristics intended for website usability issues and service quality issues, considering the total customer experience. The heuristics are based on their findings from in situ observations, post-observation interviews, post-purchase semi-structured interviews and group interviews. Among the resulting heuristics related to navigation was ”B1. Provide a variety of ways to search for a product or service” and ”B3. Ensure that labels and icons are meaningful, and are used consistently throughout the website” (Petre, Minocha and Roberts 2011, p. 196). This study was, however, concerned with e-commerce in general and did not involve mobile devices in any way.

Holst's (2015) usability study of 19 leading e-commerce web sites from different sectors in the US, resulted in the development of a set of 79 guidelines for homepage and category usability. The scope of the study's area of focus is quite extensive, varying from the implementation of subcategories to presenting suggestions such as similar, compatible or recently viewed products. Combining the results from the usability study with a complementary benchmarking study, they concluded that the filtering performances of websites is barely acceptable. Among the issues they uncovered was that 42 % of the e-commerce websites included in their study lack category-specific filter types for several of their core product categories. Another issue discussed was that, besides the lack of important filtering options, insufficient filtering logic and interface design can also affect usability and cause problems for the users. They also stress that for some product categories, it may be beneficial to promote the most important filters above the product list. However, only 16 % of the websites included in the study proved to actively promote highly important filters above the product list. Lastly, they point out that filtering needs vary greatly by industry. But even when taking these variations into consideration, websites in the apparel, electronics and sports industries are currently providing a far poorer filtering experience than what is provided by mass merchant and hardware websites. Considering the results from this study, doing a similar study targeted on mobile devices and m-commerce will be an interesting contribution to the related studies in the field of e-commerce research.

A study conducted by Raphaeli et al. (2014) compared web session browsing behavior differences between e-commerce and m-commerce by using web server logs to record usage data. Among their findings was a higher frequency of scenarios where users fail to find the information they need in mobile sessions (around 30 %) compared to stationary sessions (close to zero).

2.2 Faceted Navigation

This section will describe the concept of facets, including how they can be structured. Subsequently, previous research on faceted navigation versus baseline navigation will be presented.

The terms *filters* and *facets* are often used interchangeably. Although they do share some characteristics, they have different functions. According to Whitenton (2014), filters can be seen as an information seeking tool that helps the user to narrow down the results by excluding items that do not meet certain criteria. *Facets*, or *faceted navigation*, is

composed of multiple filters, covering different aspects of the content. Moreover, facets are also described as "a set of meaningful labels organized in such a way as to reflect the concepts relevant to a domain" (Hearst 2006, p. 60). This makes facets a useful tool when dealing with large content sets — but as creating and maintaining these facets undoubtedly entails more resources, it is wise to be confident about their value to your content before investing in it. Faceted navigation is now a widely used tool within e-commerce, making the process of navigating through a large set of products easier for the user.

A rule of thumb within faceted navigation or search is to minimize the risk of zero results. This can be solved by displaying only the facet values that apply to the items that are available in the current context, or by somehow downplaying the facet values that currently do not apply to any of the items in the navigational context. This is by Russel-Rose and Tate (2013) referred to as *smart dead ends*. E.g.: A user is visiting an online apparel store looking for a new coat, and therefore selects the category "outerwear" and the subcategory "coats". Now the following facets are available: "color", "brand" and "price". A wide range of colors are available, but there are currently no blue coats in stock, and the facet value "blue" therefore appears in a light grey font, contrary to the other available facet values which is written in a black font. This informs the user that the facet value "blue" normally exists, but that choosing it in this context would return zero results.

Although this section described the differences between facets and filters, both of them are used to describe the same elements in the literature. This is further evident through this thesis. However, when describing a collection of filters or facets, this is more commonly referred to as *faceted navigation*.

2.2.1 Structuring Facets

Faceted navigation can be structured in many different ways. Russel-Rose and Tate (2013) mentions, among others, the following issues to consider when designing facets: layout, default state, display formats, how to communicate the navigational state, and interaction models. The facet *layout* can be either horizontal, vertical or a hybrid – the latter meaning a combination of the first two. The most common approach is a vertical layout, typically placing the facets to the left. The next issue is the *default state*: the facets can be either closed by default, open by default, or an open/closed hybrid. If they are closed, this means that all of the facet values are hidden until the user selects the facet she wants to apply. The facet values will then be visible, often enabling the user to select several of them before applying them to the results. The open/closed hybrid means that the primary facets are open by default, while the secondary facets are closed by default. Another important

consideration is the *display formats*. Common approaches are the use of *hyperlinks*, which lets the user directly select a facet by a single mouse click or a single tap; *checkboxes*, ideal for multi-selection of facets; *range sliders*, suitable for quantitative data like price ranges; and *input boxes*, which is a more accurate alternative to range sliders. In fact, input boxes and range sliders are often paired, providing more flexibility to the users. With *how to communicate the navigational state*, Russel-Rose and Tate (2013) refers to how the system communicates the current location and navigational options to the user. One way of doing this is by using *inline breadcrumbs,* which means that the selected facet values are displayed in the facet menu itself. This is often done by the use of indentation to show hierarchy, as well as chevrons to enable the user to go back to a previous state. Another way to communicate the navigational state is by the use of *breadboxes*: Rather than displaying the selected values within the facets themselves, the selected facet values can be displayed in a separate container. Another fundamental issue with faceted navigation is the different *interaction models*. The two most common approaches are the "instant update" model or a "View Results" button. As the name implies, the first one instantly updates the results whenever a facet value is selected, while the latter allow the users to select multiple facets values and apply them all at once. The facet attributes and the associated values illustrated in table 1 was further used as a basis when the websites included in the usability test (chapter 4) were selected.

Default state	**Display formats**	**Navigational state**	**Interaction models**
Closed	Hyperlinks	Inline breadcrumbs	Instant update
Open	Checkboxes	Breadcrumbs	Confirm button
Hybrid	Range sliders	Breadboxes	
	Input boxes	Grey ends	
	Color pickers		

Table 1: Facet structure attributes

It is worth noting that these examples were written with desktops interfaces in mind – though the attributes included in the above selection should all be applicable to mobile devices.

2.2.2 Faceted Interfaces vs. Baseline Interfaces

Uddin and Janecek (2007) conducted a usability study of a prototype called Faceted Classification System (FCS), which is described as a browsing tool based on faceted classification. The FCS prototype was implemented on the website of an academic institute. The facets were created based on the content's metadata, resulting in multiple taxonomies describing different classifications of the content, i.e. subject and location. The FCS prototype was then compared with the traditional system. A total of 19 students and staff members from the Asian Institute of Technology participated in the study. The participants were primarily selected based on their level of Internet expertise, and were categorized as either Expert or Non-Expert users. The following tasks were given to the users: (1) Look for scholarship information for a masters program, (2) Look for staff recruitment information, and (3) Look for research and associated faculty member information within your interested area. The results were being used to measure and compare system performance, system usability, system features and overall user satisfaction on the two different interfaces.
The results of this study suggest that the performance and usability were considerably better in the FCS prototype compared to the traditional interface in the following areas: efficient access; search success; flexibility; understanding of content; relevant search results; and overall satisfaction. All of the tasks were solved faster with the FCS prototype, especially the last two tasks, which were the most complicated ones. However, some of the participants found it difficult to understand facets. Especially the non-expert users showed less understanding of browsing in multiple categories and to exploit metadata in the result preview, which in turn underlines the importance of well structured facets.

Zhang and Marchionini (2005) conducted a user study to compare their Relation Browser++ (RB++) interface with a traditional form fill-in search interface for a video library. The RB++ is an improved version of the previously developed Relation Browser (RB), which by Marchionini and Brunk is described as "an interface which provides an overview of the collection by displaying different categories and enables people to explore the relationships among these categories" (Zhang and Marchionini 2005, p.179). The study was conducted to compare the effectiveness, efficiency and user satisfaction associated with different types of searching and browsing between the RB++ interface and the baseline interface. Additionally, they wanted to explore whether the RB++ interface would encourage new interaction patterns. The participants were given 10 different search tasks to solve. There were three different kinds of tasks: simple look-up tasks; data exploration and analysis tasks; and one free exploration task. After each task, the participant filled out a short satisfaction questionnaire. When all of the tasks were completed on both of the

interfaces, the participants filled out an open-ended questionnaire about their impression of the differences between the two interfaces as well as their preferences. The collected data included the amount of time spent for solving each task, error rates, rating of satisfaction and usability, and written feedback from the participants on their impression of the differences between the two interfaces, as well as their personal preferences.
The results showed that the participants spent significantly less time on solving the data exploration and analysis tasks using the RB++ interface. They also found that the error rates were much higher with the baseline interface than with the RB++ interface. In eight out of nine tasks, the participants had no erroneous answers with the RB++ interface. There were also statistically significant differences on satisfaction on the exploratory tasks, in which the RB++ was preferred. On the post-test questionnaire, all of the participants described the RB++ interface as being easier to use than the baseline interface, particularly when doing complex searches. Recurrent comments were that the multiple categories displayed made it easy to combine different search criteria and thus effortlessly narrow down the results.

Furthermore, Fagan conducted a literary review of faceted browsing to explore to what extent it affects user performance in searching within library catalog systems, and came to the following conclusion: “Reviewing user studies about faceted browsing revealed empirical evidence that faceted browsing improves user performance” (2010, p. 65).

3 Survey

As mentioned in chapter 1, this study involves a usability test including three different online apparel stores. The intent was to identify the most visited online apparel stores, before selecting three of these based on a set of criteria. The most appropriate way of achieving this was considered to be finding official statistics on this field. However, the search for such statistics did not result in any satisfactory findings. The available statistics were either not comprehensive enough, or they were lacking reliable sources. Thus, an online survey was designed to gather enough data to create sufficient input for this study. The main objective of the survey was to identify the most frequently visited online apparel stores. In addition, it also included questions regarding people's habits and attitudes towards online shopping, how frequently people shop apparel items online, what devices they use and for what purpose they use them.

3.1 Methodology

The applied survey tool was an online questionnaire, created with Google Forms. Respondents were recruited through non-probabilistic sampling, which according to Lazar, Feng and Hochheiser (2010) are considered to be a valid sampling method in human-computer interaction (HCI) research, due to the lack of available well-structured data sets. Furthermore, due to limited resources, this was a self-selected survey. An invitation and link to the online questionnaire were posted on the researcher's Facebook timeline. To increase the demographic variety as well as the number of respondents, readers of the post were encouraged to share the post on their own timelines, making the questionnaire available for a significantly higher amount of people. The accepted minimum number of responses was set to 100.

To participate in the survey, the respondents needed to meet certain criteria. Posten and Bring's (2014) consumer study identified people between the age of 18 to 50 to be the most frequent online shoppers. The target group was thus set to be people of both genders, between the age of 18 to 50. Additionally, to ensure that all of the respondents were experienced enough to express their views on the topic, the second criterion was that they had been shopping apparel items online at least once during the last 12 months.

