Online shopping for women’s apparel
A study extending generalization possibilities for problematic heuristics in online shopping

Emma Nilsson
810827
Abstract

As an increasing number of people are logging on to the internet to do their shopping, it is imperative for a site to be accessible and usable. Nielsen’s heuristic method is one esteemed method that many web site developers use in their design work. One study suggests that online shopping needs most improvement with the heuristics “User control and freedom” where an undo button often is lacking and in ‘Help and Documentation’ where the user may not easily switch between their work and the help. The study, however, has been made on grocery shops alone.

The following study adopts the results of the past study as hypotheses and investigates if they hold true for another type of online shopping site – women’s apparel. The results of the study confirm that these two heuristics indeed are the two most troublesome. However, for the biggest usability disaster under each, the results are either inapplicable or only lend weak support. The following results lend more support to a possible generalization for all online sites and better awareness among software developers of online shopping sites. Yet a more consistent base of common usability disasters under these two specific heuristics needs to be developed.
Index list

Abstract .................................................................................................................... 2
Index list .................................................................................................................. 3
1. Introduction ......................................................................................................... 5
  1.1 Background ....................................................................................................... 5
  1.2 Limitations ....................................................................................................... 6
  1.2 Problem ........................................................................................................... 6
  1.3 Problem Development ......................................................................................... 7
  1.4 Knowledge contribution ....................................................................................... 7
  1.5 Purpose ............................................................................................................. 8
  1.6 Discussion of purpose ......................................................................................... 8
2. Frame of reference ............................................................................................... 10
  2.1 Usability and evaluation methods ....................................................................... 10
  2.2 The heuristic evaluation model .......................................................................... 10
    2.2.1 The basic heuristics ..................................................................................... 10
    2.2.2 Additional heuristics ................................................................................... 11
  2.3 Online shopping .................................................................................................. 12
  2.4 Heuristics applied to online shopping .................................................................. 12
    2.4.1 Chen and Macredie’s study ......................................................................... 12
    2.4.2 The results .................................................................................................... 13
3. Perspective ........................................................................................................... 15
  3.1 Impact of personal experience ......................................................................... 15
  3.2 Impact of chosen perspective .......................................................................... 16
    3.2.1 Usability ..................................................................................................... 16
    3.2.2 Selling goods .............................................................................................. 16
  3.3 Impact of limitations ......................................................................................... 16
    3.3.1 A heuristic evaluation ................................................................................. 17
    3.3.2 Focusing two heuristics .............................................................................. 17
    3.3.3 Women’s apparel ....................................................................................... 17
4. Method ............................................................................................................... 19
  4.1 Frame of reference ........................................................................................... 19
    4.1.1 Gathering information ................................................................................. 19
    4.1.2 Critiquing sources ....................................................................................... 19
  4.2 Presenting the hypotheses ................................................................................ 20
  4.3 Empiric selection .............................................................................................. 20
  4.4 Evaluation path ............................................................................................... 21
    4.4.1 Participatory study ...................................................................................... 21
    4.4.2 Evaluation path ............................................................................................ 22
    4.4.3 The “checklist” ............................................................................................. 23
    4.4.4 Severity rating ............................................................................................ 23
  4.5 Validity and reliability ....................................................................................... 26
    4.5.1 Validity ....................................................................................................... 26
    4.5.2 Reliability .................................................................................................. 27
4. Results ................................................................................................................. 28
  4.1 H&M ................................................................................................................ 28
    4.1.1 Quantitative data ....................................................................................... 28
    4.1.2 Qualitative data ......................................................................................... 28
    4.1.3 Other comments ......................................................................................... 29
4.2 Halens .......................................................... 30
  4.2.1 Quantitative data ........................................ 30
  4.2.2 Qualitative data ........................................... 30
  4.2.3 Other comments .......................................... 30
4.3 Mango .................................................. 31
  4.3.1 Quantitative data ........................................... 31
  4.3.2 Qualitative data ........................................... 31
  4.3.3 Other comments .......................................... 31
4.4 Top shop ................................................ 33
  4.4.1 Quantitative data ........................................... 33
  4.4.2 Qualitative data ........................................... 33
  4.4.3 Other comments .......................................... 33
5. Conclusion .................................................. 35
  5.1 H1 ......................................................... 35
  5.2 H11 ......................................................... 35
  5.3 H2 ......................................................... 35
  5.4 H21 ......................................................... 35
  5.5 Contribution ................................................ 36
6. Discussion .................................................. 37
List of references ................................................ 38
Appendix 1 .................................................. 40
  H&M ......................................................... 40
  Halens ....................................................... 42
  Mango ....................................................... 44
  Top Shop ................................................... 46
1. Introduction

The introduction gives a preparatory insight into the background and issues at hand. It eases the reader into the subject area and introduces the reasons for the study being conducted; posing the questions that will follow throughout the entire work.

1.1 Background

In this day and age, an increasing amount of people are logging on to the internet and as such, an increasing amount of business moves online as well. However, establishing an internet shop is quite different from changing a physical location. A web shop can be seen as a shopping window where users can see the good and read information about it\(^1\). In the same manner as appealing aesthetics, easy layout of the shop, relevant mode of display, etc. affect the shopper’s shopping habits and loyalty in the physical store, so do they in virtual reality. As such, boosting, or even making sales at all, is paramount to the web page being user friendly\(^2\).

Current studies offer limited research into the subject of the usability of shopping web sites.\(^3\) This, although shopping websites are identified as one of the web site types that are the most demanding in the aspect of usability\(^4\). Studies go apart on the success of shopping web sites; one recent study finds shopping sites to be the most appreciated type of web page\(^5\), yet other older studies claims that shopping exhibit a far too low usability\(^6\). The results being good and bad from previous studies, there is yet to be a study that claims web shops have perfected the art of usability. However, perfecting the art of usability in web pages may lead to sales over the internet growing in the same rate as online numbers.

The type of web page set up stresses the importance of different issues of usability\(^7\). As such, committing certain flaws in usability will be more devastating for a certain type of site than another. A well red web developer will be aware of these issues. Similarly, a well red developer should be aware of the most common and the gravest usability mistakes that are made in the type of web page that is being set up, is there is a trend in these. However, there are not enough studies that deal with the concept of usability and online web shops to dismiss the idea of certain aspects being more problematic. Nor are there enough studies to make solid generalizations in any direction as of yet.

\(^1\) Zhang & Von Dran (2002) "User expectations and ranking of quality factors in different web site domains” International journal of electronic commerce 6(2) pp. 9-33
\(^7\) RNIB (2001) “Making internet shopping accessible” available at rnib.org.uk 2006-11-04
1.2 Limitations

As this study sets about trying to do so, there are several limitations imposed along the way trying to ease the possibility of generalization. Through the paper, the main focus will be on two aspects that have proven difficult in previous studies. Although the method itself does demands for a full investigation into all of the problems on each web site, the attention in the paper will be lavished exclusively on these two aspects, using other problems only to compare, contrast and evaluate them.

The concept of usability is given many definitions and several different manners in which one may proceed in measuring it. The chosen definition will be according to a publication on usability according to ISO. The method used will be Nielsen’s 13 (extended version) heuristics. No other definitions of usability measurement methods will be explained or taken into consideration.

From the background it is clear to the reader that the type of web page that will be considered is online shopping sites. However, this study is even further limited to concern itself only with web shops offering women’s apparel. Much information is available on the gender issues of internet, but this issue will barely be touched upon. The paper and purpose is not extended to treat the issue of women’s perceptions and preferences of web pages.

1.2 Problem

Although there are many studies and much literature developed around the issue of usability and quite some literature available on online shopping, there are few studies that focus on the usability flaws that are the most common in established online web pages. Yet there is a study that proves that even online shopping sites backed by large and famous companies with enough money to pay a professional web developer have some disastrous flaws in their web sites. The usability problems tend to concern certain aspects of the web page more than others. If there are certain aspects of usability that consistently remain flawed in online shops then making web developers that work with this type of web pages aware, should raise the usability of online web shops to a higher level.

The existing problem is the relatively limited number of studies made on usability problems specifically in online web shops. Should another study be conducted on the subject, what usability flaws would it find to be the most problematic? Do the results concur with the results from the previous study done on online grocery shops? These questions simmer down to a comparison with the previous study that allows for the development of four hypotheses that should be answered:

**H1:** Women’s apparel web shops will be greatly flawed in the heuristic “Help and Documentation”.

---

8 An extended introduction is available in the Frame of Reference chapter
9 Ibid
11 The actual background to the hypotheses are given in the frame of reference and especially method chapter
**H1**: The most common weaknesses in this aspect will be the user’s inability to easily switch between help and their work.

