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Expressions, emotions, and website design

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The aim of the study was to investigate the relation between the design elements of web pages and (i) perceived usability, (ii) perceived expression and (iii) emotional responses. Two different websites, differing in content as well as in graphic design, colour schemes, the balance between text versus illustrations, etc., were evaluated in an experimental study involving altogether 20 subjects. Three main factors were identified that contributed to the perceived expression of the websites: graphic design; content; and perceived usability. Also the reported emotional responses appeared related to the same aspects.

Keywords: Web design; Affective design; Emotional response

1. Introduction

1.1 *Background*

According to the international standardisation organisation (ISO), usability is defined as 'the extent to which particular users can attain specific goals with efficiency and satisfaction in a particular environment' (ISO-DIS 9241-11). Another definition usability is given by, for example, Grudin (1992) who defines usability in terms of five attributes: learnability, efficiency, memorability, errors, and satisfaction. Both definitions thus describe one 'objective' dimension of usability, related to efficiency and performance, and one 'subjective' dimension, which illustrates how pleasant it is to use the system or product (cf. Nielsen 1993).

Several methods and tools for evaluating product usability have been developed based on the above definitions. Even so, the focus has most often been performance and efficiency while the experience of use and how the design of the product and/or the interface influence the user's perception of the product have not been a particular theme. Over the last years, however, satisfaction and above all 'pleasure' in the use of products have emerged as fundamental issues in order to gain competitive edge (e.g. Nagamachi 1995, Jordan 1997a, b, 1998, Lavie and Tractinsky 2000). Skelly (2007) considered

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cognition to be deeply intertwined with emotion and used the term 'seductive interfaces' to describe designs that aim to please and attract users. Bloch (1995) stressed the importance of product form in creating first impressions and argued that this initial response may generate inferences also regarding other product attributes in the same manner as, for example, price.

The arguments for acknowledging the satisfaction aspect of usability apply not least to information technology (IT)-based products and services. For instance, Nielsen (1996) argued that the use of information and communication technology (ICT) in the home may well stress the importance of, for example, appearance and enjoyment in use and concluded that 'not much is known about how to make interfaces seductive'. Weeimer (1995) noted that the product's appearance can influence people's perception of the ease of use of the product and that a negative reaction to the appearance of, for example, a user interface may create barriers to its successful use and adoption. Zettle (1999) stated that visual aesthetics is of prime importance for, e.g., the web as it influences the understanding of the viewers through manipulating their perceptions and intensifying and interpreting events.

Consequently, developing products with a use and usability oriented approach must encompass the cognitive aspects—of using and interacting with a product—as well as the affective aspects: how users feel about the product and about using it (cf. March 1994). However, while the importance of factors beyond performance and efficiency for use and adoption of ICT and IT-based services may have been acknowledged, their direct application in the design process has been noted to be less well understood.

1.2 *Aim*

In order to investigate further the relation between the design of an interface and the user perception of this design, an experimental study was carried out. In particular the study was designed to investigate the relation between the design elements of web pages and (i) perceived usability, (ii) perceived expression and (iii) emotional responses. Design elements in the realm of web design include, for example, layout, fonts, column width, image placement, empty spaces, shapes, colours, sound and animations.

2. Frame of reference

The following assumptions shaped the design of the study. On the one hand a user may experience a web page and make statements about the page as an object with meanings attached: 'It is . . .'. This concerns the expression and usability of the web page. On the other hand, the user can make statements about him/herself, the subject: 'I feel . . .', which is related to his/her motivation for using the page and the feelings experienced when watching and/or using. A theoretical foundation for the former issue, 'It is . . .', is found in product semantics while a theoretical basis for the second issue, 'I feel . . .', is found in psychology and different theories of emotions.

2.1 *Product semantics*

Product semantics is a research area that concerns the cognitive as well as the affective aspects of design. Product semantics has been defined as 'the study of the symbolic qualities of man-made forms in the cognitive and social context of their use and application of knowledge gained to objects of industrial design' (Krippendorff and Butter

1984). According to this definition, product semantics concerns the relationship between, on the one hand, the user and the product and, on the other, the importance that artefacts assume in an operational and social context.

