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Improving Credibility on the Web with User Centred Design

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Abstract

Introduction: Research suggests that 80% of web users only spend a few seconds on a website. In these few seconds a user has to determine if the website is relevant to their needs and determine the credibility of the website and the organization behind it. The focus of user centred design (UCD) has been usability which broadly speaking refers to how easily software can be learned and used.

In human computer interaction the concept of credibility has been often studied through the lens of source credibility theory. One of the most prominent researchers in computer credibility, a field of study which has been named "captology", is BJ Fogg. Fogg has suggested that computers have 4 types of credibility: *presumed credibility*, *surface credibility*, *earned credibility* and *reputed credibility*.

This study seeks to combine SCT with UCD to create credible websites based upon user input through creating a new web design for Brumunddal Pistolclub using user centred methods informed by SCT.

Methods: The methods used in this study are often used in UCD processes.

- **Interviews**, for gathering user requirements and comparing different current designs
- **Sketching**, for quickly coming up with ideas and testing them,
- **Surveys**, to gather impressions and requirements a the design created based upon the sketches
- **Prototype**, based upon input from the interviews, sketches and survey
- At the end **usability testing** to measure how fast user can get information.

Throughout the study using mixed methods the current design is compared with others. In the interviews other designs. In the case of the survey and usability tests compared between the current design and a design proposal. Themes and requirements were gathered and mapped to their respective credibility type.

Results: Based upon data gathered using mixed methods it was found that when assessing the credibility of a shooting organization users may look for

- A website using the latest design trends
- A website reflecting the activities of the club
- A website reflecting the social nature of the activities
- A website that keeps up with the latest news and results.

Based upon the results a prototype was created and tested using usability testing to see if a website having these characteristics were a more usable website than the current design. The results indicate that the more credible website was the most usable one.

Sammendrag

Introduksjon: Forskning antyder at 80% av brukere på webben bruker bare et par sekunder på en hjemmeside. I disse få sekundene må en bruker fastslå om hjemmesiden er relevant til deres behov og fastslå troverdigheten til hjemmesiden og organisasjonen bak den. Fokuset til brukersentrert design (UCD) har ofte vært brukskvalitet som stort sett referer til hvor enkelt programvare er å lære og bruke.

Innen menneske maskin interaksjon har troverdighetskonseptet ofte blitt studert gjennom kilde troverdighetsteori (SCT). En av de mest fremtredende forskerne innen datatroverdighet, et felt ofte kalt "captology", er BJ Fogg. Fogg har antydnet at datamaskiner har 4 typer troverdighet: antatt troverdighet, overflate troverdighet, opptjent troverdighet og anerkjent troverdighet.

I denne studien sees det på hvordan man kan kombinere SCT med UCD for å lage troverdige hjemmesider basert på hva brukere synes gjennom å lage et nytt design for Brumunddal Pistolklubb sin hjemmeside ved å bruke brukersentrerte metoder informert av SCT.

Metoder: Metodene brukt i denne studien er ofte brukt i brukersentrete prosesser.

- **Intervjuer**, for å samle brukerkrav og sammenligne ulike nåværende design.
- **Skissering**, for raskt å komme opp med ideer og teste dem.
- **Spørreundersøkelser**, for å samle inntrykk og nye brukerkrav på designet laget ut fra skissene og intervjuene.
- **Prototype**, basert på innspill fra intervjuene, skissene og spørreundersøkelsen
- Til slutt **brukskvalitetstesting**, for å måle hvor kjapt brukere kan finne informasjon.

Gjennom hele studien ved hjelp av blandede metoder er dagens design sammenlignet med andre. I intervjuene mot andre design. I spørreundersøkelsen og brukskvalitetstestene mellom dagens design og et designforslag. Temaer og krav ble kartlagt til deres respektive troverdighetstype.

Resultater: Basert på data innsamlet ved hjelp av blandede metoder ble det funnet at når man vurderer troverdigheten til en skytterorganisasjon, kan brukerne se etter:

1. Et nettsted som bruker de nyeste designtrendene
2. Et nettsted som reflekterer klubbens aktiviteter.
3. Et nettsted som reflekterer den sosiale arten til aktivitetene.
4. Et nettsted som har de siste nyhetene og resultatene.

Basert på resultatene ble en prototype opprettet og testet ved hjelp av brukskvalitetstesting for å se om et nettsted som hadde disse egenskapene, hadde høyere brukskvalitet enn det nåværende designet. Resultatene indikerer at den mer troverdige nettsiden hadde høyere brukskvalitet.

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1 Introduction

The website is often the first and only contact a user has with an organization. This means that the web presence is one of the most important assets an organization can have. Research suggests that 80% of web users only spend a few seconds on a website. (1) In these few seconds a user has to determine if the website is relevant to their needs and determine the credibility of the website and the organization behind it.

User centred design (UCD) has for decades been used successfully in creating usable software. The focus of UCD has usually been usability which broadly speaking refers to how easily software can be learned, used and satisfy the user's needs. As the Handbook of Usability Testing puts it "the user can do what he or she wants to do the way he or she expects to be able to do it, without hindrance, hesitation, or questions." (3) similar definitions of usability can be found elsewhere for example ISO 9241-11 "The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use". (4) therefore UCD processes have usually been focused on usability concepts such as effectiveness, efficiency and satisfaction without taking into consideration issues such as credibility or trust.

In human computer interaction (HCI) the concept of credibility has been often studied through the lens of source credibility theory (SCT). One of the most prominent researchers in computer credibility, a field of study which has been named "captology", is BJ Fogg. Fogg (2) has suggested that computers have 4 types of credibility: *presumed credibility*, based upon a users assumptions, *surface credibility*, based upon a users first impressions, *earned credibility* based upon a users first hand experiences over time and *reputed credibility* based upon third party endorsements.

There has been little research on how to use Fogg's work on computer credibility as part of the focus of a UCD process. In fact work done by Fogg has been criticized in the past for being designer and system centred with little reference to for example user testing or user involvement in the process at all. (5)

By combining concepts from SCT with UCD this study seeks to create a process that not only focuses specifically on how easy an application is to use or learn, but also on how users perceive the application and its credibility.

In order to create such a process as part of this study a new website for Brumunddal Pistolklubb (BPK, Brumunddal Pistolclub") will be created. Established in 1954, BPK is a sports shooting club associated with Norges Skytterforbund ("Norwegian Shooting Association") and offers shooting programmes approved by the Politidirektorat ("Norwegian Police Directorate"). In order to design this new website concepts from SCT will be used together with UCD methodology such as interviews,

sketching, prototyping and surveys to help create a new credible and usable website for BPK. Designing a website for a pistolclub is interesting from a credibility standpoint as the topic of firearms can be controversial.

This studies contributions is threefold: 1) giving some insights into what people think of firearms related sites 2) suggestions on which SCT ideas can inform UCD and finally 3) suggesting a model in which UCD can help create a credible web site.

1.1 Keywords

Credibility, trust, persuasiveness, user-centred design, web, usability

1.2 Research questions

1. What do people look for when assessing the credibility of a web site related to sports shooting?
2. Can source credibility theory be used in a user centred design process to create credible web sites?
3. Does credibility affect usability?

1.3 Disclosure

In the interest of full disclosure this thesis was written by a member of Brumunddal Pistolclub, at least at the time when this paper was written. Nothing was offered in return as a result of this thesis.

1.4 Definitions

Credibility is how much a person believes something. Credible information is believable information and credible people are believable. Credibility is a perceived quality, it does not exist within an object, person or piece of information, but within the mind of the user perceiving it. When discussing the credibility of a website it refers to the perception of the credibility of the website. (2)

User centred design is an iterative approach where the designer bases decisions upon user requirements and input. User requirements and input are gathered throughout the design process in order to inform the design so that it may better fit the needs of the users. Users themselves are often involved in order to better understand their requirements. Requirements are often what users needs and the different tasks they need to do in order to meet their goals. The user centred approach in this study seeks to gather insight into how users assess a websites credibility and how this can be integrated into a user centred approach. (3)

Source credibility theory is a theory concerned with peoples perceived credibility of a source. It has two main factors: trustworthiness and expertise. (6) In computing these two factors and further categorized into 4 types of credibility: presumed credibility, reputed credibility, surface credibility and earned credibility (2). All 4 being affected by the two main factors: trustworthiness and expertise. This study seeks to gain knowledge on how source credibility theory can be used in a user centred context.