**H2**: Women’s apparel web shops will be greatly flawed in the heuristic “User Control and Freedom”.

**H21**: The most common weakness in this aspect is there being no undo function for action/group of actions.

### 1.3 Problem Development

The four hypotheses presented show only a limited side to the 13 different heuristics presented in the evaluation method chosen. It is true that these questions themselves only give expression to two of the thirteen different heuristics as seen in H1 and H2. However, it is important to realize that in order to confirm H1 and H2 it is necessary to do a thorough investigation into all of the thirteen heuristics. The same is in actuality done for H11 and H21 as all of the different perceived flaws in the different heuristics are noted down descriptively.

### 1.4 Knowledge contribution

As the same extensive work needs to be done in answering the hypotheses above as it is in making an actual descriptive study, the reasons for tying oneself so closely to the four above mentioned questions may seem less obvious. It is important to realize that a descriptive study has already been done on the subject of Nielsen’s usability heuristics applied to online shopping. This descriptive study has yielded results that are to be further investigated to carry better possibilities for generalization. The results of the descriptive study would still have to be compared with any study so closely related. By finding evidence to confirm, dismiss or partially support the hypotheses, the comparison is already baked into the actual questions of the study.

---

**III. 1.1 Categorization of web sites**

Evidently, the knowledge contribution will not primarily be in generating new hypotheses, but ironing out generalization possibilities for already existing evidence. One study on a subject is thin, but two studies show that further investigation has been done onto the subject. It may render some of the evidence ‘subject specific’ – that is only true in a limited setting.

The same evidence from many different such limited settings (such as women’s apparel or groceries) under a bigger category name (such as online shopping) does allow one to see a
pattern. Admittedly, two studies on the most common flaws in heuristics for online shopping sites are still relatively thin. However, it may render a basis for further research where the results could show no possibilities to generalize or could be comprised to a set of guidelines for online shopping web designers.

The study itself is aimed as a contribution to the scientific community, especially working in the field of informatics, primarily as this is a very small brick in an extensive topic that needs much attention in order to allow for any generalization. Furthermore, it aims to make a contribution to those professionals concerned with web site interface development; It is their field of work that is being studied and for them that a study of generalization possibilities or dismissal thereof is being made. As such, the study is written with informatics scholars and web page interface developers in mind.

1.5 Purpose
The purpose of the study is to investigate whether or not there is a similarity in problematic heuristics between two different types of online shops and to dismiss or widen generalization possibilities for these problematic heuristics for them.

1.6 Discussion of purpose
Only one study has been encountered that actually brings forth solutions and insights into the most common usability errors committed in shopping web pages according to the heuristic evaluation. Results show that the two most frequent usability issues deal with lack in the heuristics “freedom and user control” and “help and documentation” as presented in the hypotheses. This study will seek to extend and compliment the results from the previous study, rendering more or less reliability to the results of the previously mentioned study.

The explicit purpose of the study will be to discover if shopping sites presenting women’s apparel lack in the same usability heuristics as online grocery shops. This represents the first part of the purpose – a general comparison between the two studies is implied. The results may confirm, dismiss or only partially support the hypotheses. Here, the focus is between two actual subcategories, ‘women’s apparel’ and ‘grocery stores’, to the category ‘online shopping’ as shown in illustration 1.1. The two subcategories mentioned are two distinctly different types of online shopping sites.

The implicit purpose of the study will be to extend or dismiss generalization possibilities for problematic heuristics in online shopping as mentioned in the second part of the purpose. Here we zoom out even further and look at generalization possibilities for online shopping. Should there be a link between problematic heuristics for grocery shops and problematic heuristics in shopping for women’s apparel then there may be a more general link. It is ultimately the existence of this link between the two subcategories that we are searching for. As previously mentioned, a similarity in results or lack thereof in these two subcategories is still weak support, but sets a good groundwork for later studies.

Ill. 2 From problem to purpose

---
Do the results from this study support, partially support or dismiss the hypotheses?

Do online shops selling women’s apparel look in the same heuristics as grocery shops?

Can one dismiss or extend generalisation possibilities?
2. Frame of reference
As the reader has is faced with a brief background to a problem and a purpose, previous studies and articles will form a frame of reference. No knowledge exists by itself and the following chapter will introduce theoretical and practical concepts that will extend the user’s understanding of the existing problem.

2.1 Usability and evaluation methods
As a key concept in system design, it is not strange that usability is given several different definitions\(^{13}\). The most commonly accepted definition would be “the extent to which a product can be used to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use”\(^{14}\).

There are three key concepts in the abovementioned definition\(^{15}\):
- **Effectiveness**, to what extent a goal or exercise has been reached.
- **Efficiency**, the difference between how well an exercise has been completed and the effort that was placed on its completion.
- **Satisfaction**, the level of positive feeling the user is experiencing when using the product.

This definition includes, but is not limited to, the key concepts that most definitions as well as most evaluation models are based on\(^{16}\).

When making a choice among evaluation methods, the heuristic evaluation is the cheapest and most effective manner in which to identify errors in usability on any user interface\(^{17}\). Furthermore, it is easy to learn and may be used by experts and novices alike\(^{18}\), actually lending more support to the inexperienced evaluator than any other major evaluation method\(^{19}\). The heuristic evaluation allows for an examination of a user interface based on ten extensive and descriptive rules – referred to as heuristics\(^{20}\).

2.2 The heuristic evaluation model
2.2.1 The basic heuristics\(^{21}\)
The table below shows the basic heuristics that were developed already in 1990 and revised 1994.

---

\(^{13}\) Lee (1999) “Usability testing for developing effective interactive multimedia software: Concepts, dimensions and procedures” Educational technology and society available from: ifets.gmd.de/periodicals/vol_2_99sung_heum_lee.htm 2006-11-03

\(^{14}\) ISO 9241 – ergonomic requirements for office work with visual display terminals (1998), pp. 2 available from: www.iso.org 2006-09-02

\(^{15}\) Ibid


\(^{21}\) Nielsen (1994)
### Table 1

<table>
<thead>
<tr>
<th>Heuristic</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 – Visibility of system status</td>
<td>Appropriate feedback should always be provided to the user to keep her informed</td>
</tr>
<tr>
<td>H2 – Match between system and real world</td>
<td>Information should be presented in a manner that is intuitive and familiar to the user based on their real world experiences</td>
</tr>
<tr>
<td>H3 – User control and freedom</td>
<td>Users should be free undo and redo activities, select and sequence tasks rather than the system doing this for them</td>
</tr>
<tr>
<td>H4 – Consistency and standards</td>
<td>The system should use platform conventions. Words, colors and links should be used in the same manner throughout the web page</td>
</tr>
<tr>
<td>H5 – Error prevention</td>
<td>Good design should involve preventing errors in the first place and if an error does occur, the user should be made aware of it.</td>
</tr>
<tr>
<td>H6 – Recognition rather than recall</td>
<td>Objects, actions and options should be visible or easily retrievable throughout the process and instructions on usage should be available at all times</td>
</tr>
<tr>
<td>H7 – Flexibility and efficiency in use</td>
<td>Tailor for actions for others than the “average” user – culturally, physically, by cognitive ability and frequency of use</td>
</tr>
<tr>
<td>H8 – Aesthetic and minimalist design</td>
<td>Information irrelevant or rarely needed should not be included in the regular text</td>
</tr>
<tr>
<td>H9 – Help users recognize, diagnose and recover from errors</td>
<td>Error messages should precisely name the problem and offer a solution in plain and understandable language</td>
</tr>
<tr>
<td>H10 – Help and documentation</td>
<td>Information concerning the system should be easy to search, focused on the user’s task, list concrete steps to be carried out and not be too extensive.</td>
</tr>
</tbody>
</table>

### 2.2.2 Additional heuristics

For an industry with rampant growth, it is remarkable that a method that was developed and revised over ten years ago still holds to be the most appreciated evaluation method. However, the heuristic evaluation is very ‘product-oriented’ and tends to view systems as self-contained objects that take little concern of the humanistic aspects. This shortcoming was treated by extending the 10 heuristics with an additional three to give a more process-oriented and human perspective to the evaluation. A good evaluation should have a balance between the product and process perspective and as such, including the additional 3 heuristics is necessary.