Monö (1997) chose to describe the product as a 'trinity'. The first dimension, the *ergonomic whole* includes everything that concerns the adjustment of the design to human physique and behaviour when using the product; the *technical whole* stands for the technical function of the product, its construction and production; and, finally the third aspect, the *communicative whole*, designates the product's ability to communicate with users and its adjustment to human perception and intellect. Through the product gestalt (i.e. the totality of colour, material, surface structure, taste, sound, etc., appearing and functioning as a whole), the product communicates a message which is received and interpreted by the customer/user, resulting in, for example, an emotional response. According to Monö (1997), this message is 'created' by four semantic functions.

- *To identify*. The product gestalt identifies, for example, origin and product area. A bowl can be identified as part of a specific china set; a company can be identified by its trademark or by a specific design philosophy apparent in its products.
- *To exhort*. The product gestalt triggers a user to react in a specific way without contemplating or interpreting the product's message. For instance, the user is triggered to be careful and to be precise in his/her operation of the product. (To exhort can be regarded as an aspect of 'to describe' and 'to identify' in that the product design can enforce a certain expression in order to exhort a special target group to buy or use the product.)
- *To describe*. The product gestalt can describe the product's purpose and its function. It can also describe the way the product should be used and handled. For instance, a door knob can describe the way it should be gripped and turned.
- *To express*. The product gestalt expresses the product's properties, for instance stability, lightness or softness.

2.2 *Human emotions and affective design*

According to Desmet (2002), for example, there are different perspectives on emotions: the evolutionary, the bodily feedback, and the cognitive perspective where the last is regarded as the most promising for explaining product emotions. According to this perspective, emotions involve an assessment of how an object may harm or benefit a person (Arnold 1960). The process of emotions is explained by the process of appraisal and hence the meaning that an individual attaches to an event, for example.

Different emotions may be distinguished. Ekman (1992), for instance, proposed seven distinct emotions while Plutchik (1962) described eight so-called basic emotions. These basic emotions include anticipation, surprise, joy, sadness, disgust, fear, anger and acceptance. It can be assumed that product emotions are not a special type of emotions but that they have the same qualities as other emotions (Desmet 2002). This does not mean, however, that all emotions may be relevant product emotions.

Emotions are further manifested in different ways: in physiological reactions, in facial expressions, in behaviours, and in feelings when experiencing the emotion. Different assessment methods have been developed based on the different manifestations. For instance, measurements of changes in the autonomic nervous system such as changes in blood pressure or pupilary responses, observations and classifications of the facial expression that accompanies an emotion, observations of the actions an individual

engages in when experiencing the emotion, or self reports. Desmet (2002) proposed self-reports, verbal or non-verbal, for measuring product emotions.

Emotions involve, furthermore, a relationship with a particular object, e.g. a product. As discussed by Desmet (2002), the object of emotion may not always be the product but some association induced by the product. Experiencing joy in relation to a product may for instance be because it is associated with certain pleasant situations or activities.

3. Method

The study was carried out as an experimental study in which two commercial websites were evaluated.

3.1 *Participants*

Twenty subjects, 10 men and 10 women, were recruited to participate in the study. Their ages ranged from 20 to 50 years (mean = 34.3 years). The only criterion for being selected as a subject was that one should be fairly familiar with and have experience of using the Internet.

3.2 *Websites*

Two websites were chosen: www.santamaria.se (see figures 1a and 1b) and www.hansen.se (see figures 2a and 2b). The main reasons for choosing the two sites were that they were significantly different in their character and that information on the designers' intentions for the respective websites was available.

Santa Maria Ltd is the largest producer of food seasoning in Scandinavia. The chosen website intended to display the company's products and the main product segments: basic spices, Tex-Mex accompaniments, and seasoning. Communicative aims for the site were to create sympathy for the brand through associating the brand with comfort and joy, and to express inspiration and joy for food. This was to be accomplished by creating an entertaining, surprising and usable content of the website. The website addressed two target groups who were assumed to be interested in different product segments. The so-called Tex-Mex pages focused on a younger target group who were addressed through displaying experiences connected with the food. The basic spices pages focused, on the other hand, on an older target group who were addressed through displaying simple recipes.