Usability is how intuitive a product is. How easy the product is to learn and use without causing the user frustrations and how satisfying the product is in relation to the user's needs. (3)

2 Background

In this chapter the reader will be described the theory behind the methods and ideas used in this study. First there will be a general description of the research behind source credibility theory (SCT) and its origins. Then a discussion on SCT and how it has been used in human-computer interaction research, a discussion on how SCT and usability relates to each other and finally a short description of what user centred design is.

2.1 Source credibility theory

Source credibility theory (SCT) has its origin in the 1950's. It has its roots in communication theory such as the communication models created by Lasswell (7) and the influential Shannon-Weaver model (8, 9). The Shannon-Weaver model suggests that in a communication system, a message is transmitted from an *information source* using a *transmitter* through a *channel* and is affected by *noise* as the message travels to the *receiver* and finally to the *destination*. This process is usually simplified to *sender, message, transmission, channel, reception and receiver*. (figure 1).

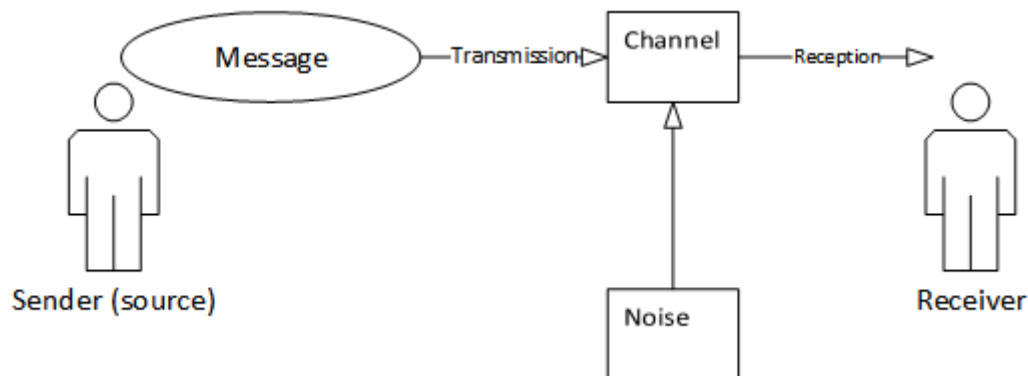


Figure 1: A simplified communication model

SCT is concerned with how the credibility of the source component affects how a person perceives the message. In some sense how source credibility creates *noise* in the communication system.

In 1951 Hovland suggested that the credibility of a source is determined by two factors: *trustworthiness* and *expertise* (6). For decades marketers, politicians and other professionals have been interested in the credibility implications of the source component in communication theory. The dimensions of source credibility have been widely identified as expertise and trustworthiness. The dimension of expertise determines whether or not the source is perceived to be able to make correct assertions and the dimension of trustworthiness refers to whether or not the audience

determines the source makes assertions it believes are valid. Other dimensions have been proposed by different researchers such as dynamism, authoritativeness, character, competence, attractiveness and objectivity. (10)

Many advertising firms have made use of the dimension of expertise to increase the credibility of the products, most often by endorsements from figures often associated with expertise such as doctors, engineers, celebrities or successful businessmen. The expert does not have to be a real person. When The Software Toolworks released "Mavis Beacon Teaches Typing" in 1987 they decided to use a confident model dressed as a high school teacher on the cover in order to give their product a perceived sense of expertise (or authority) of being a tutor. Similarly the name of the program "Mavis Beacon" gives a sense of willing to guide the user such as a lighthouse acts as a beacon for ships in the night. (11)

It has been suggested that credible sources require less work to attract customers and are more influential as suggested by readership scores and on product and company attitudes. (10)

Some studies have shown that the perceived trustworthiness of a source has an impact in persuasion. Some participants were more persuaded when overhearing another person speak if they thought the speaker was unaware of them. When participants were made aware of a speaker's intention or message in advance persuasion was more inhibited, however in some cases a speaker's perceived intention of the audience's wellbeing seemed to remove inhibitions on persuasion. (10)

Some findings have however been that a low level of trustworthiness may not have much of an effect on persuasion with perceived expertise being a constant. Advocating for a self-serving position seemed to not affect a source's persuasiveness even when the source was judged as being less fair for doing so. It has been suggested that source trustworthiness and similar concepts such as objectivity, persuasive intent and sincerity are not related in a simple way to persuasiveness. This seems to indicate that expertise and trustworthiness may have different weights. Though overall a trustworthy and expert source incited the largest change in opinion. It is unclear whether or not trustworthiness or expertise has the most weight in persuasion as different studies provide different results, though it does seem that trustworthiness alone may not be sufficient or at least less important than expertise. (10)

When looking at expertise, trustworthiness and attractiveness, the most reported dimensions of source credibility, in the context of nationality or culture researchers found that it was remarkably similar between American and Korean participants. All three dimensions were equally important in purchasing intentions and all three affected involvement with advertisements equally. Of the three trustworthiness had an impact on attitude towards the brand and its beliefs. When it came to attitude

towards the advertisement itself the perceived attractiveness of the endorser was more important than the other two. (10)

2.2 Credibility on the web

Web-based communication research suggests 4 main factors affecting credibility: expertise, trustworthiness, physical attractiveness (2) and dynamism (12). The closest we can get to physical attractiveness and dynamism on the web is the user experience of the website and how pleasing it is. In a study asking 2500 participants 46.1% of participants made a credibility comment about the graphical design of a website while 28,5% made a comment about information design and information focus. (13)

Some of the initial investigation relating to computer credibility was done by Fogg and Tseng. (2) they outlined computer credibility as requiring the two dimensions: trustworthiness and expertise. Giving trustworthiness the synonym "dependability" and credibility the synonym "believability" in an effort to help standardize research terminology in Human-computer interaction due to differing definitions used in papers.

In their paper they identified four types of credibility:

Presumed credibility:

How much the perceiver believes something or someone because of assumptions in the perceivers mind.

Example: "if a website domain ends in .org it is a non-profit".

Presumed credibility is the users assumptions before they know anything about a website or organization. Universities have high credibility for simply having "University" in their name or being a non-profit organization.

Reputed credibility

Based upon third party endorsements, reports or referrals.

Example: The individual was referred to the website by a friend or a website the individual believes is credible.

Reputed credibility is important in giving the user confidence in the website. This is usually achieved by showing the logos of partners, awards and similar. It is however important that they are genuine and appear as genuine otherwise it may instead harm credibility.

Surface credibility

Based upon simple inspection, first impressions.

Example: The individual perceives the website as professionally designed and aesthetically pleasing.

Surface credibility is perhaps the most important type of credibility. If this type of credibility is low by being unprofessionally designed, having a bad aesthetic or bad

presentation or quality of content the user might leave the site before any message is understood. (11)

Factors that improve surface credibility is a good, fitting aesthetic with relevant high quality or at least unique imagery. Usage of stock imagery should be very limited as it may suggest untrustworthiness or that the organization wants to hide who they are. A fitting logo is also very effective in building surface credibility especially in conjunction with a highly credible website. (14)

Experienced credibility

Based upon firsthand experience.

Later research by Fogg (11) superseded experienced credibility with earned credibility with the actual first experience being merged into surface credibility.

Earned credibility

Based upon firsthand experience over time.

Example: The website has fast customer service, organized in a way the individual perceives as making sense.

Earned credibility is gained by consistently providing the user with a good experience. For a news site this could mean being constantly up to date with the latest relevant news, for a shooting organization it could mean having the latest match scores updates as quickly as possible and information about new competitions and meetings. Efficiency and effectiveness in the web sites navigation is also important so that the users find the information they want quickly.

The different types of credibility are not mutually exclusive and an eventual evaluation of a website should probably keep all these types of credibility in mind.

2.3 Credibility and usability

According to Rubin et. al. (3) for a product to be usable it has to meet several criteria: Usefulness, efficiency, effectiveness, learnability, satisfaction and accessibility.

Usefulness is the degree in which a user feels a product can achieve their goal. If the user feels that a product is not suited to their needs they will not be motivated to use it. The types of credibility that could be related to usefulness is surface credibility and earned credibility in which surface credibility provides a motivation to use the product on first impression and earned credibility by giving the user useful and consistent service.