The questionnaire contained 11 questions, in which 2 of them were requesting demographic information (age and gender). The questionnaire included the following topics:

- Frequency of online apparel shopping
- Most frequently visited online apparel stores
- Preferred device
- Goals and experiences with apparel m-commerce

The full set of questions can be found in appendix A.

Before the survey was opened, a small pilot study was conducted. Initially, the researcher completed the survey herself while noting down any uncovered issues. Subsequently, these issues were solved before one potential respondent completed the survey. The respondent was then asked about his experience of the test, to which he reported a few issues on ambiguity and illogical order of some of the questions. The issues were solved and the revised survey was then published.

3.2 Results

The survey was open for seven days, and had reached 111 responses at the time it was closed. Subsequently, three of them were excluded from the results, as the respondents were not part of the target group. 74 % of the respondents were female, and 26 % were male. Moreover, the respondents were between the age of 20 to 50, and the average age of the respondents was 28.3. The following results are based on data from the remaining 108 responses.

As figure 1 below illustrates, 80.6 % of the participants reported that they most frequently use a PC or Mac when shopping online, 13 % reported using their smartphone, and 6.5 % reported using a tablet.

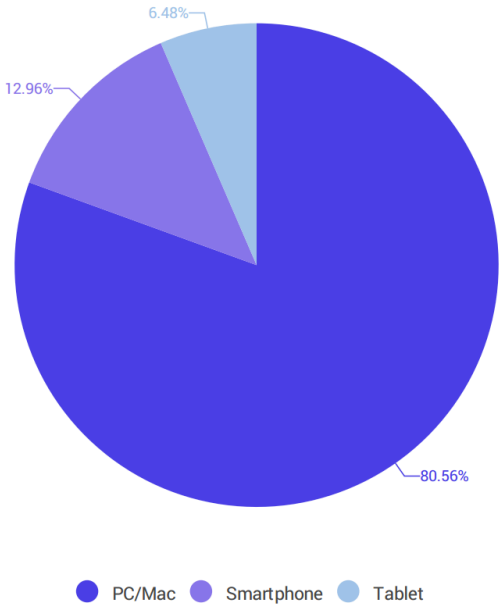

Figure 1: Preferred device

Though 92 % of the respondents reported that they had previously visited an online apparel store, only 49.5 % reported having ever completed a purchase using a mobile device. Furthermore, the respondents were asked about what they considered to be the greatest challenges when shopping online using mobile devices. The most frequent responses to this were directly related to usability, and the small screen size was often brought up as the biggest issue. Comments such as “too much information for a screen that small”, “cumbersome”, “difficult to get an overview when the screen size is so small” were frequently reported. Over 50 % of the reported issues were, similar to the aforementioned ones, related to or caused by the small screen size. The remaining issues reported were related to information security and payment solutions. These will however not be further looked into as they are outside the scope of this thesis.

The respondents who reported having visited an online apparel store using a mobile device were further asked about their goals when doing this. They were allowed to select multiple alternatives if necessary. Figure 2 below shows the selection rate for each of the goals.

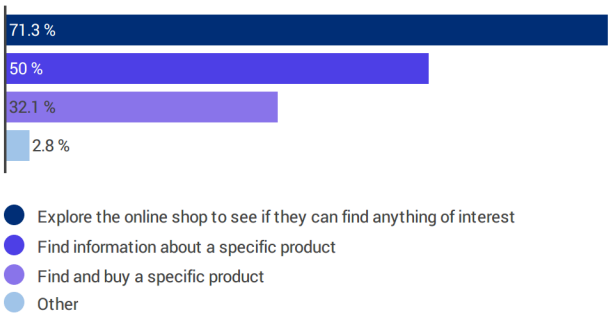

Figure 2: Goal when visiting an online apparel store

Based on the responses to which online apparel stores they most frequently visit, a list of 78 different online apparel stores was created. These were then ranged from the most frequently mentioned to the least frequently mentioned, enabling the identification of the ten most frequently visited ones, as listed below:

1. Zalando
2. Nelly
3. Hennes & Mauritz (H&M)
4. XXL
5. Get Inspired
6. Ellos
7. Brandos
8. Junkyard
9. Sportamore
10. Stormberg

This selection was intended to later on be assessed against a set of criteria. This procedure will be described in more detail in chapter 4.

4 Usability testing

The purpose of the usability test was first and foremost to acquire quantitative data on the use of faceted navigation within apparel m-commerce. More specifically, this means to identify which filters are most frequently being applied by the users when navigating through an online apparel store with a smartphone. Secondly, it was conducted to identify any usability issues related to faceted navigation, and if any errors that might occur were caused by or related to it. As the three websites included in the test are among the most frequently visited ones, they were assumed to be representable for the state of the art within apparel e-commerce. The websites that were tested and the process of selecting these is further described in section 4.1.2.

4.1 Methodology

4.1.1 Participants

The participants had to meet certain criteria. In accordance with the target group for the survey, the criteria was that they were aged 18 to 50, and that they had been shopping online for clothing or shoes during the last 12 months. People with expertise on usability, such as fellow Interaction Design students, were not recruited. Allowing these people to participate would likely have led to biases, as they tend to be more critical than the average user and would probably be actively looking for usability issues. Eight participants were recruited for the usability test, and one participant was recruited for the preceding pilot test.

4.1.2 Websites

The structuring and design of the faceted navigation in online stores is to some extent affected by the type of products or services they are offering. The scope of the usability testing was therefore limited to websites offering items within the same segment, in order to ensure a more valid comparison of the websites. As previously mentioned, apparel websites were chosen to be the object of the study, based on statistics from Posten and Bring (2014) in which apparel items were identified as the most frequently purchased products. Moreover, the specific websites included in the usability test were selected based on the results from the online survey explained in chapter 3. As described in chapter 3, a list of the ten most frequently visited online apparel stores was created, and later on assessed against a set of criteria.

The criteria in questions was based on Russel-Rose and Tates' (2013) descriptions of the different ways of structuring facets, and consisted of four different attributes with associated values, described in chapter 2. Two additional attributes described by Russel-Rose and Tate (2013) was omitted, as they were deemed to be inapplicable to mobile devices. The goal was to select three websites which in total covered as many of the different attribute values as possible. Table 2, table 3, table 4 and table 5 show the results from the assessment.

Default state

Table 2 illustrates whether or not the different websites' filters are open or closed by default.

Closed	Open	Hybrid
Zalando	Get Inspired	*H&M*
Nelly		Junkyard
Brandos		
XXL		
Ellos		
Stormberg		
Sportamore		

Table 2: Default state

Display formats

Table 3 lists the different display formats provided by each of the assessed websites. However, it is important to note that in order to say anything about the available filters and their display formats, it was necessary to first select a product category. Thes content of this table reflects the filters that were available when browsing the "sweaters" category in all of the assessed websites.

Hyperlinks	Checkboxes	Range sliders	Input boxes	Color pickers
Get Inspired	*Zalando*	Nelly (price)	–	*H&M*
XXL	Nelly			Junkyard
Junkyard	H&M			
Sportamore	Brandos			
	Get Inspired			

	Ellos
	Stormberg

Table 3: Display formats

Communicating the navigational state

Table 4 illustrates how the websites communicates the navigational state to the user.

Inline breadcrumbs	Breadcrumbs	Breadboxes	Grey ends
Nelly	*H&M*	*Zalando*	–
Get Inspired		Brandos	
Stormberg		Ellos	
XXL		Sportamore	
		Junkyard (though only the number of applied filters are listed)	

Table 4: Communicating the navigational state

Interaction models

Table 5 illustrates how the websites apply the selected filters to the results.

Instant update	Confirm button
Nelly	*Zalando*
Get Inspired	*H&M*
Junkyard	Brandos
Ellos	*XXL*
Stormberg	
Sportamore	

Table 5: Interaction models

Keeping in mind that the participants of the usability test would be of both genders, two of the websites (Get Inspired and Nelly) were excluded regardless of meeting the criteria or not, due to only offering women's clothing. The websites selected to be the object of the usability test were *Zalando*[1], *Hennes & Mauritz*[2] and *XXL*[3]. These three websites vary in

[1] www.zalando.no
[2] www.hm.com/no
[3] www.xxl.no

the filters' default state, the display formats and how the navigational state is communicated. However, they all share the same interaction model, as none of them apply any filters until the user has pressed a confirm button.

4.1.3 Test Design

The test plan (appendix B) was developed in accordance with Usability.gov's (2015) guidelines for planning a usability test. Furthermote, the usability test is following a similar procedure to that used by Uddin and Janecek (2007), described in section 2.2.2. The usability test had a within-subjects design, meaning that all of the participants are testing the same modules (the same websites, in this case) of the test. To avoid learning effects, the *counterbalancing* technique was used, by randomizing the order of the websites (Rubin and Chisnell 2008). The participants were asked solve task-based scenarios while thinking out loud. As the usability testing required both video and audio recordings, the project was reported to and approved by the Norwegian Social Science Data Services (NSD).

Tasks

The usability test included three different types of tasks. The participants were allowed to spend maximum five minutes per task – if the time limit was exceeded, the task would be considered uncompleted. The task types were the same for all three websites, but some of the attributes described, such as the product itself, or the product's color, in the tasks varied. These variations were necessary due to the websites not offering the same products, ass well as to avoid participant fatigue. The task types, including examples of the specific scenarios that were handed to the participants are listed below.

Task type 1 – Find a specific type of product: *You are looking for a new white sweater, but you can't afford to spend more than 400,- NOK. Find a sweater you like that meets the criteria and put it in the basket.*

Task type 2 – Find information about a specific product: The task included a picture of a specific product from the assortment of the website in question. *You were looking at the sweater below last night, but you want to find out about the fabric before you decide whether to purchase it or not. Locate the product and find out about the fabric. Say the name of the fabric out loud when you have located it.*

Task type 3 – Exploration task: The task included a picture of a specific product from the assortment of the website in question. *You bought this skirt a while ago, but then you*

discovered that you don't really have a matching top to go with it. Find a top/sweater/blouse that you could see yourself wear with the skirt and put it in the basket.

To make the test scenarios more authentic, female and male participants got slightly different tasks. Female participants were asked to find items within women's clothing, and male participants were asked to find items within men's clothing.

User ratings

Supplementing the task scenarios, the participants were asked to rate their perceived ease of use of the websites, as well as their satisfaction with the filtering options provided by each website (appendix D). This was done using a five-point likert scale. The instructions were as follows:

On a scale from 1 to 5, where 1 is very difficult and 5 is very easy, how easy do you think it was to solve the tasks you were given using the website you just tested? Circle your answer.

Very difficult	1	2	3	4	5	Very easy

On a scale from 1 to 5, where 1 is very unsatisfied and 5 is very satisfied, how satisfied are you with the filtering options provided by the website you just tested? Circle your answer.