Hansen and partners is an umbrella organisation for three different companies that arrange and sell events and conferences, travels to fairs, and regular business travels. The goal for the website was to be selling and inspiring. Communication aims for the three different business areas were: functionality and packaged services, for the area of business travel; unique, unexpected and inspirational, for the area of events and conferences; and up-to-date information, for the area of travels to fairs.

3.3 *Assessments and evaluations*

The framework for the design of the test was built on the assumptions that it is possible for an individual to make statements about the web page, i.e. 'the object', and about him or herself, i.e. 'the subject'. In order to assess possible correlations between the user's experience and the design of the web page both quantitative and qualitative data were collected. Quantitative data were collected by three different questionnaires:
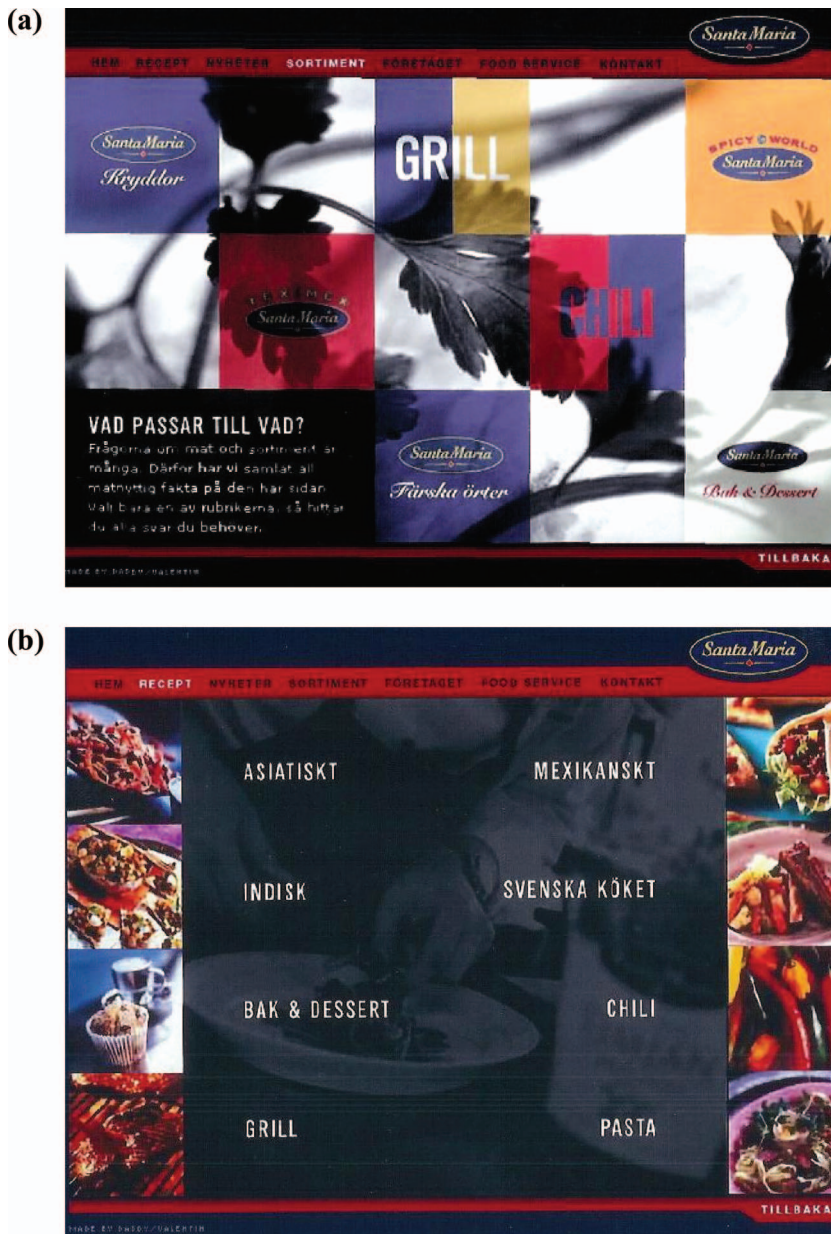
Figure 1a and 1b. Examples of web pages at the Santa Maria website. The colour scheme is dark blue, dark red and yellow. There are several illustrations. (These figures appear in colour on-line.)