Efficiency is how fast a user can complete a task and could be related to earned credibility as completing tasks quickly is an indicator of quick service. Effectiveness can also be related for the same reason as it refers to the product behaving in a way the user expects it to. Learnability the factor in which the product is easy to learn or how infrequent users quickly manage to relearn the system can also be related.

Satisfaction could be rather complex as it is about users perceptions, feelings and opinions of the product. Which could be related to all four types of credibility, however for a user to be truly satisfied the product would need to meet a user's needs on multiple occasions and thus earned credibility could be the most important part.

Accessibility refers to the ability of the target group regardless of disability, temporary or otherwise, to be able to use a product. On first impression seeing the product being able to possibly meet a disabled users needs would create surface credibility and actually meeting their needs repeatedly would create earned credibility.

2.4 Ethics of persuasive design

Persuasive design raises many questions after all it combines the two technology and persuasion into one fairly controversial one. As Fogg describes (11) the ethics of persuasion can be traced back to Aristotle and other classical rhetoricians and it continues on to this day. Persuasion in the extreme could be used to indoctrinate or coerce people into doing things they otherwise would not do, but on the other hand some believe that persuasion is the hallmark of ethical leadership and essential for participatory democracy. (11)

Fogg describes that technology has its own ethical concerns:

- Technological novelty can distract from its true intent by distracting users and therefore persuade them.
- Technology can exploit the reputation of computers as smart or impartial. causing users to accept information that may be untrue.
- Technology can be persistent by consistently bombarding users with messages to purchase something or continue using a product.
- Technology controls interactivity leaving no other choice, but to either leave or continue.
- Technology can affect emotions, but are not affected by them.
- Technology cannot be held accountable for actions made to persuade users.

Fogg states that ultimately the ethical responsibility remains with the designer. It is therefore important during a design process to analyse the benefits and consequences of their designs. (11)

2.5 User centred design

User centred design (UCD) originates from the field of human-computer interaction (HCI). Known under different names such as human factors engineering, ergonomics or usability engineering, UCD has for decades been developed as a set of approaches used to see the development of software from a users perspective. UCD represents the methods, process and procedures used to create usable products and systems and a philosophy in which the user is set first. It seeks to consider the limitations and capabilities of the users rather than to force the users change how

they get things done. The main purpose of including users in the process is to help eliminate any incorrect assumptions a designer may have. (3)

Common methods in UCD research are interviews, ethnographies, user tests, observations and user tests. A usual UCD process is an iterative process and can be described as follows

- Gather user requirements
- Designing alternatives
- Prototyping
- Evaluation

Further descriptions and discussion of UCD methods used in this study can be found in the methods chapter.

3 Methods

The goals of this study is to gather insights into web site credibility from a qualitative and user centred perspective. In order to do this a new website design will be created by combining user centred design (UCD) with source credibility theory (SCT). While this study is mainly qualitative, but it will have some quantitative aspects with multiple methods being used together to gather data which means that this study could be considered as using mixed methods. The methods used originate from user centred design and from general qualitative research to examine the baseline credibility and usability of BPK's website and then to iteratively create an alternative design and examine its own credibility and usability.

The examination methods used are interviews, surveys, usability tests and prototyping.

Even though there seems to be a lack of research regarding using UCD with SCT there are certain similar studies conducted with similar goals such as Soliman's master thesis (15) which combined UCD and Persuasive Design to help a business rent more clothes to customers by the use of surveys and usability testing, Banati and Bedi (16) concerned with quantitative measurement of trust and Robins and Holmes whose study indicates that a highly aesthetic website has higher credibility. (17)

This study is user centred and consists of four main phases. 1) A phase dedicated to gathering user requirements and perceptions about the current website, 2) a phase in which the data gathered from the previous phase is used to create and inform a new design 3) a phase where a prototype is developed based upon data from the previous phase and 4) and phase where this new design is evaluated. These phases are iterative and do not necessarily progress in a linear fashion.

This study can be seen as a combination of a descriptive exploratory study by the use of surveys and interviews and an experimental study by the testing of different designs. (3) (18)

3.1 Ethics

As this study involves people it is necessary to put the participants interests first. This study is mainly concerned about five main ethical considerations regarding participants and their information: 1) No one will be pressured to participate, 2) If someone wants to participate and if their participation may require some effort they will be **informed** both orally, if possible, and in writing about the project so they may properly **consent**. 3) Peoples time is valuable therefore they will be given an estimate of how long their participation will take 4) Participation is entirely **voluntary** and finally 5) No personally identifiable data will be published as part of the study, everything will be **anonymized**.

Other ethical considerations are described in subsections.

3.2 Interviews

Design: The purpose of these interviews was threefold 1) To give insights into what people like and dislike about the current website and 2) to present other websites related to shooting and let the participant describe what they like about those websites and 3) compare what people liked and disliked in order to create an initial design.

The interview type used was *semi-structured* interviews. Semi-structured interviews allows the researcher to create an interview guide [**Appendix D**] with pre-defined and categorized questions, but it also gives the researcher the ability to ask follow up questions on emergent topics the researcher might have not considered before. As these interviews were intended to be mostly qualitative the researcher let participants speak their mind on the topics until they did not have much other things to say.

The interview contains multiple questions related to the 4 types of credibility. Some of the questions were designed to be simple Boolean (yes/no) questions while others were designed to be long form answers in which the participant could voice their opinions in detail.

The first questions were related to presumed credibility the participant was asked questions about the domain name and what it means to them, what type of organization that may be behind the domain name and finally a question about how the user thinks when they hear the actual name of the organization. This is to see if the participant knows anything about the organization and what assumptions they may have based upon the information they already have.

The second set of questions were related to surface credibility. Before these questions were asked the participant was shown the homepage of the organization. This was done to give the participant a first impression or remind them of how the website looks like. Then the user was asked questions related to the visual design of the website and their impression of it. There were two follow up questions one specifically asking about the websites use of colours, images and one related to the logo of the organization.

The third section was a question related to reputed credibility. The question asked is if the participant had heard of the website of organization previously.

The fourth set of questions was related to earned credibility. As this was meant as a onetime interview it would be difficult to ask questions about earned credibility as it is about experiences over time, however as the participant was previously shown the website and could look at it at will the participant would have some experience with the homepage at the very least. The questions asked is if the participant perceives the website as updated in terms of visual design and in terms of being up to date on current events and if the participant perceives the website as easy to read.

The final question was a general question about what the participant thinks the homepage is missing in general.

Ethics: All interview participants were presented with an informed consent form [Appendix A] and a oral description of the project and it's purposes. By giving an explanation in writing and orally the researcher can be sure that the participant understood the purpose of the interview and the topics they would discuss. No actual responses will be published, but the interviews will be summarized.

Recruitment: 3 participants were recruited through snowball sampling and 1 person was recruited through convenience sampling. Recruitment happened on both social media and through physical interactions. The total of 4 participants is rather low a higher number such as 10 would have been preferred in order to give more detailed information.

Analysis: The interviews were analysed by establishing categories based upon Fogg's research (see 2.2). Categories based upon previous research is often known as a-priori categories (see table 1). To gain an understanding of recorded answers *content analysis* (18) was employed in addition to an *emergent coding* scheme to address and categorize possible co-occurrences and patterns the researcher might not have considered. In addition after the themes and categories were established they were counted and given either a positive and negative weight.

Credibility type	Website element
Presumed credibility	<ul style="list-style-type: none"> • Domain name • Organization name
Reputed credibility	<ul style="list-style-type: none"> • Referrals
Surface credibility	<ul style="list-style-type: none"> • Visual design • Information design • Images • Colours • Activity
Earned credibility	<ul style="list-style-type: none"> • Usability • Readability

Table 1: A-priori categories

Domain name: People assume things about a website based upon the domain name. As previously said in 2.2 the domain ending (TLD), such as .com, .org, .net, .no, affects how certain users perceive the organization. Fogg also suggests that the domain name itself (SLD) can have an effect on a users perception. (11)

Organization type: As previously stated in 2.2 the type of the organization can have an impact on credibility. In 2.2 "University" was mentioned as an example of a type that was perceived as giving higher credibility.