Very unsatisfied	1	2	3	4	5	Very satisfied

Metrics

The following variables were measured:

- Task completion
- Amount of applied filters
- Usability issues
- User satisfaction

Time on task was not measured, as this variable would have been affected by the participants thinking out loud.

Equipment

Usability.gov (2015) stress that an unfamiliar device or operating system may affect the results of a usability test. The participants were therefore provided with a device running

the same operating system (OS) as their own device. The available devices were a Google Nexus phone (Android) and an iPhone 4 (iOS). The test sessions were video recorded using a GoPro, while an audio recorder was used during the retrospective interviews. Additionally, a notepad was available for the researcher to note down any observations made during the user testing that would be advantageous to address during the retrospective interview.

4.1.4 Procedure

The usability testing was conducted in a small meeting room at Gjøvik University College. When arriving, the participants were given a brief introduction of the test. They were informed that they were going to solve different tasks while browsing a selection of online apparel stores, and were further assured that there was no right or wrong way of solving these. Subsequently, the participants were asked to read and sign an informed consent (appendix C), before being introduced to the three different websites they were going to test. They were then asked to fill out a short background questionnaire, including questions about demographics (age and gender), frequency of online shopping for apparel items and what kind of mobile device they possess.

Starting the test sessions, the participants were handed one task scenario at a time. They were handed three task-based scenarios for each of the websites, and were encouraged to think aloud while solving the tasks. Both navigating using the search box and the categories were allowed. After solving all of the tasks for the first website they were presented with, the participants were asked to rate their perceived ease of use and their satisfaction with the filtering options provided by the website, using a five-point likert scale (cf. subsection 4.1.3 – User ratings). Subsequently, a short, semi-structured retrospective interview was conducted. Part of the questions were predefined, and part of them were based on observations made during the usability test. The same procedure was then followed for the remaining two websites.
The test sessions were video recorded, and the retrospective interviews were audio recorded. Each session lasted between 30 and 40 minutes.

4.2 Results

The following results are based on the observations of and statements by eight participants. The participants' age ranged from 20 to 31.

4.2.1 Task completion

One of the participants did not encounter any problems and completed all of the tasks without error. In comparison, another participant failed to complete two out of three tasks when testing one of the websites. This severe error was caused by the lack of feedback from the system when one of the required fields were omitted by the participant prior to pressing the "add to cart" button. The participant thus proceeded, being unaware that the item was, in fact, not added to the cart. The remaining participants completed all of the tasks, but did encounter different problems before this point. These issues will further be described in section 4.2.3.

4.2.2 Utilization of Facets

With eight participants solving three task types on three websites, this resulted in 24 individual results for each of the task types. Facets were frequently utilized for both task type 1 and task type 2. For the third and exploratory task, however, facets were rarely utilized. Of the 24 times these tasks were solved, facets were only utilized in 7 of the cases, compared to 39 and 35 times for task type 1 and task type 2. Table 6 illustrates the filters that were utilized during the completion of each type of task, while figure 3 illustrates the amount of applied filters per task type. As previously mentioned, the task types were classified as follows:

Task 1 = Find a specific type of product
Task 2 = Find information about a specific product
Task 3 = Exploration task

Participant and website	Task 1	Task 2	Task 3
1 - HM	Color	Color	0
1 - Zalando	Color, maximum price	Color, maximum price	0
1 - XXL	0	0	0
2 - HM	Sorting (increasing price), color	Color	0
2 - Zalando	Color, maximum price	Color, maximum price	0
2 - XXL	Color, sub-category	Brand	0
3 - HM	Color	Color	Color
3 - Zalando	Color	Color, sub-category	0
3 - XXL	0	0	0
4 - HM	Sorting (increasing price)	Color, sorting (increasing price)	0
4 - Zalando	Color, maximum price	Color, maximum price	0
4 - XXL	Sub-category, sorting (increasing price), price range, color	Brand, price range	Sorting (increasing price)
5 - HM	Color, sorting (increasing price)	Color	0
5 - Zalando	Color, maximum price	Color, minimum price, maximum price	Color
5 - XXL	0	Sorting (increasing price)	0
6 - HM	Color, sorting (increasing price)	Color, sorting (increasing price)	Color
6 - Zalando	Color, maximum price	Color, minimum price, maximum price	Color, sub-category

6 - XXL	Color	Brand	0
7 - HM	Color, size	Sorting (increasing price)	0
7 - Zalando	Maximum price	Brand	0
7 - XXL	Sub-category, price range, color	0	0
8 - HM	Sorting (increasing price)	Color	0
8 - Zalando	Color, minimum price, maximum price	Color, minimum price, maximum price	0
8 - XXL	Color, sub-category	Brand, color	Sub-category
Total amount of applied filters	**39**	**35**	**7**

Table 6: Applied filters

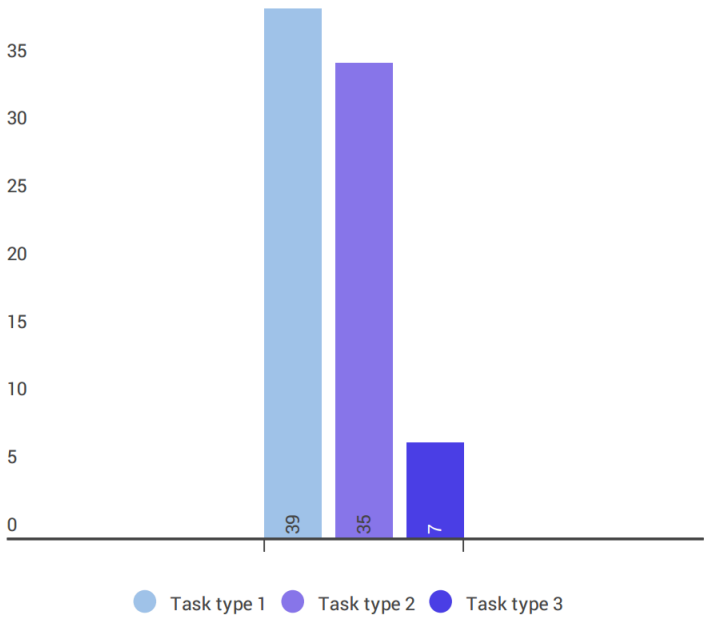

Figure 3: Total amount of applied filters per task type

There was a small selection of filters that in one or more occasions either did not exist, or could not be found when attempted. The following filters were either omitted from one of the website's filtering options, or could not be found:

- Price range
- Fabric
- Occasion (e.g. "party")

A total of eight different filters were utilized by the participants, "color" being used more frequently than the others. However, as task 1 and task 2 both specified the color of the item they were asked to locate, this is likely to have affected these results. Nonetheless, of the total amount of filters that were applied for task 3, 4 out of 7 was specifying the desired color, although this was not specified in the task. The results can therefore still be said to imply that this is among the most frequently utilized filters. Figure 4 below illustrates the frequency of use for all facets.

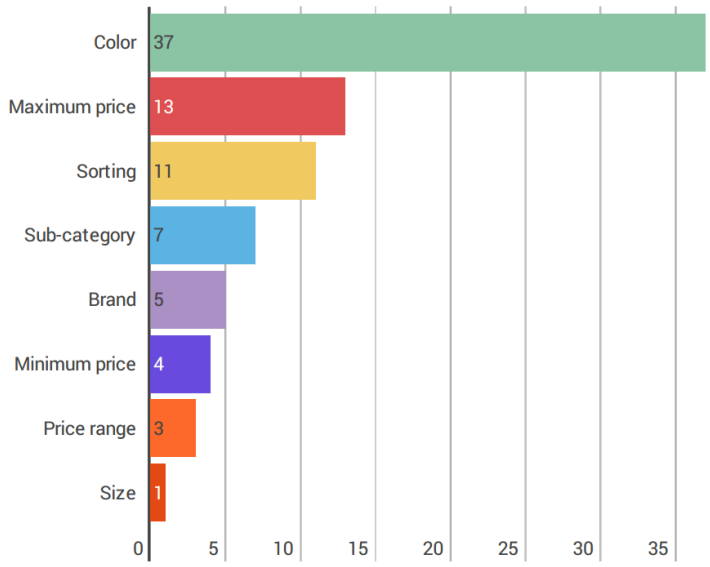

Figure 4: The applied filters

Moreover, the average participant used a total of 8 filters to solve all of the tasks. All of the participants applied filters during the test sessions. Within the total of 9 tasks they solved, the minimum total amount of applied filters was 6, while the highest total amount of filters was 14.

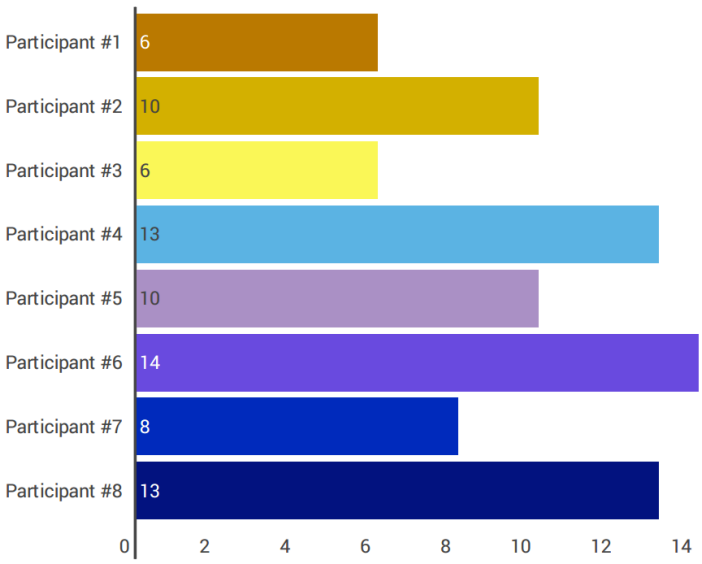

Figure 5: Amount of applied filters per participant

As figure 6 illustrates, a higher amount of filters were applied by the participants when visiting Zalando.com than when visting the other two online stores. Moreover, Zalando offers a considerably greater variety of filters than the two other online stores. Using the product category ”sweaters” as an example, Zalando provides 13 different filters, while H&M provides 4 types of filters, and XXl provides 8.

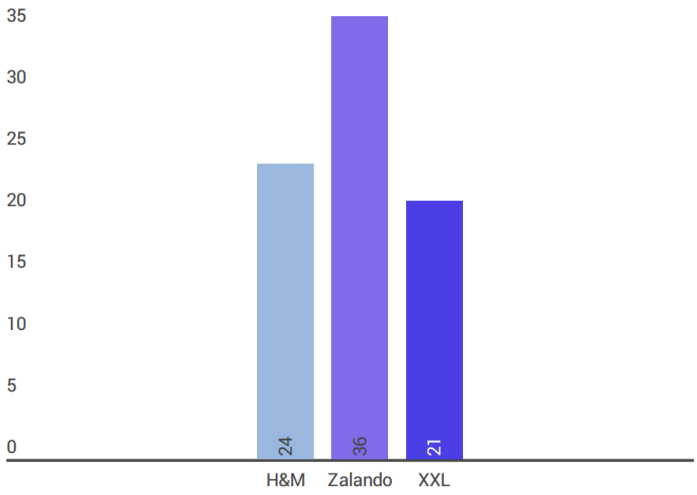

Figure 6: Frequeny of applied filters per website

The following figures are screenshots showing the filtering options provided by the different websites. As figure 8, figure 9 and figure 10 illustrate, locating the filter panel on XXL's website requires a noticeably large amount of scrolling.