(i) assessment of semantic expression, (ii) emotional response, and (iii) usability evaluation. In addition, individual interviews were completed where the subjects were asked to explain their answers to the three questionnaires. The last part was included particularly to investigate how different design elements affect the perceived expression and experience of the web page.

Figure 2a and 2b.   Examples of web pages at the Hansen website. The colour scheme is black, dark blue, light blue and white. There is a menu bar at the top, the page is divided into different sections or columns. (These figures appear in colour on-line.)

3.3.1 Assessment of semantic expression. In the first part of the test, the objective was to assess the subjects' perception of the expression of the websites. The Semantic Expression Questionnaire (a 10-item, 5-point Likert scale) used in the test was designed to assess whether or not the pages expressed the characteristics that were desired (or not) by the designers. The evaluated expressions were: Inspiring, Boring, Harmonious, Childish, Professional, Cheeky, Youthful, Unfashionable, Disgusting, and Consistent. These adjectives were explained by synonyms in order to reduce the number of interpretations. For instance, 'childish' was accompanied by the synonyms naive, ridiculous, and silly (the author's translations from the Swedish).

3.3.2 Emotional response. In the second part of the test, the subjects' emotional responses to the websites were collected. This was measured with an Emotional Response Questionnaire, an 8-item, 5-point Likert scale based on the eight basic emotions proposed by Plutchik (1962). A similar instrument was developed by Hesselgren (1985) and used to assess individual's emotional response to buildings/architecture. The eight basic emotions were included in eight statements, e.g. 'This design evokes in me a feeling of joy', to which the subjects were asked to agree or disagree.

3.3.3 Usability assessment. For the evaluation of usability, a third questionnaire, a Web Usability Questionnaire, was designed. The questionnaire was a 14-item, 5-point Likert scale which addressed topics considered important for website usability, e.g. the logic of the website, whether or not the user felt in control, how easy it was to understand how to interact with the website, and the ease of navigation.

3.4 *Procedure*

The test consisted of two different parts. In the first part, the subject was asked to look at five different screen dumps from one of the respective websites printed out on paper (A4 size, premium photo paper, using an HP Photosmart photo printer). The subjects were given 3 min to look at the five pages. After the 3 min had passed, the subjects were asked to fill in the Semantic Expression Questionnaire, followed by a short interview.

In the second part, the subjects were asked to interact with one of the websites on a computer (HP Pentium, 19'' monitor). Half of the subjects tested the Santa Maria site first, while the second half tested the Hansen site first. They were given two pre-defined tasks to solve with no time limit set for either tasks. On the Santa Maria web pages, the subjects were asked (1) to find a recipe for Mexican food and (2) to find a special offer. On the Hansen pages, the subjects were asked (1) to find out how to travel from Gothenburg to Ostersund (two Swedish cities) and arrive at a certain time and day and (2) to find out how much it costs to travel to the Comdex fair in Las Vegas. When finished the subjects filled in the Emotion Questionnaire and the short Web Usability Questionnaire. Afterwards they were asked to explain their answers. They then repeated the same procedure for the second website.

3.5 *Analysis*

Median values were calculated for all assessments. The Wilcoxon Rank Test (Siegel and Castellan 1988) was used to calculate statistically significant differences between the sites and the Spearman correlation coefficient (Altman 1991) was used to calculate possible correlations between, for example, expressions and emotional responses.

4.   Results and analysis

4.1   *Semantic expression*

The qualitative data elicited from the study identified three main factors that contributed to the perceived expression of the websites: the graphic design in terms of colours and pictures; the content; and the perceived usability. Perceived usability appeared related to the amount of information (text) on each page, whether familiar cues were present or not (links, menus, etc.), and the degree of consistency in terms of colours, structure and perceived overview, etc.

Furthermore, the expression of the two websites differed in some aspects but not in others. The differences were particularly obvious regarding the expressions: unfashionable, youthful, cheeky, boring and inspiring (see figure 3).