Referrals: Referrals in form of partners or awards by organizations the user perceive as credible can have an effect on credibility. (see 2.2)

Visual design: The general visual design of a websites could have an effect on credibility. (see 2.2)

Information Design: Designing a website so related information is categorized properly could have an effect on credibility. (19)

Images: The usage of unique and relevant imagery could have an impact on credibility. (see 2.2)

Colours: The usage of appropriate colours could have an effect on credibility. (see 2.2)

Activity: The perceived activity on a website, in terms of news updates etc., could have an effect on credibility (see 2.2)

Usability: How usable a website is can have an effect on credibility. (see 2.2)

Readability: Possibly related to usability as well. Consistently meeting a user's needs, such as consistently providing accurate information, could have an effect on credibility (see 2.2)

3.3 Survey

Design: The purpose of the survey was to gather opinion of the website from a broader set of people. While the interviews also sought to get an impression of what people thought of other websites related to the shooting sport in addition to BPK's website, the survey focused on BPK's website and a alternative design [**Appendix E**].

The survey [**Appendix E, questions translated in Appendix F**] is comprised of 25 questions 4 questions on a Likert scale, 5 being Boolean yes/no questions the rest being free text questions allowing the participant to type what they wished. This results in both quantitative data and qualitative data. The questions are similar to the interviews and relates to the same categories: 1) presumed credibility 2) surface credibility 3) reputed credibility 4) earned credibility and 5) general impressions.

The survey was divided into 3 parts. The first had questions about the presumed credibility of the club's name and website domain. In the second part the participant was introduced to the front page of the current website and asked questions about its surface, reputed and earned credibility. The third part introduced a new design of the front page and the participant was asked the same questions.

As recommended by Lazar, Feng and Hochheiser (18) a pilot study was conducted in order to test the survey before it was released, this was in order to test if the questions got the answers as intended and to fix any questions that might have been poorly worded or misspellings.

Pilot Recruitment: For the pilot study 2 participants were recruited using convenience sampling.

Recruitment: Participants were recruited through virtual snowball sampling (20). A link was posted on several Facebook groups asking for participation in the survey. The usage of different Facebook groups was an attempt not only to recruit more participants, but an attempt not to skew the participants in favour of any group of people.

Ethics: By posting on Facebook pages the participants voluntarily takes the initiative of participating. The survey was not posted without the consent of page administrators in case they would not approve of the research being conducted.

The survey was submitted to Norsk Senter for Forskningsdata (NSD, "Norwegian Centre for Research Data") for approval before it was conducted due to the risk of person identifiable data due to the platform used to conduct the survey (QuestBack) possibly recording participants IP address.

Even though it is not intended to collect personal information every participant was presented with a informed consent form **[Appendix D]** both in order to inform the participant to what they are about to partake in, but also as a requirement of the NSD.

Analysis: The survey results were analysed by the same methods as the interviews, however the categories found in the interviews were used as A-priori codes rather than the categories established by Fogg alone.

3.4 Sketching

Sketching is often used in UCD to quickly generate ideas and quickly reject bad ones before they reach the prototype stage. These sketches were informed by the themes and topics touched upon in the interviews. (3)

The purpose of sketching was to try out ideas before they were implemented as a digital prototype. The sketches and the ideas were quickly tested on friends, family and others to get an idea about the merit of the ideas. They were asked usability related questions such as "where would you click to get the latest news?" or "what do you click on to get to the shooting range rules?" as quick questions to see if the design ideas made sense.

3.5 Prototyping

By using the insight gathered from the interviews, survey and sketches a prototype was created. This prototype was created using Wordpress to quickly create a functioning high fidelity prototype, by using Wordpress the prototype could be easily be converted to a live website if the club desires.

3.6 Usability testing

Recruitment: For the user tests 4 people were recruited using convenience sampling. Nielsen and Landauer recommends a total of 5 people to conduct usability tests, however due to the limited time and resources of this study only 4 people could be recruited. In their estimations this could lead to approximately 77% of usability issues found. (21) Rubin et. al. recommends 3-4 people in usability testing (3). Therefore Nielsen also recommends that one should recruit as many as cost and times allows. Therefore 4 people was seen as sufficient.

Design: Mainly concerned to give an indication of possible earned credibility. The usability testing made use of a mix of both comparative and summarative testing (3). The participant was presented with a set of tasks to complete independently. After the usability tests were done they were asked to comment on their experiences through a few questions. The participants were asked first to test the current design and then the prototype. Time to completion was measured.

Ethics: Usability testing is concerned with the usability of the design. It is therefore important to let the participant know that it is the design that is tested not the participant themselves.

The usability test questions and notes can be found in **[Appendix G]**.

4 Results

This chapter presents the results gathered during the course of this study and their analysis. First in order to inform an initial design an interview study was conducted where the participants were asked to comment about different websites related to shooting sports (4.1). Based upon interview findings sketches were drawn (4.2) and people were informally approached and asked to do a simple task and asked for the opinion about the sketches. Based upon data gathered from the interviews and the sketches an initial design was created (4.3). Using this initial design a survey was created featuring both the current and the new initial design participants were asked to comment on (4.4). Further based upon the data gathered from interviews, sketching comments and survey a prototype was created (4.5). This prototype was then assessed by usability testing (4.6). At the end the final design will be described and findings summarized (4.7).

4.1 Interviews

Categories were created based upon the comments the participants made about different aspects of the websites talked about in the interviews. The purpose of this was to better understand the needs and opinions of potential users. The topics of the participants were associated with a website element which was then associated with their main category as seen in Table 2.

During the content analysis the following coherences and themes were found, some more confined to certain credibility types and others more general. These topics did not always occur for every website compared. These themes were then associated with the A-priori categories. (as seen in table 1, in 3.2)

During the coding of cooccurrences one interesting matter became counting the amount of times the topics occurred in order to more easily compare the results. Whether or not the topic was mentioned in a positive or negative manner also became a topic of interest in the comparison in order to better describe what the participants thought of the website.

When talking about domain names participants commented on the descriptiveness of it. Some found it impossible to know who was behind a website or the organization behind it based upon the name alone. As the domain name seemed to create certain presumptions it was assigned to presumed credibility.

When the participants were presented with the name of the organization behind the website some of them were associated with fun, sports and social aspects. As these topics seemed to be based upon participants presumptions these were assigned to presumed credibility and related to a organization type category.

Some participants made comments about how motivating different aspects of the website was especially text and visual elements. As this motivation seemed to be connected with visual elements it was assigned to visual design. As it was associated

with text it was assigned to readability which was assigned to earned credibility as if the text is what users expect it creates earned credibility.

Participants commented on websites where relevant images were used to help describe something. In addition, participants commented upon websites using images of people, especially images they perceived as being recent. Therefore, images were assigned to surface credibility and age, and social and relevance topics were added to images as a subcategory.

As an extension of age, some participants talked about looking at dates as an indicator of activity. The perception of the age of the news was also a topic in addition to the age.

Participants made comments about the navigation and its complexity and the complication in finding the information they want. Therefore, a complexity subcategory was added to usability.

Some participants made comments about the composition of colours, some commenting about neutral colours or inconsistent colours. Therefore, composition subcategory was added to colours. Some participants commented about using colours to highlight interface features such as search. Therefore, a highlighting subcategory was added to colours.

One participant made references to the association behind an organization. Association was then added to referrals.

Some participants made comments about the theme of the logo. For certain websites, participants expressed confusion about what the logo was to represent. Some participants made comments about logo size and location. A common theme was logos with text should be large enough for the logo text to be intelligible.

All these different categories and associations are organized in table 2.

Credibility type	Website element	User comment
Presumed credibility	Domain name	Descriptiveness
	Organization type	Fun Sports Social
Reputed credibility	Referrals	Association
Surface credibility	Visual design	Age Motivation
	Information design	Relevance
	Images	Age Social Relevance
	Colours	Composition Highlighting
	Logo	Theme Age Size
	Activity	Dates Age
Earned credibility	Usability	Complexity
	Readability	Motivation

Table 2: User comments, website elements and credibility type in category

The following is a comparison of the different websites using the categories created. A website is giving a score when a topic is mentioned. When a topic was mentioned it given a positive or negative weight depending on how the topic was mentioned.