### Table 2

<table>
<thead>
<tr>
<th>Additional Heuristic</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>H11 – Support and extend the user’s current skill</td>
<td>The system should not attempt to change the user’s skill, but rather attempt to improve on what already exists</td>
</tr>
<tr>
<td>H12 – Pleasurable and respectful interaction with the user</td>
<td>Design should have both functional and aesthetic value and interaction with the system should enhance the user’s work life</td>
</tr>
<tr>
<td>H13 – Protect personal information</td>
<td>Any information the system should have about the user should be kept safe</td>
</tr>
</tbody>
</table>

---

22 Floyd (1997) *Outline of a paradigm change in software engineering* Computer and democracy: A Scandinavian challenge Brookfield VT: Gower pp. 1


24 Floyd (1997)
2.3 Online shopping

One of the more successful and fastest growing branches of the e-commerce spectra is the Business-2-consumer branch. It includes the buying and selling of information, services and/or products with the web as a medium. There are several benefits for a consumer to shop online including a broader selection, competitive prices as well as a simple basis for comparison of different available goods. The driving incentive that to a certain degree includes all of the before mentioned aspects, is the convenience of shopping from whatever location the user wishes to.

The cyber world does not allow for a customer to ‘feel’ or ‘try’ the goods. Nor does it allow for the customer to move through physical space. As such, “product perception” is closely linked to “shopping experience”. Attractiveness, control, efficiency and helpfulness are named as the most important factors for a pleasurable online shopping experience. Furthermore, features that enhance a sense of freedom and control, such as email notifications, saving information, tracking a purchase etc. also motivate a purchase.

Sales are not guaranteed by good usability, but good usability is necessary to make an online sale. Electronic shops loose half of their customers due to poor usability and 39% of shoppers fail in their purchase attempt because the site is too difficult to use. Web shops grow increasingly aware of this and the usability of web pages has improved, yet ‘cyber shopping’ will not be widespread until screen design and content structure has improved further.

2.4 Heuristics applied to online shopping

2.4.1 Chen and Macredie’s study

The introduction has mentioned that one study so far has applied Nielsen’s extended heuristics to online shopping. This is Sherry Chen and Robert Macredie’s study “The assessment of usability of electronic shopping: A heuristic evaluation”. The object of the study was to investigate the most common usability flaws in shopping sites in order to develop a ‘checklist’ available especially for making web shops with the intention to sell goods or services. This is done on by evaluating four online United Kingdom grocery chain shopping sites: Asda, Iceland, Tesco and Sainsbury. Although the study involves web sites

---

30 Jarvenpaa & Todd (1997)
33 Nilesen (2001)
35 Scott (2000)
that present one type of business (groceries) and from one country (U.K), there is a wish to validate the results over more than merely UK sites or grocery web shops.

The heuristic evaluation was chosen method and just as presented above, it was extended by three additional heuristics. In order to rank the different usability flaws, the writers used a 0-4 scale to assign how severe the flaws. Furthermore, each flaw has been descriptively written down as a subtopic to the different heuristics before being assigned a severity rating. This partially as severity ratings are assigned after the web site has been explored, but also to provide some qualitative input on why a particular heuristic is problematic. Such qualitative information further the web developers knowledge of common flaws in shopping web pages rather than just knowledge on under what heuristic problems frequently occur.

### 2.4.2 The results

The results show that the greatest and most common errors committed are in the heuristics “Help and Documentation” as well as “User control and freedom”. The table below presents the qualitative part of their investigation. Here we present the amount of flaws that occurred under a certain severity rating for the two heuristics concerned.

<table>
<thead>
<tr>
<th>Site/Heuristic</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asda</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Help and Documentation</em></td>
<td>11</td>
<td>0</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td><em>User Freedom and Control</em></td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td><strong>Iceland</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Help and Documentation</em></td>
<td>11</td>
<td>0</td>
<td>2</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td><em>User Freedom and Control</em></td>
<td>9</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Sainsbury</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Help and Documentation</em></td>
<td>11</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><em>User Freedom and Control</em></td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>Tesco</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Help and Documentation</em></td>
<td>14</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><em>User Freedom and Control</em></td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The second aspect of the study was to pinpoint the more exact nature of the problem. The results below describe in words the most severe flaw that occurred in each shopping site under each of the chosen heuristics.

**Help and Documentation**

**Asda:** The help system interface is inconsistent with the rest of the site  
**Iceland:** Users can not easily switch between help and their work  
**Sainsbury:** Users can not easily switch between help and their work  
**Tesco:** Users can not easily switch between help and their work

**User freedom and control**

37 The same scale has been used in this study and will be introduced under the method chapter  
38 Severe as in considered the most problematic among the ratings that were rated as a 4 – the scale is presented in the method chapter
Asda: No undo function for action/group of actions and a user can not set up their own defaults

Iceland: No undo function for action/group of actions and user can not easily reverse their actions

Sainsbury: No undo function for action/group of actions

Tesco: Some commands had severe destructive consequences
3. Perspective

The chapter on perspective should give the reader some insights into from what angle the problem is approached. Choices made in limitations, what material is presented in the frame of reference and not least the writer’s thoughts and previous experiences impact the results of the study.

3.1 Impact of personal experience

The writer does have personal experience in both of the subjects concerned; informatics on the subject of usability and online shopping. This impedes the objectivity of the writer and does have an effect on the outcome of the study.

Learning and practicing the heuristic evaluation is part of the curriculum of the chosen study path, along with two other types of usability evaluations. The heuristic evaluation was perceived as a practical and swift approach to the subject of usability, where some other models were found both time demanding and less informative. The heuristic model may be optimal for novices and experts alike. However, the two practicing the method will surely render different results due to their level of previous exposure and knowledge on the subject. A seasoned expert knows exactly what to look for (which may color her judgment too) whilst a novice doesn’t know what to look for exactly.

As a student of informatics, with previous exposure to the heuristic evaluation and with some internet experience, the author can not count herself as a novice, nor as an expert practitioner. Rather, she is somewhere in the grayscale between. The evaluators of the previous study were also the authors, but given the publication of the study it is given that they stay closer to expert on the grayscale than the author of this particular study. As such, the user may find less usability errors.

Additionally, the author has visited all of the chosen web shops for women’s apparel previously. The visits have simply been in interest and research motives and not with the intention of evaluating or investigating the sites. The author did have grievances on all of the web sites before the evaluation was done, but with a fair amount of internet browsing time under her belt, there was particular heuristic that caused enough annoyance to have her leave the site altogether.

Trying to place oneself in the shoes of both a complete internet shopping novice as well as an expert, trying to estimate the level off annoyance the different problems would cause is difficult indeed. The intermediate level may cause the writer to perceive certain familiar problems with less concern and she may have developed a routine to work around the problem. The problem may as such be perceived as less of a problem than it may be to a novice. Certainly, she may also overcompensate, finding somewhat simple mistakes, more devastating for a novice user. This may cause heuristics like ‘Match between real world and system’ and ‘User control and freedom’ to suffer. The writer has no illusions of being able to capture the expert’s perceptions of the page’s usability. This may cause heuristics like ‘support and extend user’s current skill’ and ‘flexibility and efficiency in use’ to suffer.
3.2 Impact of chosen perspective

There is only a limited amount of writing that may be offered in the frame of reference although there may be much written on the concerned subjects. The writer does make a choice to adhere to certain definitions and perspectives rather than adopting others from a vast array of possibilities.

3.2.1 Usability

There are several different types of definitions offered for usability. In the frame of reference it is simply stated that the definition will be taken from the International Standard Organization. Other common definitions would be “the ease with which a user can learn to operate, prepare inputs for, and interpret outputs of a system or component” as defined by the IEEE in 1990\(^{39}\) or as simple as the product has been developed to be easy to understand and easy to use\(^{40}\).

The chosen definition allows one with ease to adopt Nielsen’s heuristics as evaluation method. Nielsen may be summarized into five main concepts: “Efficiency, learnability, memorability, error/safety and satisfaction”\(^{41}\) that easily allow for and extend the frames of the accepted definition. Having adopted another definition could have forced another choice of method, focusing on another aspect of usability or measuring it in another way.

3.2.2 Selling goods

As mentioned previously, the heuristics have been developed as a popular and effective to use when investigating usability on any user interface\(^{42}\). This also means that the heuristics are adapted to fit any situation where there us a user interface to be developed. However, the paper concerns itself with a particular category of user interfaces, namely online shopping ones, which may make flaws in some heuristics more disastrous than others\(^{43}\). Unfortunately, no study offers any basis of how to evaluate what heuristics may be of particular interest in this category.

This study will evaluate the web shops from a ‘selling’ perspective. The reasoning that has been adopted is that the primary motivation for an online web shop to exist is so that the seller may a) introduce the goods offered and b) sell the goods. As such, when the evaluation is performed, anything critical enough to make the user abandon the web page is considered a disaster. However, there is a distinct focus on the shopping basket as a smooth using of this tool will facilitate a purchase and a less perfect one may cause the user to abandon his/her purchase.