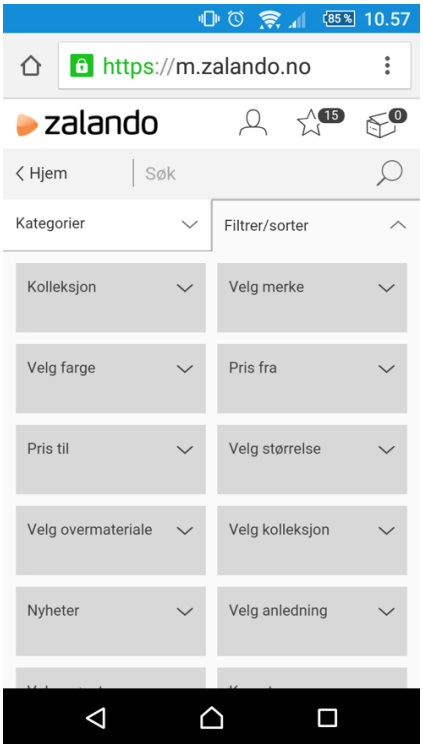

Figure 7: Filter panel - Zalando

Figure 8: Filter panel - H&M

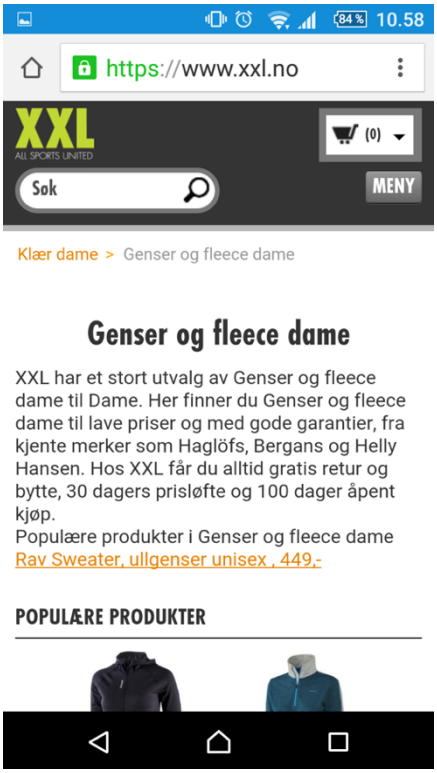

Figure 9: Filter panel - XXL (1)

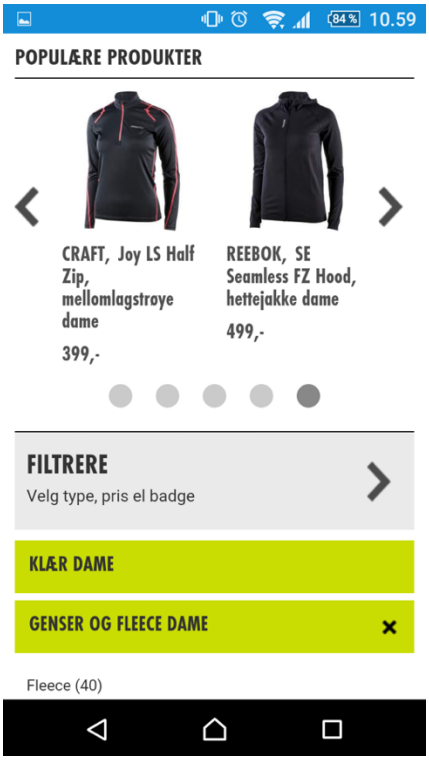

Figure 10: Filter panel - XXL (2)

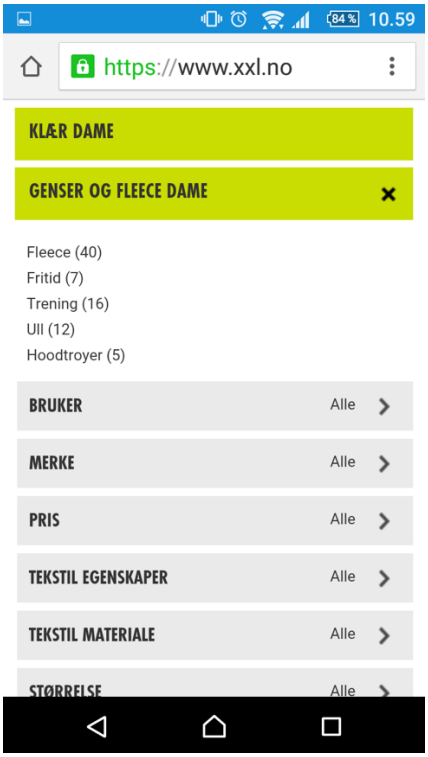

Figure 11: Filter panel - XXL (3)

4.2.3 Usability issues

Following are the observed usability issues as well as the usability issues mentioned by the participants during the retrospective interviews. The amount of times the issue occurred is noted behind every issue, illustrating the frequency of each issue. The below list contains all of the 30 usability issues that were discovered, 8 of them being directly related to facets. The facet related issues are in italics.

H&M

- *Missing the price attribute in the filter panel (2)*
- Too many categories/steps before seeing any products (2)
- Confused by the use of "add to bag" rather than "add to cart" (1)
- Accidentally selected "men" instead of "women", due to the loading time causing the items in the menu to move slightly, in addition to the buttons being too small (1)
- Trouble finding the right product category, due to misleading images next to the labels (1)

Zalando

- *Confused by the two price attributes (2)*
- *Missing a price range slider (2)*
- *Previewed items below the filter panel's "show results" button caused the user to hit one of these and get redirected when attempting to push the "show results" button (1)*
- *Confusing and unfamiliar taxonomy. The filter was called "outer fabric material", rather than "fabric" or "material", like the user expected. The filter was therefore ignored (1)*
- *The extensive amount of available filters fills the whole screen, making the "show results" button hidden until scrolling. Caused the user the ignore it before closing the filter panel, and thus the filter that had been selected was not applied (2)*
- Struggling to find the "add to cart" button, due to full screen product image (1)
- Long loading time caused the user to get redirected to campaign when pushing menu button (1)
- Long loading time caused the user to unintentionally open product description and even add the item to the cart when attempting to open the filter panel (1)

XXL

- *Sub-categories give impression of being a part of the filter panel, causing any applied filters to be removed whenever a sub-category is selected before the user has pressed "ready" (2)*
- *Low flexibility on price filter (2)*
- Illogical taxonomy caused participant to select wrong product category (1)
- Large amount of content causes long loading time and triggers user errors such as accidental selection of elements on the page (3)
- Confusing and disturbing with the suggested items-slider (2)
- Participant thought she was on a product's dedicated page when the filtering returned only one result, causing her to fail when trying to find the "buy" button (1)
- "number of items" field required. If the user fails to select a number before pushing the "buy" button, no feedback is given and the product it not added to the cart (2)
- Too many sub-categories (1)
- When scrolling past the list of categories, the same categories are listed one more time, illustrated by images that covers 60 % of the screen. This requires so much scrolling that the participant gave up on finding the category she was looking for (1)

4.2.4 User satisfaction

The participants rated their perceived ease of use and satisfaction for each website using a five-point likert scale. As figure 12 shows, H&M was on average perceived as the easiest to use when solving the tasks, ranged one point higher than XXL, which got the lowest score. Moreover, the results from the rating of satisfaction with filtering options (figure 13) suggest that Zalando has the most satisfactory filtering options. However, during the retrospective interview, one of the participants pointed out that some of the filtering options provided by this website, such as "collar type" were a bit strange. On average, Zalando was rated 4.5, which is 1.4 points higher than XXL, which on average was rated 3.1.

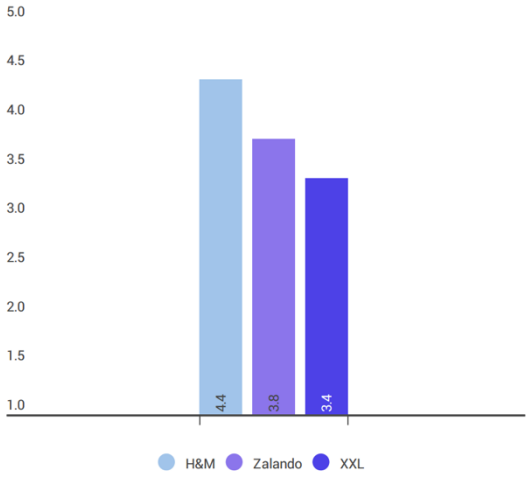

Figure 12: Ease of use

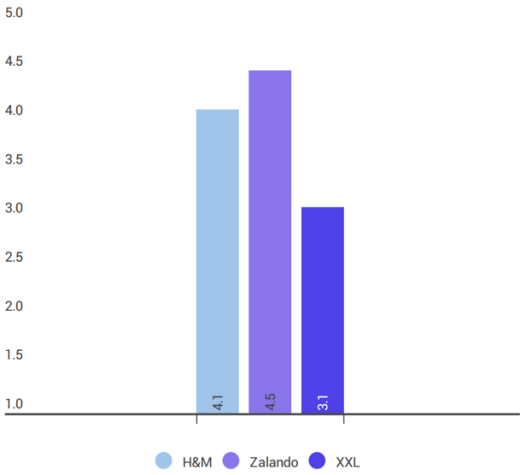

Figure 13: Satisfaction with filtering options

5 Discussion

As described in the introduction, e-commerce is to a large extent prevalent in Norway. Additionally, an increasingly higher proportion of consumers are now using their mobile devices to shop online. Despite mobile devices frequently being described as an easy and available tool, the amount of purchases completed on smartphones covers only 9 % of the total amount of purchases done by Norwegian consumers. Furthermore, it is indicated that better adapted websites and improved navigation can motivate a higher amount of the consumers to complete their purchases using a mobile device (Posten and Bring 2015). The objective of this study has therefore been to explore how users navigate when browsing m-commerce websites, particularly focusing on how faceted navigation is being utilized. Moreover, errors caused by, or related to faceted navigation has been identified. The results of this study are based on an online survey and a usability test. This chapter discusses the findings described in the preceding chapters and finally relates them to the research questions presented in chapter 1.1.