The Santa Maria website was considered more ***inspiring*** than the Hansen website ($p = 0.02$). The explanations could be found primarily in the relation between the content of the site and the interests of the subjects. An example of a typical comment regarding the Santa Maria website read: 'Yes, it is very inspiring since it is a subject that interests me'. However, also the graphic design of the websites was commented on, for instance: 'You become inspired since it has harmonic colours which you don't get tired of looking at'.

None of the sites was regarded as ***boring***, the subjects only agreed to some extent with the statement. There was, even so, a significant difference between the sites ($p = 0.01$). The expression of boringness seemed related to what was expected, the perceived degree of novelty: 'Because this is something you recognize from other sites, therefore it can be a bit boring'.

Figure 3.   Subjects' agreements with statements regarding the expressions of the respective websites, from $1 = $ do not agree, to $5 = $ completely agree. Median values ($n = 20$).

Both sites were considered to express ***harmony*** to the same extent. Based on the comments, the primary reason for this expression was the repetition of graphical elements. For instance, the pages within the site had the same colours, the pictures had the same size, the overall structure was the same: 'Yes, it sticks to the same colours, and there is balance in the pictures and it sticks to the same theme'.

None of the pages were perceived as expressing ***childishness***. Among the comments regarding the Hansen site, the subjects commented on the character of the business—as Hansen sells business trips, it cannot be childish: 'It isn't childish. As soon as it's business travels it can't be childish'. Also the colours were mentioned as affecting the judgement of the Hansen site: 'No, not at all (childish). The colours, the pictures and everything give it a sober and mild image'.

Again, both pages were considered as expressing the same degree of ***professionalism*** ($p = 0.34$). Professional seemed associated with the assumed usability of the site, based on, for example, the layout: 'Yes, it seems business like. It has a good structure and it is easy to see possible choices and it is quite logical the way it is built. I think it is easy to find things on this web page'. Also the overall impression of the websites, in particular regarding the graphic design, influenced this expression: 'Yes, it looks professional. It seems thought through. From a graphic point of view'.

According to the subjects, the Hansen website did not express ***cheekiness***: 'Absolutely not! And that probably depends on that it's rather strict and traditional', whereas the Santa Maria page did to some degree ($p = 0.04$): 'The red colour with some black . . . it feels provoking. Not negative, so that you're offended. No, it's more that it feels cool. They want to bring forth something new'.

Another difference was that the Hansen website was not considered ***youthful***, while the Santa Maria page was ($p = 0.007$). Based on the subjects' comments, however, it seems as though the interpretation of youthfulness was more a question of perceived target group than the actual expression of the web design. The Hansen page was, primarily due to its contents, perceived as directed towards businessmen and women while the Santa Maria website content was identified as directed towards a younger audience: '(It's youthful because) grandma doesn't like the new, spicy food'. In addition, some features, in this case a so-called 'refrigerator poetry' on the home page, affected some of the subject to assess the Santa Maria as youthful: 'Refrigerator poetry I associate with the movie Bridget Jones diary and I have many friends who do it. I have never seen any older person who does it even if they can do it'.

Both the Santa Maria and the Hansen websites were described by several subjects as 'classic' and 'traditional', i.e. had a design that would survive trends. Even so, the websites differed slightly in terms of their ***unfashionable*** expression ($p = 0.03$), the Santa Maria website was considered more modern than the Hansen website. Again, the colours and pictures were influential features but also the content, i.e. spices, Tex-Mex, etc., made the subjects associate with modern cooking.

The subjects provided very few comments on expression ***disgust*** but some of them mentioned the dark colours, others the choice of pictures (of food) in the Santa Maria website: 'Some of the pictures, of food (were disgusting)'. Finally, both websites were considered to be equally *consistent* in terms of their expressions.

4.2 *Emotional response*

Also the subjects' different emotional responses, according to their verbalised explanations, can be attributed to the usability of the websites, the content, and the

graphic design. The emotional responses to the two websites differed in all but 'sadness' and 'surprise' (see figure 4), though, as detailed in the next paragraphs, the apparent differences in 'irritation' and 'confidence' were not statistically significant.

Overall the websites did not elicit a feeling of **sadness**. The colour schemes of the website played an important role: 'No, not sad. I become happy by looking at the colours'.