3.3 Impact of limitations

In chapter one, one section 1.2 imposed three limitations upon the study. The impact of these limitations is discussed below.

\(^{39}\) Institute of Electrical and Electronics Engineers, (1990), “IEEE standard glossary for software engineering terminology”, Los Alamitos p. 1
\(^{42}\) Greenberg, et al. (2000)
\(^{43}\) RNIB (2001)
3.3.1 A heuristic evaluation

The heuristic evaluation is far from the only evaluation method for web page interfaces. Other possible evaluation methods could be cognitive walk throughs\(^\text{44}\) or user testing\(^\text{45}\). The writer is aware of that using another method could have yielded different results. However, this method was chosen for the study for two distinct reasons. Firstly, this method is an inexpensive, flexible and manageable by any level evaluator. It is an established method in both the professional and academic community alike. Secondly, it was the method chosen to evaluate the web sites in Chen and Macredie’s study. Results from other methods may still be transferable to make fair comparisons, but using the same method allows for more direct and evident comparisons.

3.3.2 Focusing two heuristics

It may be argued that the forming of the four hypotheses presented in chapter one and furthermore, focusing on these throughout the paper may slant the results of the evaluation. The thorough attention given to these two heuristics alerts and keeps these heuristics recent in the head of the evaluator. Upon performing the investigation, the writer may search more intently to find flaws under these heuristics. Such slanting of the investigation could be avoided by using a novice or somebody who is not familiar with Chen and Macredie’s study to perform the evaluation\(^\text{46}\).

However, perfect objectivity is impossible to find as evaluators are human and all human’s have some form of background and perception of the world that influences them. Various measures were taken to give each of the heuristics a fair chance next to the other two focused. Awareness of ones’ own subjectivity is the only remedy possible in a situation such as this one.

3.3.3 Women’s apparel

The category of shop chosen would have to be a type of good that would have rather high demands on navigational routes, visual layouts and attractive overviews – and in general on usability. Banks, fast food, supermarkets and clothing retail were four types of online shopping site that were frequently visited by one market segment\(^\text{47}\). As one study treating supermarkets had already been performed, the author made a second pick among the remaining and chose: clothing retail. The scope of clothing retail is still and extensive one and after a short inventory of the online shopping possibilities in this area, the scope was narrowed to include only women’s apparel – a route that allowed for a more plentiful selection.

Women’s apparel web shops do have great usability demands on them. Offering a wide array of products, they have the task of classifying and structuring up this into a navigation route that will allow for the user to find exactly what they are looking for. As when making a purchase, there are extensive demands to build trust and loyalty with the customer. When the


\(^{46}\) Further discussion on this issue can be found in the method section

\(^{47}\) RNIB (2001)
site attempts to sell fashion that deals much with perception and appearance, the demands on the aesthetics of the site are also high.

For the purpose, the fact that women’s apparel was chosen is of lesser significance, just as choosing grocery shops in Chen and Macredie’s was of less significance. The purpose is the study of a type of web pages – online shopping web pages and the study is an attempt to glance beyond subcategory-specific heuristical problems and seek or dismiss possible underlying heuristic problems for all shopping web pages. Nonetheless, it is obvious that one has different expectations, objectives and perspectives when approaching shopping sites for different types of goods.

A poorly designed procedure in choosing the number of items ordered may be a catastrophe in one case and less so in the other. This is exemplified by that when grocery shopping, the customer may orders five liters of milk and twelve packs of yeast while in clothes shopping, one usually orders one piece or possibly to two of the same item. Going against associations that women have towards women’s apparel may make certain heuristics more problematic than what they would be in grocery shopping. Furthermore, the target population for women’s clothing is obviously, women. Although this is not a study on gender in perception of problematic heuristics, sex may certainly also influence what heuristics are perceived as more problematic than others.
4. Method

The method chapter will serve as a source of information on the manner by which the results will be gathered. It will give a thorough explanation on what path is taken through the work allow for some further insights and show support for the choices made.

4.1 Frame of reference

It may be fair to say that much of a study will rest on the foundations presented in the frame of reference; much of this literature is the relevant information that the author has found on her quest for grasping the subject, formulating initial thoughts and eventually a purpose, deciding on a method used to approach the problem. Thus, much attention has been attached to how the information has been gathered as well as how reliable the sources are.

4.1.1 Gathering information

There is an abundance of data to be collected concerning usability and somewhat less on the subject of online shopping. Due to the relative abundance of information offered, the research material has been gathered almost exclusively from a database search engine known as Elin@Örebro available through the university library in Örebro, Sweden. The search engine includes established and credible databases such as ABI/Inform, Cambridge Journals online, EBSCO, Sage etc. where the articles have endured a process of scrutiny before saved. The search engine was subjected to several key words and combinations thereof: Usability, heuristics, shopping, web shops, online shopping etc. On occasion, a source has been adopted from the reference list of a source found in the databases.

4.1.2 Critiquing sources

The study rests most heavily on two sources:

The first is the study by Chen and Macredie that has served as a basis for developing the purpose as well as where extensive parts of the method have been adopted from. It is important to note this material is not an article, but an actual academic study that has passed the scrutiny of peers with the result later published.

The second is several different papers presenting all presenting thoughts and ideas on usability, but more importantly, presenting and updating the main method used: the heuristic evaluation. The works are written by somewhat a ‘guru’ on the subject of Usability – Jacob Nielsen. His heuristics have been developed primarily for the commercial sector, but the ideas have been used and scrutinized extensively by the academic community.

As these two sources have been the most influential in the paper, the writer considers them both credible and reliable each for a different reason: The first as academic papers are among the most credible sources one may find and the second because it such an established and well respected method.

The manner in which the information has been gathered has already asserted a fair amount of credibility to the literature study. Otherwise materials come primarily from two other

---

49 Greenberg, et al. (2000)
sources. About half of the references are taken from established journals such as International Journal of electronic commerce, Internet world or Australian Journal of Educational Technology. The other half is materials taken from material published for business proceedings such as glossary definitions or business conference papers. As these are less reliable sources, there has been an attempt at stemming an argument not completely on one source, but finding others that back up the same or a similar idea.

4.2 Presenting the hypotheses

The purpose of the study is to support or dismiss generalization possibilities for problematic heuristics in online shopping. If support is to be lent to Chen and Macredie’s study, then their results should hold true in any type of web shop that is evaluated. Thus, the hypotheses are simply a summary of the results of the previous study, including both the quantitative measures presented in H1 and H2 and the qualitative descriptions of the main problems under these heuristics in H11 and H21.

**H1:** Women’s apparel web shops will be greatly flawed in the heuristic “Help and Documentation”.

**H11:** The most common weaknesses in this aspect will be the user’s inability to easily switch between help and their work.

**H2:** Women’s apparel web shops will be greatly flawed in the heuristic “User Control and Freedom”.

**H21:** The most common weakness in this aspect is there being no undo function for action/group of actions.

4.3 Empiric selection

The empirical subject chosen is online shops for women’s apparel. Keeping within the scope of the study and within time/money resources, four online shops have been selected to be evaluated. As Chen and Macredie’s study concerns the four largest online grocery shops in the United Kingdom, the same line was attempted in this study. However, after measuring out the six largest shopping retailers for women’s apparel with actual physical shops in the country, it was found that only two of these: H&M and Mango offered actual purchases over the internet. The four others has web pages where most would model the apparel, however customers would be referred to the closest store for purchases. Drawing upon previous personal experience, the two other shops selected were done so out of convenience. A selection out of convenience may slant the results of the study somewhat. Still both of the other web shops are also large and successful companies with the same monetary possibilities in maintaining an excellent web shop.

The following sites have been chosen:

<table>
<thead>
<tr>
<th>H&amp;M</th>
<th>Mango</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topshop</td>
<td>Halens</td>
</tr>
</tbody>
</table>

51 Motivations for choosing women’s apparel may be found in chapter 3
4.4 Evaluation path

4.4.1 Participatory study

One of the most prevalent and justified critiques towards the method would be the fact that the discovery and evaluation of the heuristics is done as participatory study, the author being the only one participating. With all of the preconceived notions and ideas that are placed in the head of a researcher when reading through the available literature and information, it is difficult for such a person to remain objective. Although an evaluation model and criteria are set up for how to judge how severe these problems are, outside test subjects with less ideas and knowledge about where and how to search may do a more fair and unbiased capturing.

It is important to note that a thorough evaluation of a web site, all of which are quite extensive, takes quite an amount of time to do. In the case of doing four of these, it is anything but a brief undertaking. Asking a test subject to expend much of their free time on such a thing may demand for monetary reimbursement – a resource continuously scarce. Asking a novice to perform the evaluation allows for several other problems: finding fewer errors\(^\text{52}\), inability to phrase where the problem is and inability to evaluate problems a more experienced user would encounter.