5.1 Survey

Only half of the respondents from the survey conducted during this research reported having ever completed a purchase using a mobile device, despite the fact that 92.1 % reported having visited an apparel store with a mobile device. Moreover, only 13 % reported smartphones as their preferred tool for online shopping, while 6.5 % lists tablets to be their device of choice. These numbers indicate that online stores still have some challenges to overcome when it comes to adapting their websites for mobile users. According to Posten and Bring (2015), the use of smartphones to gather product information before purchasing has increased from 3 % in 2014 to 23 % in 2015, while of the total amount of completed purchases, only 9 % are done via smartphones. It therefore comes as no surprise that the results from this survey show that “finding information about a specific product” is a noticeably more frequent goal than “finding and purchasing a specific product”.

The average age of the respondents who participated in the survey was 28.3. Considering that the target group was people between the age of 18-50, the average age would preferably have been 34. Thus, the demographic diversity could have been better. Additionally, the ratio between male (26 %) and female (74 %) respondents is considerably large. However, taking into account the statistics from Virke (2015) which states that 70 % of the consumers who purchase apparel items online are women, and that shopping apparel items online

within the last twelve months was a criterion for participating, this ratio is quite close to reality.

5.2 Usability Test

In a few cases, the participants of the usability test selected one of the suggested items provided in one of the websites, which in turn may have affected the total amount of utilized filters. Moreover, a source of error analysis was not conducted for each task specifically, due to the tasks being solved in the same order (only the order of the websites was randomized). This would especially have affected the number of errors on task 2, since the navigation strategies for task 1 and task 2 similar to such a degree that a learning effect would have been very likely.

The mediocre internet connection on campus might have affected the results of the usability testing, such as the ones caused by the increased time of loading for one of the websites. This is, however, a realistic and common situation, as mobile users are often on the move and thus connects to various networks with varying speed. These results are therefore still considered to be valid.

Another aspect to consider is that since these results are based on apparel m-commerce only, the specific filters identified as the most frequently used are not applicable to other industries. Nonetheless, being aware of the remaining discovered usability issues should be relevant regardless of industry.

5.3 Research Questions

5.3.1 Research Question 1

How do users utilize facets when visiting an online store using a mobile device?

a) when looking for a specific type of product
b) when looking for information about a specific product
c) when exploring the website to see if they discover any items of interest?

The results from the usability testing imply that facets are rarely utilized for exploratory purposes. In these cases, the users seemed willing to do a larger amount of scrolling in order to find the perfect item. Moreover, the results indicate that the more the user know about the desired item's specifications, one will accordingly utilize a higher amount of facets. This interpretation is based on the considerably large difference in the amount of applied facets between the three tasks. Task 1 included specifications on color and price,

while task 2 included a picture of a specific item the participant was asked to locate. Task 3, however, was an exploratory task with no specific criteria. The only criteria for this task was that the product should be considered appropriate to wear together with a second item in which they were handed a picture of. As illustrated in figure 3 (section 4.2.3), facets were rarely utilized for these tasks compared to task 1 and task 2.

Furthermore, it is interesting that, while Zalando got the highest score on satisfaction with filtering options, H&M got the highest score on ease of use. As Zalando provides a noticeably larger selection of filters than H&M does, these results imply that the structure and usability of the faceted navigation is just as important as which and how many filters are provided. Additionaly, the results on ease of use corresponds well with the amount of usability issues identified. As described in section 4.2.3, H&M had the lowest amount usability issues with 5 identified issues; followed by Zalando, which had 8; and XXL which had 9.

5.3.2 Research Question 2

Are there any tendencies of errors that are caused by or related to faceted navigation?

Before proceeding to answer this question, it is important to make a distinction between *mistakes* and *slips*. Norman (1983) explains an error in the intention as a mistake, and an error in executing the intention a slip. An example of a mistake can in this case be if a user selects the product category “jackets” when in fact looking for a cardigan, which is located in the “sweaters” section. Moreover, an example of a slip can be if a user attempts to apply a filter, but then forgets to push the “add filter” button before closing the filter panel.

Several of the slips made by the users during the usability testing were caused by an excessively long time of loading the page. This in turn caused the user to unintentionally select unwanted elements on the website, as the elements moved once the website finished loading other elements on the site. This was a more frequent issue for one of the websites than for the others. The same website provided a slider with suggested items placed above the product list, which on multiple occasions confused and disturbed the participant when solving the tasks. The same slider might also have had an impact on the unsatisfactory time of loading this website.
Another error which occurred with two different participants was that the extensive amount of filters filled the whole screen, making the “show results” button hidden until scrolling. The participant thus ignored the button and closed the filter panel mistakenly

believing that the selected filters had been applied. Finally, the results of this study support Holst's (2015) claim, as decribed in section 2.1.2, that insufficient filtering logic and interface design can affect usability and cause problems for the users.

6 Conclusion

In this study, three of the most frequently visited online apparel stores in Norway were evaluated through a usability test. The study uncovered several different usability issues related to navigation on all of the websites that were tested. These findings support the claim on unsatisfactory navigation that was introduced in the introduction, and may explain the low share of purchases done with mobile devices. Results further imply that faceted navigation is frequently utilized and thus making the process of locating the desired items more efficient. However, in the situations where the user is simply exploring the website with no specific item in mind, facets proved to not to play any important role while navigating.

6.1 Future Work

To further investigate the importance of the findings from this study, it would be interesting to consider the identified usability issues and make a prototype for an improved faceted navigation. By further testing and improving this prototype and in turn implement this in an actual apparel m-commere website one could have seen to which degree it impacts the users' navigation strategies as well as the number of completed purchases.

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Appendix A – Questionnaire

(Translated version)

Thank you for your time and contribution to my study. This questionnaire is part of my Master's thesis in which I am studying user behavior in online shopping. The questionnaire is meant for you who are between the age of 18 to 50, and have been shopping for clothing or shoes **online** during the last 12 months. If you do not meet these requirements, please disregard this survey. The survey will take approximately five minutes to complete.

1. Approximately how often do you shop for **clothing or shoes** online?
    - 1-2 times a year
    - 3-6 times a year
    - 6-12 times a year
    - 1-2 times a month
    - or more times a month
    - I don't know

2. Write down the names of the stores (maximum 3) that you most frequently visit when shopping online for **clothing**.

3. Write down the names of the stores (maximum 3) that you most frequently visit when shopping online for **shoes**.

4. What kind of device do you most frequently use when shopping for clothing or shoes online?
    - PC/Mac
    - Smartphone
    - Tablet
    - Other: (input field)

5. In the previous question you specified what kind of device you most frequently use when shopping for clothing or shoes online. Why is this the device you most frequently use for this purpose?

6. Have you ever visited an online apparel store using a mobile device (i.e. smartphone or tablet)?
    - No
        - Why haven't you visited an online apparel store using a mobile device before?
    - Yes
        - Have you ever completed a purchase in an online apparel store using a mobile device?
        - What do you consider to be the greatest challenge when shopping online using a **mobile device**?
        - What tend to be your motivation when you visit an online apparel store using a **mobile device**? (choose the most frequent one)
            - To find and purchase a specific product
            - To find information about a specific product
            - Just browsing through to see if I can find anything of interest
            - Other: (input field)

7. What is your age?

8. What is your gender?
    - Female
    - Male

Appendix B – Usability Test Plan

Scope

The objects to be tested are three different apparel online stores on mobile devices. The focus of the test will be the use of facets during navigation.

Purpose

Faceted navigation can be structured in many different ways (I will refer to the theory chapter here), and so the structure and functionality of facets vary greatly between the different providers' websites. The purpose of the user test is to answer the following questions:

- How do users utilize facets when visiting an online store using a mobile device?
- Does the utilization of facets depend on the user's goal for visiting the website? (The user's goals are represented by the different tasks they will be solving)
- Does an online store's navigation structure affect the user's information seeking strategy?
- Does the navigation structure lead to perceived differences in the usability of the different online stores' websites?
- Are there any tendencies of errors that are caused by or related to faceted navigation?

Sessions

Prior to the user test, the participants will be asked to read and sign an informed consent, before being introduced to the three different websites they are going to test. I will make sure that they are able to locate the products section on each website before proceeding. They will then be asked to fill out a short background questionnaire. The order of the websites will be randomized, meaning that the test order of the websites will vary between the participants. The participants will be handed three task-based scenarios for each of the websites, and will be encouraged to think aloud while solving the tasks. After solving all of the tasks for the first website they are presented with, the participants will be asked to rate their perceived ease of use and their satisfaction with the website. A short semi-structured interview will then be conducted, in which part of the questions will be

predefined, and part of them will be based on observations made during the test. This procedure will then be repeated for the two remaining websites. The test sessions will be video and audio recorded and the retrospective interviews will be audiorecorded.

- 45 minutes per session
- 30 minutes between each session
- 5 sessions a day

Equipment

- Smartphone: one Android device and one iOs device
- Video camera
- Tripod
- Audio recorder
- Informed consent
- Background questionnaire
- Notepad

Participants

- Preferably 10
- Experienced mobile users
- Have been shopping online for clothing or shoes during the last 12 months

Scenarios

There will be three different types of tasks. The participants get to spend maximum five minutes per task. The goal of the tasks will be the same for all three websites, but some of the attributes/criteria (such as the product itself, or the product's color) of the tasks will vary. These variations are necessary due to the websites not offering the same products, and to avoid participant fatigue.

Looking for a specific type of product

- You are looking for a new white sweater, but you can't afford to spend more than 400,- NOK. Find a sweater you like that meets the criteria and put it in the basket.

Looking for information about a specific product

The participant is handed a picture of a product along with the task description.

- You were looking at this sweater last night, but you want to find out about the fabric before you decide whether to purchase it or not. Locate the product and find out about the fabric. Say it out loud.

Exploration task

Women:

The participant is handed a picture of a product along with the task description.

- You bought this skirt a while ago, but then you discovered that you don't really have a matching top to go with it. Find a top/sweater/blouse that you could see yourself wear with the skirt and put it in the basket.

Men:

The participant is handed a picture of a product along with the task description.

- You bought these jeans a while ago, and now you're on the lookout for a nice t-shirt or sweater to go with it. Find a t-shirt/sweater/shirt that you could see yourself wear along with the jeans and put it in the basket.

Metrics

Background questionnaire

- Estimate how frequently you shop online for clothing or shoes
- What kind of mobile device are you using?
- Have you been visiting any of these websites before?

Ease of use and satisfaction after completion of the tasks for each website

- Please rate how easy you think it was to solve the task on a scale from 1-5, where 1 is very difficult and 5 is very easy.
- Please rate your satisfaction of the website's filtering options on a scale from 1-5, where 1 is very unsatisfied, and 5 is very satisfied.

Retrospective interview

- How did they experience the process of solving the tasks at the particular website. Did they experience any problems?
- Did they miss any kind of functionality?
- If any of the facets that could have eased the process were overlooked, ask them about why they didn't utilize them. Was the user not aware of their existence? Was the user not able to find them?