4.1.1 brumunddalpk.no

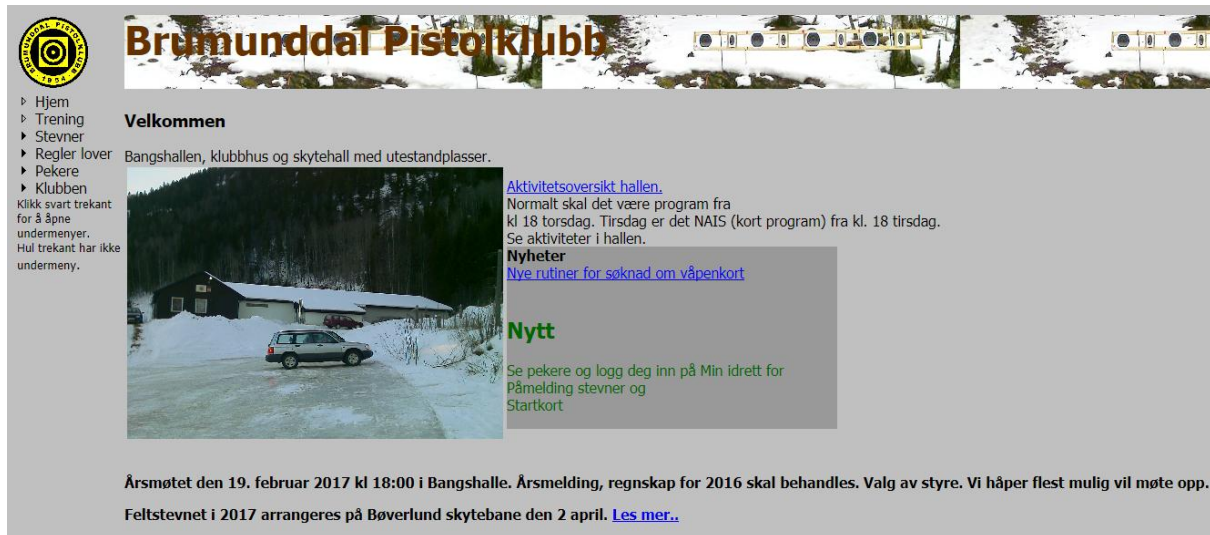


Figure 2: brumunddalpk.no

Figure 2 is the website of Brumunddal Pistolclub (BPK), it provides the user with information on the clubs current and past events and provides resources on rules and club organization.

3 out of 4 interview participants had heard of the club before and had used the website before.

When the participants were asked about the domain name most participants referred to the website itself. It was referred to as an old, boring, hard to use website with little relevant information. One participant responded with slight confusion not quite knowing what the site was about. When asked about who it may belong to most participants answered the pistol club, with one still not quite sure.

When asked about what they thought about when they heard the name Brumunddal Pistolclub the participants thought about pistols, but also fun and a social aspect. One participant point out that they perceived it as a male dominant place while others simply just referred to it as a place for adults.

Asked about the club and its activities the participants answered shooting. The reasons they gave for why they were shooting it was because of competition. It was referred to as a social sport where people could get together and shoot, socialize and train the ability to stay calm and focus on something. Other participants simply liked the shooting aspect.

The participants perception of the websites appearance mirrored some answers from the domain name question. It was referred to as an old, messy, sad, un motivating and boring looking website. Information was seen as hard to find, read and not informative in addition new more relevant information was seen as never appearing on the site when needed. One participant referred to it as looking like a "secondary school assignment". The use of pictures were seen as old, irrelevant and not reflective of the club itself. The use of colour was criticized as being drab and slightly confusing as not every link on the site was highlighted, neither was the text on the menu given any indication that they were in fact menu items. The website header was criticized as hard to read due to colour contrast issues.

The website was not seen as credible, the participants saw it as a amateurish while still saying that the information it had was credible. One participant said they would rather do elsewhere for information such as a Facebook group.

The logo was seen as nice and traditional.

The website was not seen as frequently updated one suggesting that it might not have been updated for 15 years due to the visual style. One saying that they got their information elsewhere as the site was not frequently updated.

The features the participants suggested was contract information, links to social media and a new page for activities and events and better navigation.

4.1.2 skyting.no

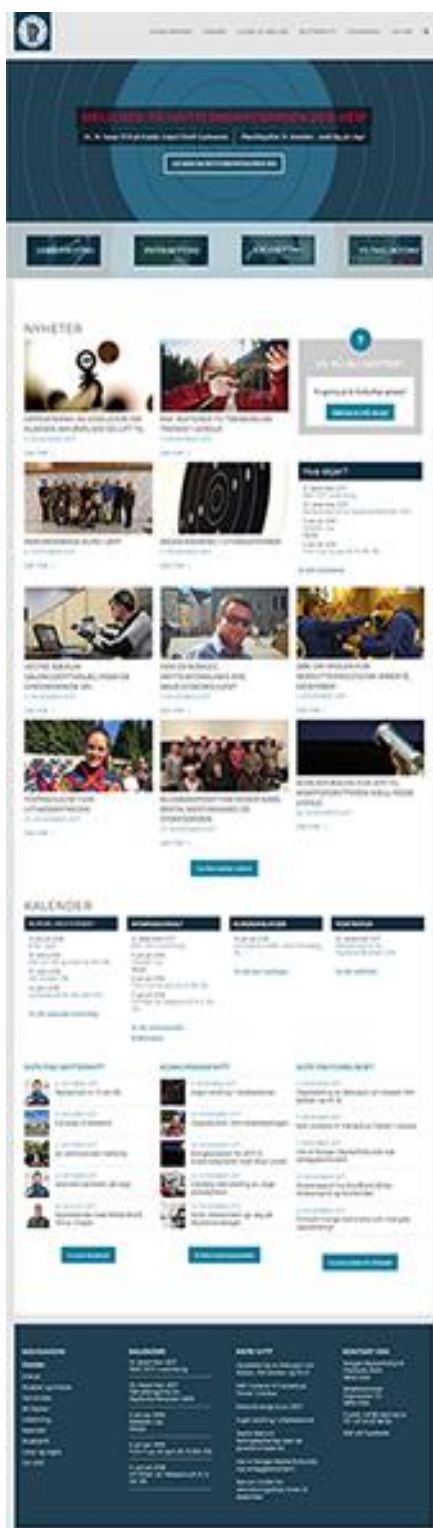


Figure 3: skyting.no

Figure 3 is the website of Norges Skytterforbund (NSF, Norwegian Shooting Association). NSF is the largest association of pistol shooting in Norway and is the parent organization of BPK. NSF also includes amongst other things skeet shooting and rifle shooting.

The intension of NSF's website is to provide news about the association and provide information about the shooting sports in general, information about laws, rules and regulations, how to become a sports shooter and to give information about events administered by the different associated clubs.

3 out of 4 interview participants had heard of the NSF before and had used the website before.

The participants perception of the domain name was that it sounded like a private or commercial website about shooting, however most participants identified it as the website for the NSF. One participant suggested correctly that it was an association and a national website for news, but did not know which organization was behind it.

When asked which thoughts the name "Norwegian Shooting Association" gave them the participants thought about an association that keeps shooting sports together one participant suggesting that it might give legal assistance and a place to create new shooting clubs.

The participants saw the website as nicely organized, easy to use, and using icons well and showing the many sides of the sport. One participant said that it had a lot of news, but it was hard to discern what they actually were doing and what the purpose of the organization was, but suggested that it looked somewhat professional, but criticized it for not using more of the screen.

The usage of images was positively received. It was described as illustrating what the site was about and showing life or activity. The amount of pictures was also appreciated. One participant perceived that usage of images as creating a social and "popular" atmosphere therefore making it attractive.

Colour usage was also seen as attractive and was referred to as neutral and fitting together. One participant simply said that it "wasn't gray and boring" and other simply said it was alright, but if not a little inconsistent with its blue colour.

The website was seen as credible with participants appreciating the amount of information it has.

The logo was seen as ok, it was criticized for not appearing to be about shooting at first glance, small and "anonymous" and lacking a bit of colour.

The website was seen as very frequently updated.

The features suggested was an easy to use schedule and results list.

4.1.3 dssn.no



Figure 4: dssn.no

Figure 4 is the website of Dynamisk Sportsskyting Norge (DSSN, Dynamic Sports Shooting Norway). DSSN is the Norwegian division of the International Practical Shooting Confederation (IPSC).

DSSN's website is very focused on news and events prominently displaying a magnitude of different sports events on their front page and news about the organization. In addition to news and events DSSN's website also provides information on rules, laws and regulations about the sport and firearms.