The following section gives a rigid guideline on the manner in which the study is to be conducted. There is hope that such a guideline will help the author who is performing this

\(^{52}\) Nielsen (1997)
evaluation to keep many of her prejudices from showing in the results. Again, perfect objectivity is impossible to achieve.

4.4.2 Evaluation path
The following section will explain the steps taken through the evaluation. The illustration below shows the concise version of the proceedings.

1. The web site is entered and the Heuristic “check list” is used in a free flow inspection. Any and every problem encountered is noted down under any and every heuristic that I occur.
2. The Heuristics “checklist” is used in a task based inspection. Any and every problem encountered is noted down under any and every heuristic that occurs.
3. Ultimately, the different problems encountered from both of the different inspections are ascribed a rating from 0-4 depending on how problematic they were perceived. Problems occurring under more than one heuristics were ascribed what heuristics they would belong to and the others were placed in parentheses.

The same procedure as before was repeated on another date, more than two weeks later, without the results from the previous evaluation at hand.

4. The two different results were compared. Ultimately, all of the problems discovered were put under one extensive list.

5. The severity ratings, on those problems they did differ, were compromised into a final severity rating.
4.4.3 The “checklist”

In order to ensure thoroughness and to gain better objectivity in the study, each page is evaluated through a “checklist” – the thirteen heuristics. The explanation given for each of the heuristics is rephrased as a question. For H1, Visibility of System status, the given explanation is as follows: Appropriate feedback should always be provided to the user to keep her informed. This is rephrased as a question: Does this web page give me enough appropriate feedback to keep me informed?

The writer moves through the different elements of the web page, repeating the rephrased question above. Different elements may vary from page to page and often the question may not be applicable. Inapplicability of the question has not been considered a flaw. Elements that frequently are considered is the navigational tools, images presented, texts in headings and bread text. A question may be, does the web page give me enough appropriate feedback to keep me informed on how to discover onward links?

With a problem occurring on a web page, this problem often interferes with more than one heuristic. This is exemplified by a spelling mistake:

H2 – Match between system and real world – a spelling mistake makes the text less intuitive and familiar to the user based on their real world experiences
H10 – Help and documentation – a spelling mistake may make it difficult for the user to understand the concrete steps listed that need to be taken
H12 – Pleasurable and respectful interaction with the user – The aesthetic value of the web page falls with spelling mistakes.

A problem may only belong to one heuristic to be able to make a fair comparison between the different heuristics. What heuristic the spelling mistake will belong to depends on where it causes the most damage and the problem may belong to all of the above depending on circumstances.

H12 – An unfortunate scramble of letters that most would discern as too swift typing such as “...then take teh tablespoon and...” would just make the experience less pleasurable.
H2 – A spelling mistake where the user has to guess what the word really is such as “...then take a blespon and...” would be considered a less than intuitive match between the text (system) and the real world.
H10 – If the spelling mistake occurred in a set of instructions and was grave enough for the user not to be able to understand the instructions as in “...then click on the hrgy button...” when available buttons are clear, submit or store, the problem would make it difficult to recognize what step is to be taken.

In the last mentioned example H10, the problem would belong to H10 rather than H2 or H12 as the spelling mistake will do the most damage here.

4.4.3 Inspection proceedings

The web shops extend over many pages and it may be difficult to look into every single corner of the web page. As such, the web shop will be approached in two different types of inspections in order to try to capture all of the web shop.

53 Keep in mind that a selling perspective has been adopted as presented in chapter three.
4.4.3.1 Free flow inspection
The free flow inspection is done in an attempt to capture the overall aspects and ideas of the web site. It should capture inconsistencies, smaller aesthetic errors and location-specific problems that would not be captured with a task based inspection.

The graph below is by no means a model over how a web page is built but is used to explain the shape of the free flow inspection. The full lines show attachment to the main navigational menu while the broken lines indicate other onward connections.

- All of the topics accessible from the home or front page will be investigated, be they attached to the navigational system or presented in another manner
- Four of the topics attached to the main navigational system will be picked at random and followed through subtopic and content to the end of the branch or until encountering a page that obviously belongs to another subtopic and has been visited before under that subtopic. The end of the branch is perceived in terms of no onwards or forwards links in any form.
- Two of the subtopics not attached to the main navigational system and that had a development into subtopics were chosen and followed to the end of the branch or until encountering a page that obviously belongs to another subtopic and has been visited before under that subtopic.

All of the above guidelines were found applicable and relevant in the examination of the four different online web shops.

4.4.3.2 Task based inspection
The task based inspection on the other hand, would include moving through the site in an attempt to fulfill a certain scenario. The scenarios themselves are not evaluated on basis of time of completion, learnability or ease of use. Rather they were used as a method to discover usability problems that stretch over more than topic, i.e. one of the aspects considered in task 1 is if information about fabric is presented in connection with viewing the shirt – as a customer in the real world could do this and expect to be able to do this in the system as well. That is not to say that a long time to complete a task isn’t taken into consideration, but it is broken into applicable heuristics that explain why the task took much time.
It is noteworthy that online shopping sites vary as much as any sites and the philosophy of the company may offer different features and aspects to the shopping experience. Some will offer fashion tips while others focus on presenting the company in a good light by presenting their social commitment. This makes some of the tasks inapplicable or only partially applicable on some web pages. A web page has not been considered worse if a certain task is not completed. Instead the task has been attempted to the best of what is offered by the web page and the tasks have been worded carefully to allow for some flexibility in interpretation.

The tasks have been developed by the author of the study to cover a vast array of tasks that a user may want to do whilst on an online shopping site and this, keeping the core concepts of the frame of reference in mind. The tasks have been worded to concern several events and possibly stretch over several subtopics in an attempt to gain a more holistic view.

1. Find a white shirt made primarily out of cotton, find out what the washing recommendations are and place it in your shopping cart
2. Find what fashion is applicable in pants for this coming spring, find a pair where these rules apply and place it in your shopping cart
3. Find out what the biggest size offered in skirts is and shopping basket then change your mind about it
4. Find four pieces of clothing that belong to the latest collection, see what the back looks like and inspect smaller details on one of these and add all of these to your shopping basket.
5. Find an item of knitwear and add it five different times to the shopping cart
6. Find one item of clothing that is worn by the model on the opening page and add it to the shopping cart
7. In the shopping basket, make sure you get two pairs of the same pants in two different sizes, change the color of the cotton shirt and try to manipulate the identification name or sequence that identifies one of the items in the latest collection.
8. Complete the purchasing process knowing how your submitted details, including address and credit card details, is secured and treated and on the last step, remember to add promotion details
9. Find out if there are any discounts available for a member and apply for a membership
10. Find your personal membership details and change your address
11. Find the details necessary to distinguish a dress from the others and then find a number to your closest local shop
12. Find out how well the company did last year (in words or numbers) and any event they participated in
13. Try to find out two different ways of contacting the online shop if you wish to complain and discover what way is the fastest
14. Try to manipulate different features of the site: Background color, text font and sound
15. Find out what the policy is on returning goods and discover the fastest method to do so

4.4.4 Severity rating

In order to quantify the usability problems, a severity rating will be used. The purpose of the severity rating system will be to find out how serious the flaws are. Due to the fact that all of the web pages are different it is difficult to access severity of the flaw on one and the same

---

scale. It is a 0-4 scale that is used and the different points should indicate different levels of severity as follows:

0 – Not a usability problem at all
1 – Superficial problem to be fixed if enough time is available
2 – Minor problem with low priority
3 – Major problem with high priority
4 – Usability disaster – imperative to fix

Three main factors in assessing the severity of a usability issue are frequency, impact and persistence.

- The frequency by which the problem occurred; was it common or rare?
- The impact of the problem; was it difficult or easy to overcome?
- The persistence of the problem; was it a one time occurrence or would it keep on appearing?

These three factors are used and combined in order to make a fair assessment. One spelling mistake is not a problem, but if there is a spelling mistake in every sentence (frequency), the problem may be perceived as a disaster although the impact and persistence may not be very high. Lack of a back button at one place in the purchase procedure may force the user to go in and alter the submitted details after the procedure is done or may possibly even make the user have to call or email in to ensure correct information to the company. It may concern a problem that only occurs once (frequency), but it is difficult to overcome (impact) and the problem remains in the system (persistence).

In fact, severity ratings are estimated in part from the factors set up as well as the descriptive explanations for the severity numbers. All are measured up against the “seller’s perspective” previously established. It is essential to always ask, is this problematic or annoying enough to make the user a) leave the web page or b) not make a purchase. If the answer is yes, the problem is likely to be in the 2-4 part of the numerical scale. The factors may then aid in making finer distinctions.