- If all of the facets were overlooked, ask the participant if he/she usually utilize facets
- If any problems or error were observed, ask them about their actions

Quantitative metrics

The quantitative data to be measured:

- Successful completion rates
- Error rates
- Non-critical error rates
- Number of utilized facets
- User satisfaction

Procedure checklist

1. Introduction
2. Informed consent
3. Present the websites
4. Background questionnaire

Start video and audio recording

5. Test website #1

Stop video recording

   a. Rate ease of use/satisfaction
   b. Retrospective interview

Start video recording

6. Test website #2

Stop video recording

   a. Rate ease of use/satisfaction
   b. Retrospective interview

Start video recording

7. Test website #3

Stop video recording

   a. Rate ease of use/satisfaction
   b. Retrospective interview

Stop audio recording

Test order

Zalando = A

H&M = B

XXL = C

Participant number	1st	2nd	3rd
1	A	B	C
2	B	C	A
3	C	A	B
4	A	B	C
5	B	C	A
6	C	A	B
7	A	B	C
8	B	C	A

References

Usability.gov (2015) *Planning a Usability Test* [online]. Washington, D.C.: U.S. Department of Health and Human Services. URL: http://www.usability.gov/how-to-and-tools/methods/planning-usability-testing.html (18.10. 2015)

Appendix C – Informed Consent

GJØVIK UNIVERSITY COLLEGE

FACULTY OF COMPUTER SCIENCE AND MEDIA TECHNOLOGY

Samtykke til intervju «information seeking behavior in m-commerce»

Netthandel er et globalt økende fenomen, parallelt med økende bruk av mobile enheter. Jeg vil derfor se nærmere på intuitiviteten og brukervennligheten til mobiltilpassede nettbutikker, og herunder brukeratferd ved bruk av disse. Jeg er spesielt interessert i bruken av filtre og fasettert navigasjon.
Metodene som benyttes er kvalitative retrospektive intervjuer med personer i brukergruppen, i etterkant av observerende brukertesting. Jeg håper gjennom intervjuene å få dypere innsikt i brukerenes strategier og innstilling til brukren av fasetter og filtre i netthandel på mobile enheter.

Lydopptak

Jeg ber om å få ta lydopptak av intervjuet, slik at jeg i etterkant får mulighet til å transkribere hele eller deler av intervjuet. Det er helt valgfritt om du ønsker å tillate lydopptak eller ikke. Lydopptakene vil slettes fra innspiller og lagres i passord-beskyttet mappe, som kun undertegnede vil ha tilgang til. Lydopptakene vil lagres passord-beskyttet til utgangen av november 2015, og vil deretter slettes permanent.
Lydopptakene er per definisjon ikke direkte personidentifiserbare ettersom de ikke lagres sammen med andre opplysninger.
Resultatene fra prosjektet vil kunne bli muntlig presentert, samt publisert i form av en rapport som vil være tilgjengelig i en åpen database. Enkeltpersoners opplysninger vil derimot ikke under noen omstendigheter inkluderes i publisert eller presentert materiale.
Det er frivillig å delta. Du har på et vilkårlig tidspunkt rett til innsyn i informasjonen du har gitt, og har rett til å trekke deg uten å oppgi grunn - all informasjonen du har gitt vil da slettes.

Ta gjerne kontakt med meg dersom du har noen spørsmål angående din deltakelse.

Takk for ditt bidrag!

Med vennlig hilsen

Marte Johnsen
Masterstudent ved Interaksjonsdesign, HiG
Tlf: 917 41 514, marte.johnsen@hig.no

Jeg tillater at det blir gjort lydopptak: Ja: ▢ Nei: ▢

Jeg samtykker til deltakelse:

Dato: _____ Underskrift: _____

Appendix D – Ease of Use and Satisfaction

Rangering av brukervennlighet

Nettbutikk:_____

Deltaker nummer:_____

På en skala fra 1 til 5, hvor 1 er veldig vanskelig og 5 er veldig enkelt, hvor enkelt synes du det var å løse oppgavene ved hjelp av nettbutikken du nettopp testet? Sett en ring rundt svaret ditt:

Veldig vanskelig	1	2	3	4	5	Veldig enkelt

På en skala fra 1 til 5, hvor 1 er veldig misfornøyd og 5 er veldig fornøyd, hvor fornøyd er du med de tilgjengelige filterene på nettbutikken du nettopp testet? Sett en ring rundt svaret ditt:

Veldig misfornøyd	1	2	3	4	5	Veldig fornøyd

Appendix E – Usability Test: Observations and Retrospective Interviews

Ease of use

H&M: 5, 5, 3, 5, 5, 4, 4, 4 = 4,4
Zalando: 3, 5, 4, 4, 4, 4, 2, 4 = 3,8
XXL: 4, 2, 3, 5, 4, 3, 3, 3 = 3,4

Satisfaction with filtering options

H&M: 4, 4, 4, 5, 5, 3, 4, 4 = 4,1
Zalando: 2, 5, 5, 5, 5, 4, 5, 5 = 4,5
XXL: 3, 3, 3, 4, 3, 2, 5, 2 = 3,1

Participant #1

H&M

1. Opened the filter panel and selected the correct color. The participant then kept scrolling up and down, seemingly to look for the non-existing price attribute. Opened the sorting panel and selected increasing price.
2. Selected the color filter again. Quick and easy.
3. Tops > sleeveless > selected item. No use of facets for the exploration task.

Interview

Helt greit. Litt for mange kategorier å klikke seg i gjennom. Mindre filtreringsmuligheter. Kunne ikke velge pris, måtte sortere etterpå. Pleier ikke å være på jakt etter noe som koster akkurat 400 kr, så det går egentlig fint at man ikke kunne velge pris.

Zalando

1. She opened the filter panel and selected the desired color. When trying to choose the price boundaries, the participant got confused by the two different price attributes and selected “price from” instead of “price to”. Due to the product image covering all of the screen and no cues encouraged scrolling, the participant struggled to find the “add to cart” button. She went back to the results page and then chose the desired product one more time. She then tapped the shopping cart icon to see if the product had automatically been added to the cart when tapped on. She then tried scrolling and succeeded to add the item to the cart.
2. Opened the filter/sort panel, and selected color and “price to”, and had no problem finding the product.
3. T-shirts and tops > chose item. Did not choose any facets for the exploration task.

Interview

Skjønte ikke hvordan man skulle legge til i handlekurven. Savna ikke noe funksjonalitet. Nesten litt for mange filtre.

XXL

1. Non logical taxonomy causes the participant to choose the wrong product category. When looking for a fleece jacket, she chose the category “jackets” instead of the category “sweaters and fleece”. A great amount of content on the results page made the loading time noticeably long. When two suggested items suddenly appeared above the results, the participant accidentally tapped on one of them and got redirected to this product’s page. After returning to the “jackets” results, she tried to find the right sub-category without succeeding. She tried a couple of them before leaving the whole “jackets” page, and discovered the “sweaters and fleece” category. She then selected one of the suggested items from the slider above the results.
2. Simply chose the category trousers > softshell. Did not use any facets.
3. T-shirts > tops. No facets.

Interview

Det var litt vanskelig å løse oppgavene. Forvirret av taxonomy. Forvirrende med jakke-reklamene. Forstyrrende. Ikke ha så mye ekstra som bruker tid på å laste inn.

Participant #2

H&M

1. Chose the sweater category, went straight to sorting from lowest price to highest price, then went to the filter panel and selected the right color.
2. Chose the right category, opened the filter panel and marked the color blue before tapping “use”. The page refreshed, and the filter was not applied. She repeated the procedure, and it worked the second time.
3. Localized the skirt first, to see if the store offered recommendations for matching products. It did provide recommendations, and the participant chose a top with the same design as the skirt.

Interview

Gikk ganske fort og greit. Filtreringa og sorteringa funka bra. Filtrering ble ikke registrert ved første forsøk.

Zalando

1. Chose category and sub-category, opened the filter panel and selected color and pressed “show results”. The majority of the results turned out to be too expensive, so she opened the filter panel once more to choose the price limits. She first opened the “price from” facet, before realizing that this wasn’t what she was looking for. She then chose “price to”. She showed the results and quickly found a suitable product.
2. Chose categories, opened the filter panel, chose color, and “price to”. Quickly found the product.

3. When the page appeared to be finished loading, the participant pressed the menu button and intended to select a category. Presumably, the page was still loading, and caused the user's action to lead to the page being redirected some kind of campaigne. As the page one again took some time to load, the participant was trapped while it loaded. She tried to push the logo, but nothing happened. She then discovered a link in the top right corner, called "shop". After tapping this button, she finally got redirected to the main site. Simply chose categories and scrolled down to a desired product. No use of facets.

Interview
Gikk greit, fram til hun kom borti en link som sendte henne til en ny side. Funksjonaliteten virka greit.

XXL

1. The page took a long time to load after choosing product category. This caused the user to try and tap the "filter options" button, but as the page finished loading at the same time, she just got redirected to a different location at the same page. She then chose the right subcategory. When clicking on the filter panel, she got redirected to the top of what seemed to be same page, and had to scroll quite a long time to discover that the filter panel had opened at the bottom of the page. She first chose color, and then proceeded to select the subcategory "product type", and at this point she said "and now I'm going to choose the product type, if that doesn't make everything fall a part". I turned out she was right. It seems like when choosing a second filter, the first one got deleted. The results only filtered via product type. She then had to reopen the filter panel to select the correct color.
2. She started by saying that she wanted to locate the product's brand. The she chose the category pants, opened the filter panel, chose the correct brand, and pushed "ready". She then scrolled down the results until she found the correct product.
3. Chose product category and sub-category and products with the preferred color was ranked high on the results page without any use of filters.

Interview
Litt vanskeligere enn på H&M. Synes ikke filtreringa var noe særlig bra. Kunne bare velge ett filter om gangen, selv om det var netmange kategorier man kunne velge. Burde vært mulig å velge flere. Gikk jo litt treig. Alt det nødvendig av filtre.

Participant #3

H&M

1. Sweaters > cardigans. Chose the "color" filter before selecting the desired product. Quick and easy.
2. Used the banner category "women" instead of the menu. Succeeded in selecting the correct categories. Chose the color filter. The correct item showed up among the first results.
3. Used the color filter to see items of the preferred color. Quick and easy.

Interview

Veldig greit. Store knapper og veldig enkelt å manøvrere seg rundt på sida. Veldig greit at man kommer rett til oversikt over klær med én gang etter at man har valgt kjønn. Klærne også fordelt ganske greit i kategorier. Veldig fine filtreringsmuligheter. Store knapper og enkelt å trykke på! Har med de viktigste filterne, slik som farge og sånt.

Zalando

1. Used the color filter.
2. Used the color filter. Then applied another sub-category. Quick and easy task.
3. No use of facets.

Interview

Greit, men litt misvisende i starten når man kunne velge kjønn, og så ble man sendt videre til menyen. Kunne jo like gjerne ha gått inn på menyen med én gang? Valg av kjønn førte jo bare til kampanjer og sånt. Mye å velge i filtreringa – masse muligheter.