2 out of 4 interview participants had heard of the DSSN before. 2 had not used the website before and 2 were unsure if they had used it before.

When hearing the domain name none of the participants quite knew what it was. One suggesting that it might be a government website while another made vague references to dynamic shooting.

When asked about what they thought when they heard "Dynamic Sports shooting Norway" it was associated with more practical shooting exercises containing a lot of movement. One participant associated the name with people with an over the average interest in weapons who like to shoot fast and another suggested it might be a type of shooting sport with this website being for the Norwegian team.

The website was seen as well organized, easy to use and information seemed easy to find. One participant perceived it as looking a bit like NSF's website and suggested that they "may been looking at each other". One participant referred to it as looking a bit boring with a lot of text and another perceiving it as very modern and airy.

The images were perceived as few, but very descriptive one suggesting that makes the site seem credible.

Colour usage was seen as nice. One participant liking how it was used to highlight elements such as search another referring to it as nice and comfortable.

All participants simply said yes when asked if the website looked credible.

The logo was seen as ok, but was criticized by one participant for potentially being a bit too nationalistic due to the Viking design while another was confused and did not know what it represented.

The website was seen as frequently updated due to what was perceived as a modern design, one participant said they primarily look for dates.

4.1.4 njff.no

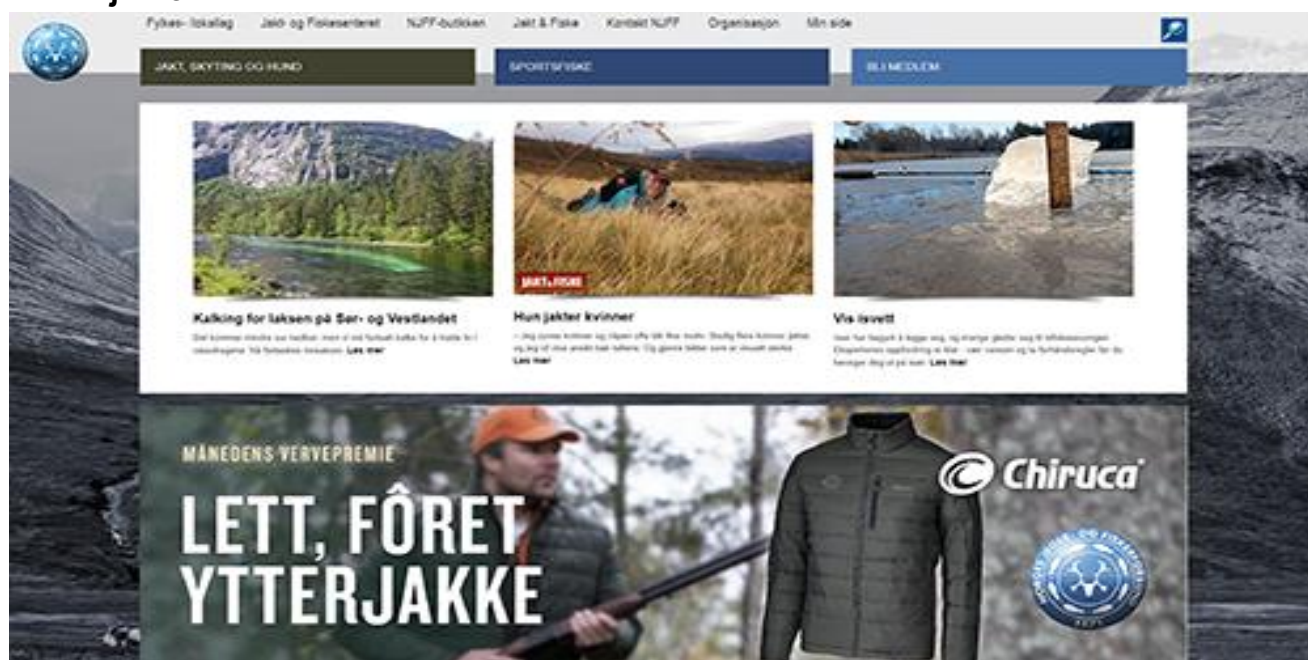


Figure 5: njff.no

Figure 5 is the website of Norge's Jeger og Fiskerforbund (NJFF, Norwegian Hunting and Fishing Association). NJFF is an interest group concerned with hunting, fishing and outdoors life.

NJFF's website is a comprehensive collection of information regarding their activities and the activities of sub organizations. It contains news about hunting, fishing and general usage of nature, such as when the use of fire is prohibited, information on attaining hunters licences and other information.

4 out of 4 participants had heard of the NJFF before. 3 out of 4 had used their website.

When asked about the domain name most participants associated it with hunting and fishing and the NJFF themselves. One participant got no associations.

When given the name " Norwegian Hunting and Fishing Association " most participants associated it with hunting and fishing. An association working to create a better environment for hunters and fishers. One participant suggesting they help with acquiring hunting licences and knows laws about use of nature and hunting.

When presented with the website it was seen as well organized, but one participant saw it as hard to find information while another said the opposite that it was easy to find information, a third participant felt it looked professional, but overall "not beautiful".

The usage of many images was appreciated especially topical images such as those of nature, animals and hunting. However one participant did not appreciate what they perceived as a use of stock photos.

The colourful nature of the site was very appreciated.

The website was overall seen as credible with nothing further described.

The logo was seen as alright, it was criticized as being too small for the text to be intelligible. One participant suggested that it looked a bit like NSF's logo and another perceiving it as being placed incorrectly.

Finally the website was seen as frequently updated with one participant noticing that the news were current while another having no idea as they could not see the dates when the news was published.

As for features one suggested that it could use a schedule list.

4.1.5 Main Interview findings

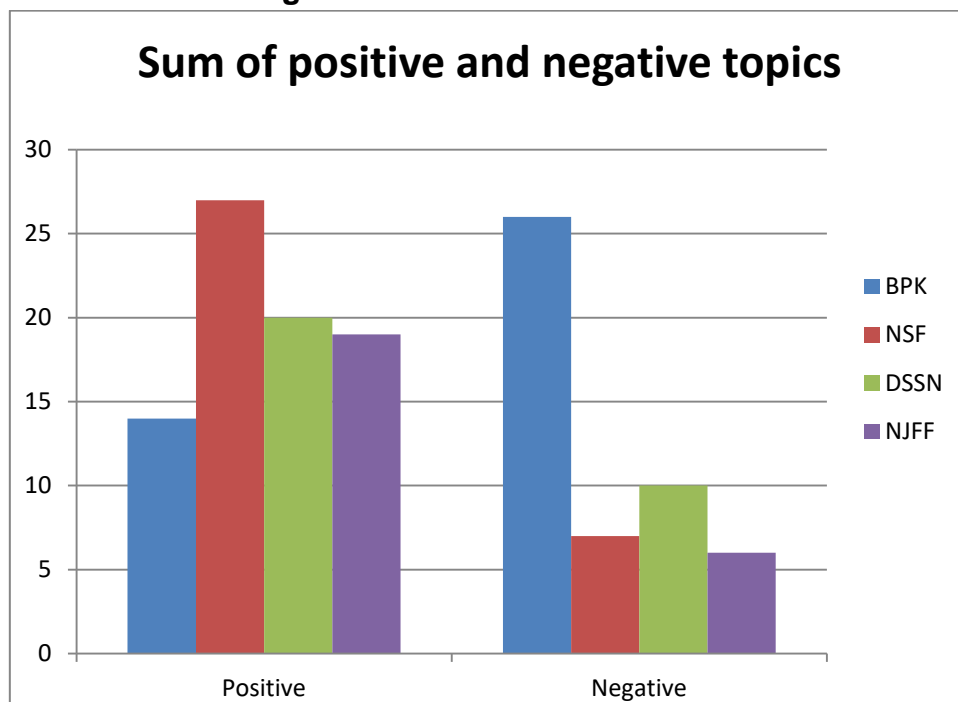


Figure 6: Diagram of positive and negative topics

Figure 6 shows a diagram comparing the sum of different negative and positive topics which occurred about each organization and their website. The diagram shows that BPK received the most total negativity while NSF received the most positivity. If needed the codebooks for the interviews and the source for the graph can be found in **[Appendix B]**.