The Hansen website evoked slightly more **worry** than did the Santa Maria website ($p = 0.02$). This was in particular related to the perceived usability: 'I worried about choosing the wrong option, the wrong route. You have to confirm several times before a booking is accepted'.

Also the feeling of **irritation** seemed related to usability issues, in particular to navigation and orientation, and to performance. Several subjects mentioned becoming irritated when they did not find the things they were looking for: 'Of course I would feel irritated when I cannot find what I want'. No statistical difference was found between the Hansen and Santa Maria website.

Expectation was felt in relation to both sites, even though slightly higher for Santa Maria ($p = 0.001$). Expectation was primarily related to the content of the website: 'I expect a number of really good recipes'.

The perceived **surprise** appeared related to whether the site turned out according to what was expected or not. This referred, for example, to the content of the website: 'It had a much larger assortment than expected', but also to interaction: 'You're supposed to interact the way you interact in other, similar, sites'. No difference could be found for the two websites.

Feeling **confident** may be important particularly for novice users. The subjects felt slightly more confidence in relation to the Santa Maria than the Hansen website but the difference in ratings was not statistically significant. Confidence seemed primarily related
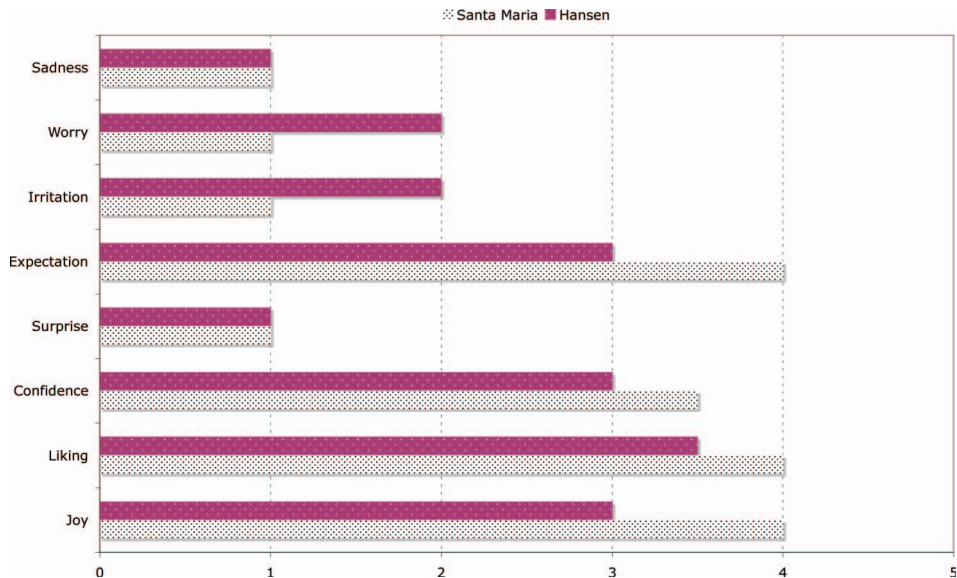

Figure 4.   Subjects' agreements with statements regarding their emotional response, from 1 = do not agree, to 5 = completely agree. Median values ($n = 20$).

to usability issues: 'I understand how it works...' and performance: 'I found what I set out to do'.

Liking was related to the content of the website: 'I like it (Santa Maria) because I like cooking' and to what benefits the subjects felt that the website provided. Also the usability of the websites was reflected in the subjects' assessments: 'I like it somewhat. But there were just too many choices'. The subjects experienced liking to a higher degree for the Santa Maria website than for the Hansen website ($p = 0.02$).

The feeling of *joy* was explained by the choice of colours and pictures, but also the content of the website. In relation to the Santa Maria particularly those subjects who were interested in food felt joy: 'It's fun to find some nice food, it's what's expected'. In relation to the Hansen website, the subjects did not regard joy as a relevant response: 'It's functional. You're not supposed to be happy'.

4.3 *Usability*

Overall, the difference in usability evaluation between the Santa Maria and the Hansen websites is small (see figure 5). The Santa Maria website is, according to the ratings, slightly more logical and the information is somewhat easier to extract. This may, however, be the consequence of the character and complexity of the tasks to complete.