XXL

1. Had no problem selecting the right categories. An item that met the criteria showed up among two showcased suggested items. The participant therefore chose this one.
2. Chose the correct categories. The item once again showed up among two showcased items.
3. Quick and easy. No use of facets.

Interview

Veldig enkelt og oversiktlig.

Participant #4

H&M

1. Selected the correct categories. Then chose to tap “sorting” first, and selected “from lowest to highest price”. A black sweater was among the first results, so she chose this. She then selected the correct size, but got confused by the confirmation button, which was labeled “add to bag” rather than “add to cart”. She scrolled further down the page to see if there was another button there. She was a little unsure, but decided to try the “add to bag” button” which turned out to be the correct one.
2. Used the categories. Selected “filter” and the right color. Had a look at the results, and then selected “sorting” and selected “price low to high”.
3. Tops, sleeveless, no use of facets.

Interview

Litt mindre oversiktlig. For det første, så er menyen som du må trykke på for å finne produktene er veldig gjemt på mobilen, så man må liksom vite at det er der man skal trykke. Litt vel mye trykking for å komme frem til at jeg skal ha en genser. Når jeg har funnet riktig kategori, er det vanskelig å velge pris. Farge gikk greit, når jeg først skjønte at “filter” betydde at man kunne velge bl.a. farge – det kunne ha vært tydeliggjort. Valgte

ved en feiltakelse “mann” i stedet for “dame”, fordi menyen hopper, også er det så lite i tillegg. Hadde jeg vært mann/hatt tykkere fingre, så ville jeg ikke ha klart å trykke riktig i menyen. Forvirrende at det stod “legg i bagen”, i stedet for “legg i handlekurven”. Skjønte ikke med én gang at det var det samme som å legge i handlekurven. Tenkte kanskje det betydde at man kunne legge noe til side hvis man vil se på det senere.

Zalando

1. Sweaters and cardigans > sweaters > results. She then tried the “categories” button left to the “filter/sort” button, to see what was in there. No additional categories to see, she proceeded by selecting the “filter/sort” button, and selected the right color and “price up to”
2. Sweaters and cardigans > knitted sweaters. Selected color and “price to”. Found the item without any problems.
3. Clothing > T-shirts and tops. Selected one of the first results.

Interview

Enkelt, fordi de har så mange underkategorier, så man slipper å lete så lenge etter det man skal ha. Burde vært mulig å skrive inn nøyaktig den priskategorien du er ute etter.

XXL

1. Clothing > women’s clothing. Tapped the “filter” button. Selected the correct category. The page updated, and she then selected the sub-category “fleece”. She tapped the drop-down menu with sorting options and selected “increasing price”. She reopened the filter panel and selected the price attribute and chose the “500-1000 NOK” option. She continued by selecting the desired color. The filtering resulted in only 1 item, which confused the participant, as she didn’t realize this was only the product preview, the way it would appear next to other potential products in the result. As this was the only product in the result, she thought she was on this product’s dedicated page, and therefore didn’t manage to find the shopping cart. She then tried tapping on the product and got redirected to the product’s dedicated page. She selected a size, but did not notice the “number of items” field above the “buy” button (which was 0 by default), and went straight to tapping on this button. Nothing happened, and she got no feedback telling her to choose number of items before proceeding. The product was not added to the cart.
2. Clothing > women’s clothing. Selected the sub-category “trousers women”. The page didn’t respond and she continued scrolling down the page, and almost full size pictures of the different women’s clothing categories appeared. She tapped on the picture for “trousers”. She selected the correct sub-category. Opened the filter panel and selected the desired brand and the price range “1000 - 1500”. She found the desired item and it’s details.
3. Clothing > women’s clothing > t-shirts, tops and piqué > training. Drop-down menu for sorting: increasing price. No use of filters. Did not choose number of items this time either.

Interview

Litt mange underkategorier. Virka som om det var veldig mange jeg kunne ha valgt for å komme frem til samme produkt. Litt rotete. Kunne vært litt bedre prisalternativer (ref. filter), for det var så store spenn på det jeg kunne velge i mellom. Ellers var det greit, men det var litt for mange kategorier, og det gikk litt treigt.

Participant #5

H&M

1. Cardigans and sweaters > sweaters. Opened the filter panel and selected the correct color. Opened the sorting panel and selected “price low to high”. Had no problem finding a proper item and putting it in the cart.
2. Cardigans and sweaters > sweaters. Scrolled a little before opening the filter panel and selected the correct color. Had no problem finding the requested item and its material.
3. Used the categories and scrolled down to a suitable product. No use of facets. (Got feedback telling her to choose the size when trying to add the item to the cart without doing so)

Interview

Veldig enkelt og greit. I hvert fall når du vet veldig konkret når du skal ha – men når du skal finne fram til et spesifikt produkt, så var det litt vanskeligere. Men igjen, hvis jeg faktisk hadde sett på dette produktet tidligere, så hadde jeg sikkert huska hvor jeg hadde funnet det. De kunne ha tilbudt “tidligere søk” funksjonalitet.

Zalando

1. Sweaters and knitted cardigans. Opened the filter panel and selected the right color. Chose “price to” and said “Oh, this site was very straightforward!” Quickly found a sweater that met the criteria.
2. Sweaters and knitted cardigans. Opened the filter panel and selected the right color, as well as defining “price up to” and “price from”. Accidentally tapped on one of two previewed items below the “show results” button when attempting to hit the button. “No, no, no, now I pushed the wrong button *sigh*”. Reopened the filter panel and selected the same filters as before. Found the correct item within few seconds.
3. Used categories to find the desired product type. Used the filter panel to select the preferred color. Selected size and put the item in the shopping cart.

Interview

Veldig enkelt og greit, masse bra filter og ja, veldig bra. Veldig oversiktlig og bra – lett å finne frem.

XXL

1. Tried entering “fleece” in the search box. The results showed items for both women, men and children. After scrolling both up and down for a few seconds, she returned to the search box and further specified the search by writing “fleece pink”. This results included only on pink fleece jacket (even though the store has

__ pink fleece jackets in their product range). She selected this jacket and mumbled “put in… where is it?” as she scrolled up and down the screen, looking for the “add to cart” button. She found the button labeled “Buy” and without hesitating selected the number of product and pushed the button. The system then gave her feedback, telling her to also select a size. She selected a size and pushed the button once more, adding the product to the cart.

2. Selected women’s clothing, scrolled past the sub-category labels and tapped the category picture for “trousers” below. She then chose the wrong sub-category, and instead of removing this filter by tapping the X, she pushed the back-button in the browser to go one step back. She then tried the search box, by entering the product’s brand. “I wonder if it’s possible to search the price as well.. No. Probably not...” as she scrolled up and down the results page. She then opened the drop-down sorting menu, selecting “increasing price”. She was only able to see a given number of the results at once, and had to push a “see more” button to see more of the results. She did this multiple (five?) times and when she finally reach the right price area, she had to wait for the product images to load. She wasn’t 100 % sure that she had localized the correct item, and at that point she said “I’m not sure if I want to try and select this item, in case I lose my position when I go back to the results. (Probably because she already had invested so much time in trying to find the right product). She managed to select the correct product after all, but spent some time finding the details of the fabric.
3. Traning > fitness. Got unsure if this was the right way to go before the results even loaded, and selected clothing > women’s clothing instead. “Maybe if I find the tights first, then the site will suggest some matching tops. Or maybe not”. She scrolled past the sub-category labels and got to the image category section. She didn’t find any “tops” category, so she selected the “sports bra” category.

Interview

Veldig vanskelig, veldig vanskelig. Kan jo være fordi jeg ikke har vært så mye på sånn type nettbutikker. Det var flere ting jeg savna – sånn som da jeg skulle finne overdel. Jeg fant liksom tightser, men ingen spesifikk kategori for overdeler. Hadde vært greiere hvis man kunne spesifisere nærmere hvilken pris man var ute etter.

Participant #6

H&M

1. Scrolled down and then up again. “Is it under tops, or? No. Oh, there it is. Cardigans and sweaters”. Cardigans and sweaters > Sweaters. Opened the filter panel and selected the right color. Clicked the sorting panel and selected “price low to high”. Quickly and easy found an item that met the criteria and put it in the cart.
2. Cardigans and sweaters > sweaters. Immediately clicked the filtering panel and selected the correct color. Proceeded to click the sorting panel and select “price low to high”. Easily found the product and information about its material.
3. Used the categories. Opened the filter panel to select the color black. Scrolled down the results until she found a suitable item. No poblems with adding the item to the cart.

Interview
Jeg synes den var ganske bra. Men jeg har jo vært der en del før. Pleier å ha lett for å finne ting der. De bildene ved siden av kategoriene synes jeg ikke stemte så godt. Jeg må liksom lese labelen uansett. Det var jo ikke så mye å filtrere der heller. Savner å kunne sortere f.eks topper etter "pentopper", "hverdagstopper" og "treningstopper", litt mer etter anledning, kanskje. Hamburgermeny-knappen ser ut som om den går litt utenfor skjermen, så jeg prøvde å zoome ut, for jeg trodde ikke jeg så hele bildet. Synes det er rart at f.eks "designere" står over de vanlige kategoriene. "Nyankommet" er jo greit å ha langt opp, men. Sleit med å finne "cardigans og gensere"-kategorien, fordi jeg så på bildene først, og der så det ut som en poncho, så da fortsatte jeg å lete lenger nedover. Skjønner heller ikke hvorfor cardigans og gensere skal være en og samme kategori, for det er jo to forskjellige ting. Men sånn er det jo på mange nettbutikker.

Zalando

1. Started by entering "sweater" into the search box."But this is maybe not the way I would have approached it if I was looking for a white sweater". She started over again, selecting "Sweaters and knitted cardigans". Opened the filter/sort panel, selected the correct color and pressed the "show results" button. Reopened the filter/sort panel and specified the "price up to" filter. Found an item from the results and easily put it in the cart.
2. Sweaters and knitted cardigans. Opened the filter/sort panel and selected the correct color. "Price from" and "price up to". "Collar type? Neh. Too much work." "But maybe I could have chosen the sweater type" she said, and reopened the filter/sort panel. but didn't find the filter type she was looking for, since it was called "outer fabric material" rather than "material". She scrolled down the results and found the product she was looking for. Had no problem finding out about the material.
3. Chose the "t-shirt and tops" section. Opened the filter/sort panel and said "is there a party category in here? No, I doesn't seem like it… Hmm, pattern… Yeah, maybe I'll choose a pattern." Had a look at the different pattern options, and discarded it. Then reopened the filter/sort panel and selected the color blue. "But isn't there a party category in here?" Reopened the filter/sort panel and then discovered the "category" button next to it. Still no "party" category, but she specified it further by selecting "tops". She never pushed the "show results" button after selecting the color blue, so the results show tops in every color. She selects a white blouse and puts it in the cart.