Summary of brumunddalpk.no

The front page of BPK's website left the participants a perception of a complex website with boring content and of a website that it rarely updated full of information that no longer seems relevant. The general visual design and usage of colour was seen as giving the website an old appearance so old that one participant mentioned they would rather find information elsewhere..

What the participants most positively associated with the website was the organization behind it. Associating with it as a place to socialize, train focus, accuracy and perhaps most importantly have fun.

Summary of skyting.no

NSF's front page left the participants with the perception of a organized, easy to use website, with some usability issues, with a lot of activity. The use of colour was generally positive with some appreciating the use of neutral colours and others simply that it was not "gray and boring". The usage of images was perceived as social, lively and relevant.

The most negative comments were directed towards the domain name. With one person suggesting it could have been a private website.

Summary of dssn.no

The website of DSSN was perceived as easy to use well organized and easy to read. There was some issue with the theme of the logo, but otherwise there did not seem to be much issue with the website. The most negative comments they received as directed towards the domain name being non-descriptive.

Summary of njff.no

Most participants saw the website of the NJFF as easy to use and colourful using a lot of nature photographs. The photographs were seen as relevant with one participant reacting negatively to what they perceived to be stock photos.

The website should reflect the organization behind it. Every organization was at least associated with the sub categories fun, sports and social of the category organization type. Organization type was associated with presumed credibility.

Recommendations

The website should follow more current design trends as suggested by the amount of negative comments related to age BPK website received. This could also be associated with a motivation to use the website as suggested by the amount of negative comments BPK's website received.

Associated information should be placed together as suggested by the amount of commented related to relevance and information design.

The usage of images should reflect the activities of the organisation behind it. Every website got comments related to the categories age, social and relevance. This suggests that images should be recent, they should be of activities and that images should be of relevance to a topic such as NSF's usage of news imagery.

The usage of colour should be consistent. Using colour to highlight certain elements such as search is appreciated.

The logo should be large enough so that the text is intelligible. Contrary to the visual design and imagery the perceived old age of a logo did not matter as much. Some people might have issue with nationalistic Viking themed logos as suggested by a participant reacting to DSSN's logo.

The website should be updated with the latest news. People with experience might be able to determine a sites activity solely based upon headlines or ingress alone, however more novices might not. Therefore displaying dates is a good idea.

4.2 Sketching

The sketches were used to quickly create a design for the website before starting on any digital prototypes. The sketches were based upon the findings from the interview. The categories created from the interviews was associated with each other and turned into actionable website characteristics these characteristics were then associated with a credibility type seen in table 3.

User comment category	Characteristic	Matched to credibility type
Relevance, age, social	Unique relevant imagery	Presumed credibility
Age, composition, information design	Follow design trends	
Relevance	Information design with focus on relevance	
Social, relevance, age	Unique relevant imagery	
Size, theme	Large enough logo	
Complexity, relevance	Simple navigation	
Activity, age, relevance	Activity and news	

Table 3: Comment categories, characteristic and credibility type

The participants seem to associate the club with social activities and based upon the comments made for the websites of the NSF, DSSN and NJFF it would suggest that participants would expect a design making use of recent images depicting social and relevant activities with the caveat that freely or commercially available stock photos should not be used. Therefore a characteristic to follow with be to create a website with unique and relevant imagery. Unique in the sense that they are from the club, not found elsewhere on the internet and relevant in the sense that they depict

peoples shooting activities. Unique and relevant imagery was associated with presumed credibility as it seems to be one thing users would expect and surface credibility as it would possibly create a first impression of a social club.

The participants seem to positively associate modern design trends of using the most of the screen, bright colours and relevant structure positively. This is suggested by the positive reaction to the colour usage and the structure of the NSF and DSSN, one participant did criticize the NSF website for not using more of the screen. This suggests that users would prefer a website following design trends. Following design trends could create surface credibility as users might perceive it as an a new and active website

In the interviews participants appreciated when related content was close together and well organized such as the DSSN and NSF's website. Therefore it seems important to have related text, imagery and other content organized together. This could contribute to the surface credibility of the website by being perceived as being well organized.

When participants commented on the logo the main themes were the size and the theme of the logo. Participants seemed to prefer a logo consistent with the organizations theme and a logo large enough for the text to be intelligible. This would probably create surface credibility by proudly showing a logo which obviously was created for the organization.

The participants preferred websites with simple navigation systems. Notable websites were NSF, NJFF and DSSN. This seems to suggest that users would prefer navigation systems with descriptive labels such as those the NSF uses. For example the "competitions" category leads to lists of competitions, the "about NSF" category leads to association information such as administration and history. This reduces complexity and introduces relevance into the navigation system. Having a simple navigation system may lead to earned credibility by consistently providing the user with the information they want.

The participants seemed to prefer websites showing activity by having the latest news. The websites that were especially appreciated for this was the NSF and NJFF. By having the latest news the website will provide the users with the latest most relevant information which might increase earned credibility.

- **Unique relevant imagery:** Use recent imagery to show the shooting and social aspect of the club.
- **Follow design trends:** Follow design trends to be perceived as active.
- **Information design with a focus on relevance:** Organize related content to be seen as organized.
- **Large enough logo:** The logo should be prominent enough to be noticed and large enough that the text may be intelligible, the theme should also be consistent with the organization.

- **Simple navigation:** Users would prefer a simple menu with descriptive menu titles.
- **Activity and news:** The interviews suggests that participants would prefer a website with the latest relevant news and activities of the club.

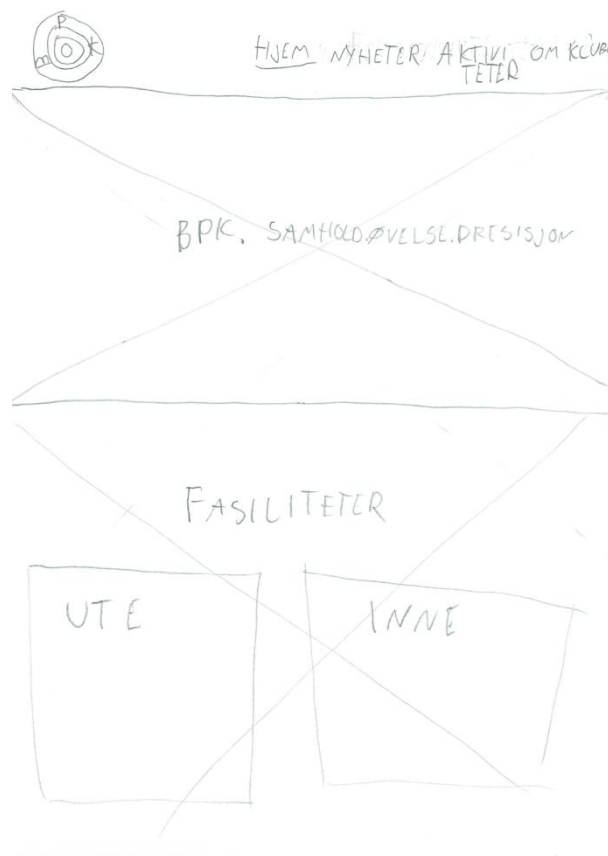


Figure 7: Front page sketch

Figure 7 is a sketch of the front page. The menu on the top was intended to be as simple as possible with only 4 items. The intension of this front page to give the user an indication of what the club is all about. By stating the club name and a slogan, samhold (unity), øvelse (practice) and presisjon (precision) combined with a suitable image in the background for example a person shooting at a target should help a user understand the values and the purpose of the club.

Under the introduction is a section describing the clubs inside and outside facilities. These facilities are described with a relevant image and bullet points describing them. This is intended to give a user a description of what the club has to offer in terms of equipment, shooting distances and the facilities themselves.