4.4 *Correlations between expression, emotional response and usability*

An *inspiring* expression seems to be positively correlated with positive, emotional responses in terms of *joy* ($r_s = 0.54$), *liking* ($r_s = 0.62$), and *confidence* ($r_s = 0.50$). A *professional* expression seems negatively correlated with negative response in terms of
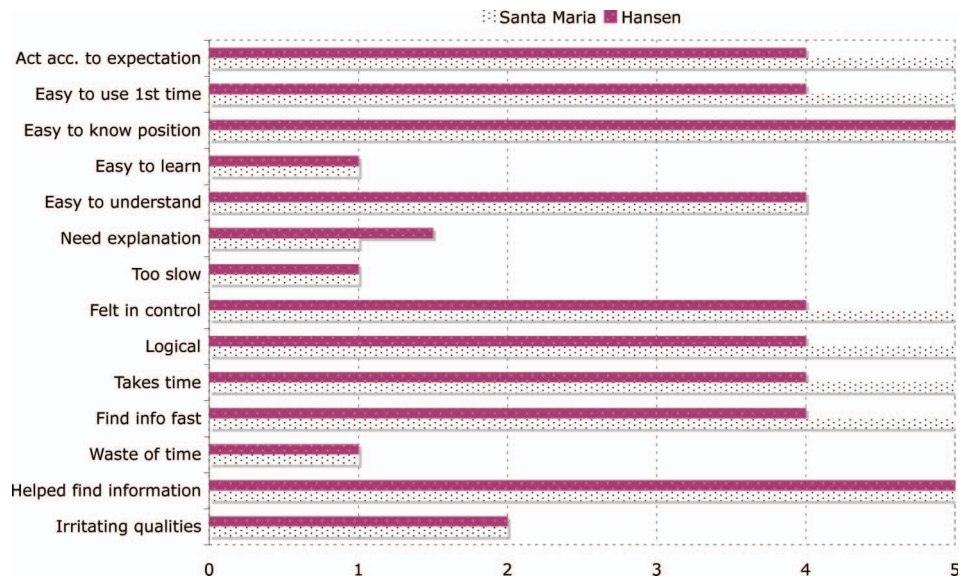

Figure 5.   Subjects' agreements with statements regarding the usability of the websites, from 1 = do not agree, to 5 = completely agree. Median values ($n = 20$).

irritation ($r_s = -0.55$), *worry* ($r_s = -0.54$) and *sadness* ($r_s = -0.64$). An *unfashionable* expression is positively correlated with *irritation* ($r_s = 0.50$) whereas an *unattractive* expression seems negatively correlated with *liking* ($r_s = -0.61$) and *confidence* ($r_s = -0.62$) but positively correlated with *worry* ($r_s = 0.75$) and *sadness* ($r_s = 0.59$). Finally, a *consistent* expression seems positively correlated with *confidence* ($r_s = 0.60$) and *expectation* ($r_s = 0.56$).

Usability (calculated as an average of assessments) seems positively correlated with a feeling of *liking* ($r_s = 0.61$) and *confidence* ($r_s = 0.71$) and negatively correlated with a feeling of *irritation* ($r_s = -0.62$), *worry* ($r_s = -0.62$) and *sadness* ($r_s = -0.63$). The correlation between *usability* and *joy* is weaker ($r_s = 0.40$). Other features may, hence, be more important for eliciting joy.

5.   Discussion and conclusions

The aim of the study was to investigate the relation between the design of an interface and the user perception of this design. In particular the study was designed to investigate the relation between the design elements of web pages and (i) perceived expression of the site; (ii) emotional response to the site and (iii) perceived usability of the site.

Two different websites were evaluated. The qualitative data elicited from the study identified three main factors that contributed to the perceived expression of the websites: graphic design; content; and perceived usability. Also the reported emotional responses appeared related to the same aspects.

5.1   *Factors affecting semantic expression and emotional response*

Earlier research has suggested a correlation between the aesthetic quality of a user interface, its perceived usability, and the overall user satisfaction with the product or system (Tractinsky *et al.* 2000, Lindgaard and Dudek 2003). Other studies, e.g. Hassenzahl (2003), have not found any obvious correlation.