4.5 Validity and reliability

4.5.1 Validity

The validity of a study ensures that the study is capturing what it is supposed to capture. The study can not be defined as a qualitative nor a quantitative study, but rather a hybrid of the two. In a qualitative study, the best way of evaluating validity is by assuring that the bricks of knowledge are placed a top of each other in a logical manner. In a quantitative study, a thoroughly developed and explained method is crucial.\(^{55}\)

Although one may question the heuristic methods ability to capture usability, this reasoning is already excluded by the purpose that places the focus on this particular method. The issue that lowers validity the most would be the ascribing problems accurate severity ratings. The entire

basis for comparison in order to reach a conclusion is balanced on the ability to ascribe accurate severity ratings. The method by which one ascribes severity ratings have two guidelines that the evaluator should follow. These, due to the varying form of web sites, must allow for much flexibility and inflexibility there is also room for error. This possible room for error does lower the validity to be quite poor.

4.5.2 Reliability

The reliability of the study is a measure of how well the results of the study match reality. In other words, if the study was made again under the same premises, would the result be the same.\textsuperscript{56} The author does use the same approach to the web sites as used before, but the premises have changed not only in the choice of online shops, but also in evaluating skills. Due to the varying forms and shapes of web sites, it is difficult to find simple and objective rules by which to evaluate all the sites the same. This allows for much subjectivity to find its way into the method used. Due to the variation in the user’s expertise, the study reliability of the general results is lowered further.

It is noteworthy, however, that the study seeks to capture the main points – the most severe heuristics. Although the chances of another capturing the same general results are low, capturing the same answer for the hypotheses, the significant results of the study, is believable. As such, the reliability of the study is fair, but not too high.

4. Results

Here both the qualitative and quantitative data for each of the different web shops are presented. The qualitative data is presented in a table, showing how many problems each severity rating under a particular heuristic has acquired.

The second part of the presentation of the results will offer the qualitative results – presenting the three most disastrous problems under the two heuristics concerned in the hypotheses.

The purpose does only call for an evaluation of the heuristics ‘Help and Documentation’ as well as ‘User control and freedom’. However, in order to be able to evaluate these, there is a need to look at other problematic heuristics that surface in the study. The final part of the results, deal with presenting these and trying to indicate where to place them in comparison to the two heuristics focused upon. Much of this information is already available in the quantitative data presented in the results.

4.1 H&M

4.1.1 Quantitative data

<table>
<thead>
<tr>
<th>Heuristic</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 – Visibility of system status</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>H2 – Match between system and real world</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H3 – User control and freedom</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>H4 – Consistency and standards</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H5 – Error prevention</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>H6 – Recognition rather than recall</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H7 – Flexibility and efficiency in use</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>H8 – Aesthetic and minimalist design</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H9 – Help users recognize, diagnose and recover from errors</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>H10 – Help and documentation</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>H11 – Support and extend the user’s current skill</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H12 – Pleasurable and respectful interaction with the user</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H13 – Protect personal information</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

4.1.2 Qualitative data

Heuristic 3 – User control and Freedom
No ‘undo’ button for partially submitted information
No ‘back’ button available in links opening in new windows
No ‘back’ button available between topics
Heuristic 10 – Help and documentation
No ‘help’ topic available
No instruction aiding in wrongly entered data
No search function available
4.1.3 Other comments

The H&M was pleasant and intuitive to surf with generally few aspects heuristic errors. With a generally consistent structure and a good solid framework, the web page gave an impression to be safe and trustworthy. The greatest number of severe breaches occurs in heuristics “Visibility of system status” and “Help and Documentation”. Upon entering the site, there are no tools utilized to aid the user in her awareness of where in the site she/he is. With a web page as extensive as the H&M one, with many subtopics and pages, such a system is imperative. This alone could be perceived as the single most important issue.

The web page has a well designed navigational tool and much intuitive actions. As such, the lack of a ‘help’ topics and sometimes lacking instructions does feel like a lesser problem. Nonetheless, there is several times that lack of proper instructions or aid in form of a ‘help’ page would have proven useful. The same navigational tool also managed to decrease the severity of the consistent lack of ‘back’ buttons as movement through the web page could be done well without it. The lack of ‘back’ buttons also haltered the possibility of ‘undoing’ functions and when submitting information, there would be no undoing function available. ‘User control and freedom’ could, however, be considered the third most problematic heuristic for the H&M web site.
4.2 Halens

4.2.1 Quantitative data

<table>
<thead>
<tr>
<th>Heuristic</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 – Visibility of system status</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H2 – Match between system and real world</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>H3 – User control and freedom</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>H4 – Consistency and standards</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>H5 – Error prevention</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>H6 – Recognition rather than recall</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H7 – Flexibility and efficiency in use</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H8 – Aesthetic and minimalist design</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>H9 – Help users recognize, diagnose and recover from errors</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H10 – Help and documentation</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>H11 – Support and extend the user’s current skill</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H12 – Pleasurable and respectful interaction with the user</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>H13 – Protect personal information</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

4.2.2 Qualitative data

Heuristic 3 – User control and Freedom
No ‘back’ button in the purchasing process
No ‘back’ button available between subtopics
No ‘back’ button available between topics

Heuristic 10 – Help and documentation
No ‘help’ topic available
No instruction on how to fill out incorrectly added information
No instruction available for some more complex actions

4.2.3 Other comments

Although the Halens webpage was easy and intuitive to navigate, it was far less aesthetically pleasing than the H&M web page. All pages would contain too much information, fonts would be consistently inconsistent and images and bars asymmetrical. There would be much unnecessary scrolling and a lot of clicking to find the right information. Less aesthetic as it may be, the most troublesome issues would be “user control and freedom” as well as “help and documentation”.

On the contrary to all of the other web pages, Halens did utilize an ‘undo’ button for a lot of information. However, it would consistently lack or misuse the ‘back’ button. The most stressful point would be lacking a ‘back’ button in the purchasing process and having to start from the beginning while submitting information. Lack of ‘back’ buttons could not be excused even with a well functioning navigational tool.
4.3 Mango

4.3.1 Quantitative data

<table>
<thead>
<tr>
<th>Heuristic</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 – Visibility of system status</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>H2 – Match between system and real world</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>H3 – User control and freedom</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>H4 – Consistency and standards</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>H5 – Error prevention</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>H6 – Recognition rather than recall</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>H7 – Flexibility and efficiency in use</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>H8 – Aesthetic and minimalist design</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>H9 – Help users recognize, diagnose and recover from errors</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>H10 – Help and documentation</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>H11 – Support and extend the user’s current skill</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>H12 – Pleasurable and respectful interaction with the user</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>H13 – Protect personal information</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

4.3.2 Qualitative data

- Heuristic 3 – User control and Freedom
  - Poor access to navigation tools
  - No ‘back’ button
  - No ‘undo’ button / No undo button for partially submitted information

- Heuristic 10 – Help and documentation
  - No textual ‘help’ topic
  - No instruction on how to use the interactive help
  - No instructions on usage

4.3.3 Other comments

As visible from the table above, the Mango web page would be considerably less surfable than the previous two online retail shops. The links would open up inconsistently and jump to what could be perceived as three different web pages closely linked together. There are many severe breaches against the heuristics, but the three seemingly most difficult areas are “user control and freedom”, “help users recognize, diagnose and recover from errors” as well as “help and documentation”.

Much of the trouble in all areas stem from a poorly designed navigational tool and a design of the web page that is hard to grasp. The page has shunned many ‘back’ buttons as well as ‘undo’ buttons in most areas where they are absolutely necessary. Upon problems occurring, the system has little feedback to the user to explain what he/she did wrong or what went wrong in the system. If feedback is given, it is done in Spanish. The user may really worry if their action actually had an effect as it sometimes did, but no feedback is given and sometimes did not and feedback is still not given. In this uncertainty, regret in form of ‘undo’ or ‘back’ buttons are lacking.
In the case of such an extensive web page, help and guidance in the usage is essential. There is a help available. Upon clicking it I was shocked to find out it was interactive with an actual human being sitting at the other side. There was no explanation in how to interact with this help. Interactive help felt somewhat stressful and a textual one would be much appreciated. Furthermore, search functions or a more available sitemap would have greatly added in an understanding of how to navigate the site.
4.4 Top shop

4.4.1 Quantitative data

<table>
<thead>
<tr>
<th>Heuristic</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 – Visibility of system status</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>H2 – Match between system and real world</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H3 – User control and freedom</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>H4 – Consistency and standards</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>H5 – Error prevention</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>H6 – Recognition rather than recall</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>H7 – Flexibility and efficiency in use</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>H8 – Aesthetic and minimalist design</td>
<td>0</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>H9 – Help users recognize, diagnose and recover from errors</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>H10 – Help and documentation</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>H11 – Support and extend the user’s current skill</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>H12 – Pleasurable and respectful interaction with the user</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>H13 – Protect personal information</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

4.4.2 Qualitative data

Heuristic 3 – User control and Freedom
No ‘back’ button available
‘Back’ button not always usable
No ‘undo’ button for partially submitted information

Heuristic 10 – Help and documentation
Help page contains limited information
Help page gives no instruction on general usage
No instructions on usage available

4.4.3 Other comments

In a similar fashion, the top shop web page was less aesthetic and hardly intuitive to surf. Here “Help and documentation” is by far the most problematic heuristic, followed by ‘User control and freedom’. While top shop actually has a ‘help’ topic, it contains very limited information and adds no clarity in how to optimize the web page. Details on general usage or on more complicated procedures. With the extent and complication of the web page, a more extensive help function is imperative.