Interview
Mer filtreringsmuligheter, men de var litt rare, kanskje. Kragetype, f.eks. Jeg savner å kunne sortere etter anledning, f.eks "fest". Jeg er jo også redd for å velge for mange typer filtre, sånn at jeg kanskje ikke får se alle de produktene jeg er ute etter. "Kolleksjon" og "velg kolleksjon" trodde jeg betydde at man kunne velge en design-kolleksjon. Noen av filterne kunne ha vært open by default, i hvert fall de mest brukte. "Pris" f.eks kunne ha vært sånn bar (range slider). Burde være mulig å velge eksakt pris. Så ikke helt "kategorier" med én gang – den som ligger ved siden av "filter". Men jeg fant jo frem.

XXL

1. She started by entering “fleece” into the search box. “I’m pretty lazy – I always do this when I’m looking for a particular item”. The first thing that shows up on the screen is “people who searched for “fleece” have been looking at” and then a slider with five promoted products. She looked through it, scrolled down to the filter panel and tried to find a “color” filter. She opened the “category” filter and selected “women’s clothing”. She opened the filter below, labeled “user” and said “user? what’s that?”she discarded it and went on to see the results. Some of the items turned out not to be made of fleece, so she discarded them and kept on scrolling. She found a suitable item and proceeded to put it in the cart. She noted that she thought it was weird that the button was labeled “buy”, rather than “add to cart”. After completing the task, she expressed “I’m probably the one with the biggest problems when solving these tasks” followed by a nervous laughter.
2. She opened the menu, and looked through the different categories. As the trousers she was looking for was of the outdoor kind, she was unsure about whether she should select the “clothing” category, or any of the other categories. She was looking for a “brand” category, which not existed. She then tried the search box, entering the brand “Bergans”. She opened the filter panel and the “category” filter and selected “women’s clothing”. She opened the filters “user” and “brand” in which she already had chosen different values, but she reselected them anyway before clicking the “ready” button. She then discovered that the “real” results was placed further down the page, in addition to the slider she was looking at when solving the previous task. She scrolled through the results, past the item she was looking for, as it seemed to be of a different color. When reaching the bottom of the results, she realized this slip, and started scrolling up again. She then discovered the item she was looking for and had no problem finding out about its material.
3. Women’s clothing > T-shirts, tops and piques. Scrolled right past the slider with suggested items and said “This time I’m scrolling past this useless stuff”. Found a suitable item. No use of facets.

Interview

Ikke veldig vanskelig, men litt bedre filtreringsalternativer kanskje. Og de der foreslåtte produktene som dukka opp øverst på siden gjorde at jeg trodde det var de som var resultatet. Jeg syntes jo det var litt lite med 5 resultater. Men så fant jeg jo de egentlig resultatene lenger ned på siden. Har vært inne på verre sider. Nelly er mye bedre. Filtrering har veldig mye å si for meg. Få filtreringsmuligheter på søkeresultater. Veldig mye innhold på sida.

Participant #7

H&M

1. Sweaters and cardigans. Opened the filter panel, and selected colour AND size. Found a suitable item, but almost hit the “share” button instead of the “put in bag” button.
2. Sweaters and cardigans. Scrolled down to see if he could find the sweater among the results. Then aimed to open the filter panel, but had accidentally hit

an item while scrolling, so he got redirected to a specific product's site. Opened the filter panel, but didn't select anything. Then opened the sorting panel and selected "price low to high". Found the item and its material without any problems.

3. Shirts > casual. Chose one of the first ones. No use of facets.

Interview

Helt greit, ingen overraskelser. Det var helt kurrant. Jeg vet ikke hvorfor jeg ikke benyttet meg av fargefilteret.

Zalando

1. Noticed a campaign banner at the front page with a man wearing a nice, white sweater. He clicked this picture to have a look at the sweater, but instead he got redirected to some kind of campaign site. He scrolled down the page, viewing a number of different products – none of them being the white sweater that triggered his attention. He tried the sales banner and had some complications, deemed not to be relevant for the task (I can have a look at this later). Opened the menu, selected sweaters and knitted cardigans. Opened the filter/sort panel and selected "price up to" and hit "show results". He kept scrolling through the results until he found a white sweater. Quick and easy added it to the cart.
2. Sweaters and cardigans. Opened the filter/sort panel and selected the correct brand. Did not push the "show results" button, since it was not visible due to the high amount of different filters above it. The filter was therefore not applied. He reopened the filter/sort panel, selected the brand, and this time scrolled down to push the "show results" button. He quickly found the item and its material.
3. He entered the "News and style" banner at front page. He then tapped the first picture, illustrating different types of items. He swiped right, moving through different styles showcasing different types of items. He selected one of the products from there and easily put it in the cart.

Interview

Synes det var en kurrant oppgave å løse. Det var enkelt og greit. Det er jo en del ting jeg setter store spørsmålstegn ved. Bl.a. Den tilbudsdelen hvor man ikke kunne velge kategorier dynamisk som når man handler via den vanlige menyen. Man måtte velge én og én kategori. Utover det synes jeg det gikk enkelt og greit. Zalando er en av de bedre nettbutikkene – det må jeg bare få lov til å si.

XXL

1. Men's clothing. Opened the filter panel. Selected sweaters, fleece and shirts. Reopened the filter panel, opened the "price" facet and selected 500-1000. Clicked on "ready". Scrolled down to have a look at the results, but went back to the filter panel. Selected the sub-category fleece. Scrolled down to the results (past a couple of blue fleece jackets) and returned to the filter panel and reopened the "price" filter. Selected 500-1000 and pressed "ready" this time. Scrolled down to the results and selected a green fleece jacket. Scrolled down to see if there was additional colour available of that product, but it turned out the

other color was sold out. Went back to the results, but all of the sweaters there were closer to 1000 NOK than 500, and therefore too expensive for his budget. He reopened the filter panel and selected the colour blue before pressing “ready” again. The single item of the results was too expensive. He therefore selected one of the suggested items from the above slider which cost less than his budget and was the right color.

2. The participant entered the item’s brand in the search box and quickly scrolled down to the right product in the results. No problem finding out about its fabric. No use of facets.
3. Men’s clothing > T-shirts and piques. Selected the last item of the first page of results. But changed to a different color than the previewed one before adding it to the cart. Selected both size and number of items before adding it to the cart.

Interview

Rotete nettside. Jeg opplevde filtreringa som et eneste stort kaos. Det var uvant. Nettsiden i seg selv virker veldig lite mobilvennlig. Fordi at når jeg er på xxl på nett, så skal jeg jo i utgangspunktet finne klær eller shit, jeg i utgangspunktet skal ha. Menyknappen er veldig liten. [...] Små lenker å trykke på. Jeg trykka på fleecen som var grønn, for av erfaring så vet jeg at man kan trykke på og kanskje velge farge på produktet. Men nå var det jo utsolgt i den andre fargen denne gangen.

Participant #8

H&M

1. Cardigans and sweaters > sweaters. Opened the sorting panel and selected “price low to high”. Found a product with the correct color among the first results. No problems adding the product to the cart.
2. Cardigans and sweaters > sweaters. Opened the filter panel and selected the correct color. Easily found the description of the item’s material.
3. Overdeler > no sleeves. Scrolled down the results and selected a purple top. When getting redirected to the product’s page, however, she changed the color to another available color, illustrated by some color swatches below the product picture (visible both in the results and on the product’s page).

Interview

Jeg synes det gikk greit. Det er det du forventer, kanskje for en nettbutikk for klær. Men det kunne sikkert ha vært litt flere typer filtere der, men jeg trur ikke jeg pleier å filtrere så mye, egentlig. Ikke noe mer enn de filtrene som er her i hvert fall.

Zalando

1. Sweaters and knitted cardigans. Pushed to open the filter/sort panel, but as the page seemingly had not finished loading combined with her pushing it one more time, this caused her to unintentionally enter a specific item’s page and even put it in the cart. She used the browser’s back button to get back to the sweaters and knitted cardigans page. She tried one more time to open the filter/sort panel, and it opened for a second, but then closed again. She tried one more time, this time with success. She then selected the correct color, as well as “price from” and

"price up to" She quickly found a suitable product among the results and had no problems adding it to the cart.

2. Sweaters and knitted cardigans. Tried to open the filter panel, but once again the sweater that was previewed below it got selected instead, and she got redirected to this product's page. She used the browser's back-button and opened the filter/sort panel. She then selected the correct color, as well as "price from" 250 and "price up to" 400 before pressing "show results". She quickly found the correct item among the results and had no problems finding out about its material.
3. T-shirts and tops. Short scrolling before she found a suitable product and added it to the cart without any problems.

Interview

Det var litt vanskelig. Fordi jeg trykka på knapper som ikke var de jeg trykka på. Så jeg måtte gå mye fram og tilbake. Da jeg trykka på "filter" så ble det automatisk trykka på genseren som lå rett under i stedet for. Og da jeg trykka på filter igjen, så ble det jo borte igjen, så jeg måtte trykke en gang til. Bra filtreringsmuligheter, mange filtre å velge i. Jeg valgte både pris fra og pris til, selv om jeg bare hadde en øvre pris å forholde meg til, for da tenkte jeg at jeg fikk færre resultater, så det gikk fortere å finne den jeg ville ha.

XXL

1. Women's clothing > sweaters and fleece. The page then used a long time loading, and the participant tried scrolling while waiting, causing her to unintentionally select an unwanted item (once again, one of the suggested items in the slider). She pressed the browser's back-button. She opened the filter panel and selected the color she was looking for. She then selected one of the sub-categories (fleece), which seems to be a part of the filter panel, before pushing "ready". It turns out the color filter was removed when she selected the sub-category. She reopened the filter panel and selected the color once more. She pushed the "ready" button. Quickly and easily found a suitable item and had no problems selecting the size and putting it in the cart.
2. Women's clothing > Trousers. Opened the filter panel and selected the brand and color, before pushing the "ready" button. This returned only one result, which was the item she was looking for. No problem finding out about its material.
3. Women's clothing. Opened the filter panel and selected the sub-category t-shirts, tops and piques. Scroll down until she found a suitable product. No use of facets.

Interview

Det var greit, men nettet var litt treigt, så det tok litt tid å laste inn sida. Det var elementer som ble lasta før andre, også trodde jeg at den var ferdig og trykka for å scrolle, og da trykka jeg plutselig på noe og måtte gå tilbake igjen. Den var kanskje ikke så mobiltilpassa som man kunne ønske, i forhold til at det gikk an å scrolle sidelengs, og da ble det litt sånn utafor, så jeg måtte tilbake. Hvis jeg trykka på linkene i filterpanelet, så ble de andre filtrene jeg hadde valgt først borte. Kjøp-knappen og "finn varehus" var veldig nære hverandre, så jeg holdt på å trykke feil, spesielt når den lasta litt treigt, så innholdet "sklei" litt opp og ned.