Regarding website design specifically, Schenkman and Jönsson (2000) found that the best predictor of users' first impression and overall judgements of a website was its aesthetic qualities. Lauer and Pentak (2002) claimed that when a website is harmonious (has a pleasing arrangement of and balance between different parts, colours, etc.) it engages the user and creates a sense of order whereas a not harmonious design becomes either boring or chaotic. Colour is considered to evoke different emotions and, for example, Lindgaard (2006) claimed that colour is a strong predictor in the overall appeal of a web page or rather that colours are a main reason for disliking a website. Jämting and Karlsson (2001), on the other hand, did not find any clear correlation between website appearance and liking.

In this study, the subjects' responses to the appearance and aesthetics were elicited through their assessment of the semantic expressions of the sites and their verbalised motives for their assessments. The interviews showed that the choice of colours played an important role in creating the different expressions of the websites as well as in eliciting different emotional responses, a result which supports the findings by Lindegaard (2006). Also, as was proposed by Lauer and Pentak (2002) a harmonious expression was positively correlated ($r_s = 0.43$) with liking even though it did not have the same impact as, for example, a professional expression ($r_s = 0.59$) or an inspiring one ($r_s = 0.62$).

Also usability played an important role in the users' emotional response to the websites. Whether it is a satisfier or a dissatisfier only is another matter. The correlation between perceived usability and liking was high ($r_s = 0.61$), confirming earlier conclusions by, e.g. Jämting and Karlsson (2001). Actually, even though the subjects had not yet used the website, they identified and recognised certain visual cues (the amount of information on each screen, the balance between text versus pictures, and the consistency in layout, fonts, etc.) that led them to draw conclusions regarding, for example, navigation and ease of use. The initial impression, formed by the visual appearance of a site, is important in order to attract new and novice users.

On average, the subjects in the study gave the Santa Maria website a higher rating than they did the Hansen website. Appearance and perceived usability explain part of the difference in assessment but the study indicates that users must further experience that they belong to the intended target group in order to feel concerned by the site. The same conclusion was drawn in an earlier study by Jämting and Karlsson (2001). The contents of the websites had a large impact but also certain features (e.g. the fridge poetry) which were perceived as directed towards a specific age group.

In the study reported on in this paper, information was not elicited regarding neither the desired expressions, nor the desired emotional response to the different sites. Nevertheless, the subjects' comments indicate that what is regarded as a desired and/or expected feature, expression, and emotional response differ depending on the type of site, i.e. the context (cf. de Angeli *et al.* 2006). Based on the verbalised statements one may assume that users would expect and accept that a website, such as the Hansen one, would appear slightly less inspirational and exciting than the Santa Maria website. The Santa Maria website can be described as an exploration-oriented site, i.e. a site where users would explore for new impressions, new recipes and new ideas. They would expect to be surprised and excited. The Hansen website, on the other hand, could be termed a target search-oriented site. Users would most probably visit the site to search for and find specific information, to book a specified trip, etc., and they would expect to find reliable information quickly and efficiently. The expected emotional response would probably not be that of extreme joy or excitement (even though that was specified as a communicative goal by the designers) but rather, e.g. confidence.

5.2 *Fulfilling design requirements*

Even though not a primary aim of the study, a question is whether or not the intentions of the designers were fulfilled. Communicative aims for the Santa Maria website were to create sympathy for the brand through associating the brand with comfort and joy, and to express inspiration and joy for food. There were two target groups who were assumed to be interested in different product segments: a younger target group who were addressed through displaying experiences connected with the food, and an older target group who were addressed through displaying simple recipes. Based on the semantic profile for the Santa Maria website, these requirements were fulfilled.

The goals for the Hansen website were to be selling and inspiring. Communication aims were functionality and packaged services for the area of business travel; unique unexpected and inspirational for the area of events and conferences; and up-to-date information for the area of travels to fairs. Based on the test results, these goals were not altogether fulfilled. However, this may be the consequence of the experimental situation. The subjects were asked to find specific information and to book a trip, tasks which were relevant for a website such as the Hansen one, but still tasks not defined by the subjects

themselves. If the subjects had been users who actually searched for and booked a trip they would undertake themselves, the response might have been different.

Acknowledgements

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