“User control and freedom” could be the second most problematic heuristic with the classical problems with no ‘undo and ‘back’ buttons as well as buttons that do not perform what they promised. It is noteworthy, that the heuristics “Visibility of System status” and “flexibility and efficiency in use” could also qualify as particularly problematic heuristics. The page links onwards to other sites and with an inconsistent use of opening onward links and no indication of whereabouts in the system one is, it is easy to become disoriented. The sign up procedures are complicated and there will be no purchase without a registration. This pulls
down the flexibility and efficiency of the site, along with a clutter of information and a demand for complicated and less intuitive actions.
5. Conclusion

5.1 H1

Women’s apparel web shops will be greatly flawed in the heuristic “Help and Documentation”.

The clearest and most consistently problematic heuristic is “Help and Documentation”. For Mango, top shop and Halens it has the greatest number of usability disasters. The top spot of usability disasters is shared with another heuristic in the case of H&M. There is no doubt that this hypothesis has full support.

5.2 H11

H11: The most common weaknesses in this aspect will be the user’s inability to easily switch between help and their work.

Less clear is the support for the greatest common problem. None of the qualitative descriptions supports this hypothesis. This is largely due to the fact that there either is no ‘help’ topic available at all or because the help offered under such a topic is severely limited and lacking. Basically, the specific problem mentioned above can occur first when a ‘help’ topic is available and informative. The grocery shopping web pages are, as such, better developed according to Nielsen’s method, than the web pages for women’s apparel.

The apparent link between the findings of this study and the hypothesis make it difficult to truly state if there is support or not. With no ‘help’ topic available, there is no possibility to switch easily between this and work. If the ‘help’ topic is limited in its content, there is no cause to switch between help and work as all the information available is either insufficient or will easily be remembered. It could bring the author speculating to the nature of the problem once the pages develop proper ‘help’ topics and in such case, there could very well be strong support for the above hypothesis. To claim the hypothesis has weak or no support would also be inaccurate. Instead, the conclusion drawn is that the results are not applicable to lend support to or dismiss the hypothesis.

5.3 H2

H2: Women’s apparel web shops will be greatly flawed in the heuristic “User Control and Freedom”.

Sure enough there is evidence of the above mentioned heuristic being problematic, but it is hardly as clear cut as in the case of H1. ‘User control and freedom’ may be considered among the second most problematic heuristics for two web sites, the third most problematic for a third site and lastly among the top three most problematic for yet another web site. Considering the inconsistency of other problematic “heuristics” throughout the four tested sites, I still believe it is fair to give this hypothesis full support.

5.4 H21

H21: The most common weakness in this aspect is there being no undo function for action/group of actions.
There is mention of the problem with the absence of an undo button for two of the different sites, where it is the biggest problem under this heuristic for one web page. However, a bigger problem still would be the consistent lack of ‘back’ buttons throughout all of the web pages. ‘Back’ buttons and ‘undo’ buttons are rarely interchangeable or dependent upon one another. The introduction of one will rarely change the outcome of the problem. Instead they are seen as two different important components under the heuristic ‘User control and freedom’. As such, there is weak support to H21.

5.5 Contribution

As explained in the research constructs, this study sets out to lend support to or dismiss evidence of the most problematic heuristics for online web shops. While the previous study concentrated on grocery online shops, this study has focused on another form of online shopping – this time for women’s apparel. The results of the study show that the same two heuristics, ‘help and documentation’ as well as ‘user control and freedom’ would be the two most difficult heuristics for online shopping of women’s apparel – just as it had been for grocery shopping. This lends further support to that developers of online shopping sites should pay particular attention to these two heuristics as usability disasters frequently occur under this topic.

The more specific disasters were more difficult to pinpoint. In the case of ‘user control and freedom’ there was only weak support to that the lack of an ‘undo’ button would be a problem. The greater problem here seemed to be a lack of ‘back’ buttons. Here, no generalization may be drawn between the two studies. In the case of ‘help and documentation’ the problem had been a difficulty to switch between work and help. With no or poor ‘help’, the matter is not applicable. Web page developers need to master the first step, actually making functioning ‘help’ topics before the issue raised from the previous study is relevant.
6. Discussion

Although the purpose of the study does not directly involve the issue of other problematic heuristics, such ones have been discovered all the same. It is still of weight to bring these forth and discuss these as they may well be prevalent in other future studies.

Three other problematic heuristics make an appearance in this study. The most prevalent one, mentioned in two of the studies, as noteworthy was “Visibility of System Status”. In this case, the most common problems deal with lacking in showing the users location within the page. Furthermore, the web page opens up links inconsistently which in turn makes the user wonder if she/he was on this web page or another.

‘User flexibility and efficiency’ deal mostly with extensive clutter and information overload as well as complicating the registration and log in procedures to the point that the customer loses interest. Lastly, ‘help users recognize, diagnose and recover from errors’ is another heuristic mentioned. Here, the trouble has to do that the system provides little feedback to the user and when given, it would be in Spanish.

This study has extended a study by Chen and Macredie in an attempt to dismiss or support generalization possibilities for heuristics over all types of online shopping sites. This study lends support to the main heuristics, but less so to the reasons for these heuristics being problematic. Further research into the subject is needed as the topic grows more important for more people, buyers and sellers alike, by the day.

Two different types of online shopping sites still does not offer much possibility for generalization, yet the concurrency on heuristics between the these two studies does raise the curiosity. Is it the makings of a trend or is the fact that they concur on the problematic heuristics a fluke? There is a need to look into the other problematic heuristics mentioned in the paragraphs before and see if these occur in other online shops. Further research needs to be done to look into the more descriptive problem issues as well, as these are rather inconclusive.
List of references

Published sources:
Despotopoulos et al. (1999) "Developing an efficient model for evaluating www search engines” Proceedings from 17th IASTed International Conference pp. 87-89
Floyd (1997) ”Outline of a paradigm change in software engineering” Computer and democracy: A Scandinavian challenge Brookfield VT: Gower pp. 1
Institute of Electrical and Electronics Engineers, (1990), “IEEE standard glossary for software engineering terminology”, Los Alamitos p. 1
Kalakota & Whinston (1996) ”Frontiers of electronic commerce” MA: Addison-Wesley : pp. 1
Zhang & Von Dran (2002) “User expectations and ranking of quality factors in different web site domains” Intentional journal of electronic commerce 6(2) pp. 9-33

Internet sources:
Appendix 1

H&M
H1 – Visibility of system status
4 - No indication of place in the site
4 - No indication of place in the site section
4 - No feedback in content with error
3 - No hint of how the link will opening
1 - Location difficult to distinguish in sidebar

H2 – Match between system and real world
2 - Top bar headings are less intuitively named
2 - Second top bar heading are less intuitively named

H3 – User control and freedom
2 - Instant regret when shopping is not available
1 - Manipulation of shopping bag is through several clicks
3 - No ‘back’ button available between big topics
4 - No ‘back’ button available in links opening in new windows
4 - No ‘undo’ button for partially submitted information

H4 – Consistency and standards
0 - Inconsistent use of bread text font
0 - Inconsistent use topic font
2 - Inconsistent opening of links
2 - Inconsistent display of links

H5 – Error prevention
3 - Heavy web page
3 - Use of pop-ups

H6 – Recognition rather than recall
2 - No drop down menu offered in the shopping bag

H7 – Flexibility and efficiency in use
2 - Few choices in default change menu
3 - No content under some topics

H8 – Aesthetic and minimalist design
0 - Unbalanced use of pictures
0 - Inefficient use of pictures
0 - Unpleasant color use
1 - Irrelevant information in choice of default

H9 – Help users recognize, diagnose and recover from errors
4 - Many customer numbers may be given
4 - Little aid in wrongly entered information
H10 – Help and documentation
4 - No ‘help’ topic available
2 - The entrance page is available from the top bar, but this is unclear.
4 - Search function not available
4 - No instruction aiding wrongly entered data

H11 – Support and extend the user’s current skill
2 - No quick buttons available

H12 – Pleasurable and respectful interaction with the user
1 - Many clicks to gain required information

H13 – Protect personal information
2 - Finding security information is less than intuitive
Halens

H1 – Visibility of system status
2 - Poor visibility on location in step by step process

H2 – Match between system and real world
3 - Some subtopics are less intuitively named

H3 – User control and freedom
3 - No ‘back’ button available between topics
4 - No ‘back’ button between subtopics
3 - Consequences of using ‘back’ button are less intuitive
2 - Instant regret when shopping is not available
4 - No ‘back’ button in purchasing process

H4 – Consistency and standards
2 - Links are inconsistent
1 - Fonts in bread text are inconsistent
1 - Heading font is inconsistent
1 - Color choice is inconsistent
2 - Inconsistent size of pictures
3 - Links open up inconsistently

H5 – Error prevention
1 - Using pop-ups
2 - Matching between area code and area does not occur
Very basic check in submitting of info
1 - Not maximized potential of drop down menu
0 - Allow the user too much freedom in input choices

H6 – Recognition rather than recall
1 - Left sidebar does not show previous visits
1 - Second top bar does not show previous visit
1 - No drop down menu offered in the shopping bag
1 - Shows no previous visits/clicks

H7 – Flexibility and efficiency in use
1 - Too many clicks to find sought after information

H8 – Aesthetic and minimalist design
4 - Too much information offered on some pages
1 - Unpleasant color use
2 - Inefficient use of images
2 - Inefficient use of colors
3 - Tick boxes are barely visible

H9 – Help users recognize, diagnose and recover from errors
1 - Error message is not reintroduced, but remains static if another error is committed

H10 – Help and documentation
4 - No ‘help’ topic
4 - No instructions available for some more complex actions
3 - No movement between instructions and action
3 - Poor instruction on actions available
1 - The entrance page is available from the top bar, but this is unclear.
4 - No instruction on how to fill out incorrectly added information

H11 – Support and extend the user’s current skill
1 - No quick buttons available

H12 – Pleasurable and respectful interaction with the user
3 - Too much scrolling on web pages
2 - Choice tick box is ticked as default
1 - Text written without use of paragraphs

H13 – Protect personal information
3 - No personal information policy topic
3 - No security topic
Mango

H1 – Visibility of system status
4 - No indication of place in the site
3 - No indication of place in the site section
2 - No indication of place in step by step process
2 - Poor indication of place in step by step process
4 - Use of three different web pages to present same or similar information

H2 – Match between system and real world
4 - Online shop poorly integrated
2 - Color presented by boxes similar to tick – boxes
2 - Less than intuitive topic names
3 - Web page not available in local language
2 - Information available not country specific

H3 – User control and freedom
4 - Poor access to navigation tools
4 - No ‘back’ button
4 - Consequence of back button unclear
4 - No ‘undo’ button
2 - No ability to retrieve previous page by any means
3 - No “next” button in a step process
4 - No ‘undo’ button for partially submitted information

H4 – Consistency and standards
3 - Inconsistent use of links
4 - Inconsistent opening of links
1 - Inconsistent use of colors
1 - Inconsistent use of subtopic fonts
1 - Inconsistent presentation of bread text
0 - Inconsistent use of menu fonts
4 - Help is interactive in form of a chat room

H5 – Error prevention
4 - Use of pop ups
2 - Heavy web page
2 - Not maximized potential of drop down menu
2 - Not maximized potential of multiple choices
2 - Allow the user too much freedom in input choices
3 - Some buttons have unexpected effects on the web page
4 - Image downloads through pop-ups

H6 – Recognition rather than recall
4 - Some text can only be seen when highlighted
1 - Function of some arrow buttons is unclear
1 - Unclear where bread text will appear
4 – Shows no previous visits/clicks

H7 – Flexibility and efficiency in use
0 - Zooming too far available
4 - Shopping possible only after logging in

H8 – Aesthetic and minimalist design
1 - Too much information offered on a page
1 - Too many links offered on page
1 - Inefficient color use
3 - Font for names is too small
1 - Unbalanced use of pictures
0 - Inefficient use of pictures
2 - Unpleasant color use

H9 – Help users recognize, diagnose and recover from errors
4 - Error message comes back in Spanish
4 - No ability retrieve inserted information once error occurs
4 - Once menu is clicked, it remains up until a topic is clicked
3 - Forwarding the user onwards without warning
4 - No warning about use of pop-ups
4 - No feedback by web page when a pop up is blocked
2 - No feedback when some clicks fail

H10 – Help and documentation
4 - No textual help
4 - ‘Help’ button obscured
4 - No instruction on how to use the interactive help chat room
2 - No ‘search’ button
2 - Poor instruction in usage
4 - No instruction on usage
4 - Sitemap only available at times under few topics

H11 – Support and extend the user’s current skill
3 - No guide to possible shortcuts
1 - No guide to keyboard wise shortcuts

H12 – Pleasurable and respectful interaction with the user
3 - Color choice is presented in too small of a sample
3 - Name of some offered goods is difficult to find
3 - Too little information about the good is provided
4 - Choice tick box is ticked as default

H13 – Protect personal information
4 - No topic on treatment of personal information
2 - Conditions of privacy on submitted information poor
2 - Security information only available at certain times
3 - Finding security information is far from intuitive
Top Shop

H1 – Visibility of system status
4 - Each page offers too much information
4 - No status visibility in the ‘new window’ links
2 - Some links are completely unnecessary
4 - Complicated sign up procedures
3 - Using many exterior web pages in signing up

H2 – Match between system and real world
1 - Menu topics are sometimes less intuitive
2 - Onwards links are often less intuitive
1 - Several thoughts are presented under different topics
0 - Too many topics available in menu
1 - Topics available in too many different bars

H3 – User control and freedom
4 - ‘Back’ button is not always usable
1 - ‘Back’ button available when irrelevant
3 - No ‘forward’ button available to access the previous information
4 - No ‘back’ button available
1 - Instant regret when shopping is not available
4 - Manipulation of shopping bag is through several clicks
1 - Size may not be manipulated in the shopping bag
3 - ‘Previous’ button erases previously entered information
4 - No ‘undo’ button for partially submitted information

H4 – Consistency and standards
3 - Onwards links are inconsistent
2 - Grouping is inconsistent
3 - Links open up in different manners
2 - Some abbreviations are too diffuse

H5 – Error prevention
2 - Too many links onwards from main page
4 - Important information is presented in pop up windows
1 - Some choices are ticked in as default

H6 – Recognition rather than recall
3 - No drop down menu offered in the shopping bag
4 – Shows no previous clicks/visits

H7 – Flexibility and efficiency in use
3 - Quantity to choose is at times only one
4 - Too many different thoughts presented in one topic
3 - Optimized for an experienced user
4 - Online shopping not available for non-members
3 - Many ‘special functions’ are utilized less than intuitively
2 - Some information about the item is limited enough to be included immediately
3 - Too many clicks to find sought after information
H8 – Aesthetic and minimalist design
3 - Main page offers too much information
2 - Some images call for too much attention
4 - Too much information presented under many topics
1 - Too much color
1 - Too many different fonts
1 - Unbalanced use of pictures
1 - Inefficient use of pictures
1 - Unpleasant color use
2 - Some page information is irrelevant
3 - Some topics are irrelevant
2 - Unbalanced providing of information

H9 – Help users recognize, diagnose and recover from errors
4 - Some onward links do not work
3 - Some links are not clickable

H10 – Help and documentation
1 - The entrance page is available from the top bar, but this is unclear.
4 - Search function not available
3 - Poor instructions on usage
4 - No instructions on usage
3 - Available documentation too obscured
1 - The accessibility page holds too few topics
4 - Some ‘special’ functions come completely without instruction
3 - Some aid buttons do not work
4 - Little guidance to correction in wrongly entered information
4 - Help page contains limited information
4 - Help gives no instruction on usage
3 - Difficult to switch between help and other work

H11 – Support and extend the user’s current skill
3 - Too much information lends little support
2 - Shortcut information available is poorly explained

H12 – Pleasurable and respectful interaction with the user
4 - Too much scrolling on web pages
3 - Scroll available when unnecessary
2 - ‘Registration’ offers an “option”, but in reality all fields are mandatory

H13 – Protect personal information
4 - No single topic deals with personal information
4 - No information on payment safety