Figure 8: News page sketch

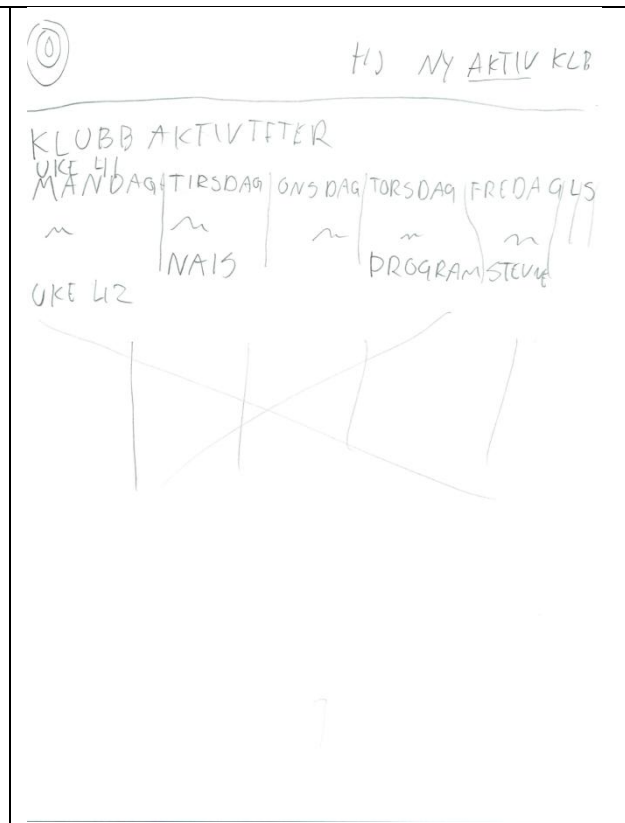


Figure 9: Activities page sketch

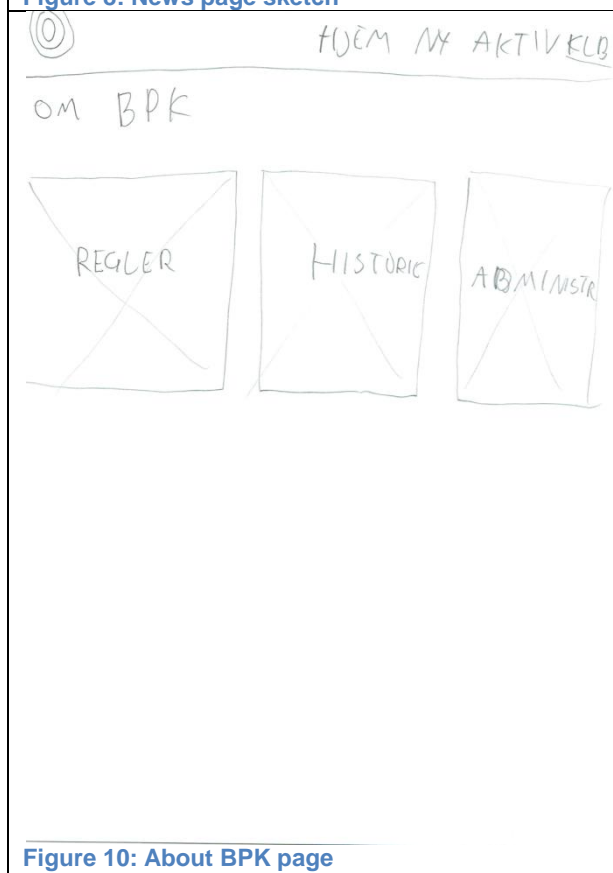


Figure 10: About BPK page

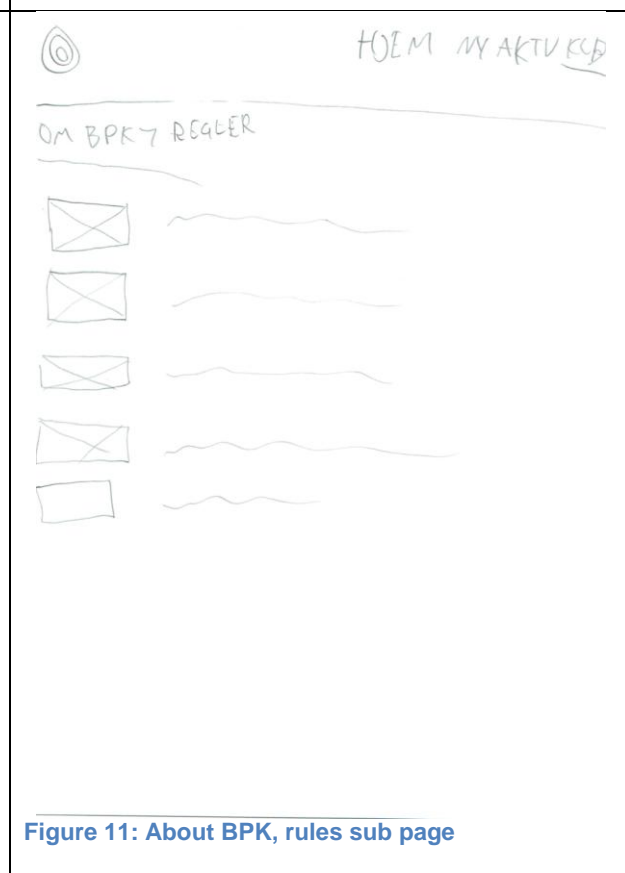


Figure 11: About BPK, rules sub page

Figure 8 is a sketch of the news page. The news page was placed next to the home page to give an indication of the importance of the news. The news page was

intended to have a title an ingress and a descriptive image. If the user clicked on a news item they would be taken to the full article.

In terms of content the news page was intended to have news about new rules, regulations in addition to event announcements and event results.

Figure 9 is a sketch of the activities page. This page was intended to function as a calendar of current and soon upcoming club events.

Figure 10 is a sketch of the about the club page. This page was intended as an index where the user could find information about club rules, club history and about the club administration. To show that the club is a real and serious organization.

Figure 11 is a sketch of the rules page. This page was intended as a quick description of the range rules with illustrating images.

The sketches were quickly tested on 3 people and these are the main points of the feedback gathered:

- The sketches were perceived as well organized and easy to use.
- All 3 successfully completed finding the correct page based upon a small usability test task.
- Participants appreciated the "straight to the point" nature of the sketches.

4.3 Initial Design

Based upon the interviews and sketches the initial design of the front page was created (figure 12) was created for the website. This digitally created design was designed to continue the characteristics of the sketches in higher detail by introducing images taken by or for BPK and actual colour. The initial design was focused upon the same assumptions as the sketches. As this was a digital design features such as colours were now relevant.

The characteristics and categories were analysed in the same fashion as when they were chosen for the sketches, with the only difference that they were based upon feedback from the sketches see table 4.

User comment category	Characteristic	Matched to credibility type
Referrals	Displaying association	Reputed credibility
Fun, sports, social	Straight to the point	Surface credibility
Composition, highlighting	Consistent and useful use of colour	

Table 4: Categories mapped to new characteristics

In order to associate the club with its parent association, the Norwegian Shooting Association its logo was placed on the design. As suggested by Fogg and Tseng displaying the logos of associated organizations connects the website with the rest of the world. If the user has seen the logo before and associates it with a credible organization it creates reputed credibility.

The people tested with the sketches appreciated what they perceived as a "straight to the point" nature. In order to try and improve this by using images an image of a person shooting at targets was taken from the Facebook page of the club and placed behind the slogan. "BPK" was replaced with "Brumunddal Pistol club" and the slogan was kept the same. With this combination it was hoped that users would instantly understand what the site was about. Further a description of the clubs social and helpful nature was placed as the second item then a description of the facilities with relevant text and images and finally a section encouraging the user to come visit and a map to the club. By being upfront about what the club is about should contribute surface credibility.

In the interviews participants appreciated websites such as the websites of the NSF and the DSSN which used colours to highlight various UI elements such as search and UI elements, the current BPK website was criticized for not highlighting menu items better. By highlighting such elements it should make it easier to find search and navigation this should contribute to earned credibility.

Additions

- **Displaying association:** Associate the club with the world, by showing the logo of its parent organization.
- **Straight to the point:** By the use of text and images clearly describe what the website is all about.
- **Consistent and useful use of colour:** Highlight elements such as navigation and search with colour.

As seen in figure 12 the initial design follows the "straight to the point" nature of the sketches. The user is greeted with a splash image using an image from a recent competition with the name of the club and the slogan created for the sketches overlaid. This gives the user an indication of what the club is about. Under this is a section describing the open and helpful nature of the club. Following is a description of the clubs facilities with associated images like the sketches and at the end an encouragement to come to the club, the clubs address and a map of the surrounding area to the club. The main menu received a prominent search bar highlighted by white

In order to help see if the assumptions about the design was correct the design was used in a survey (see 4.4).

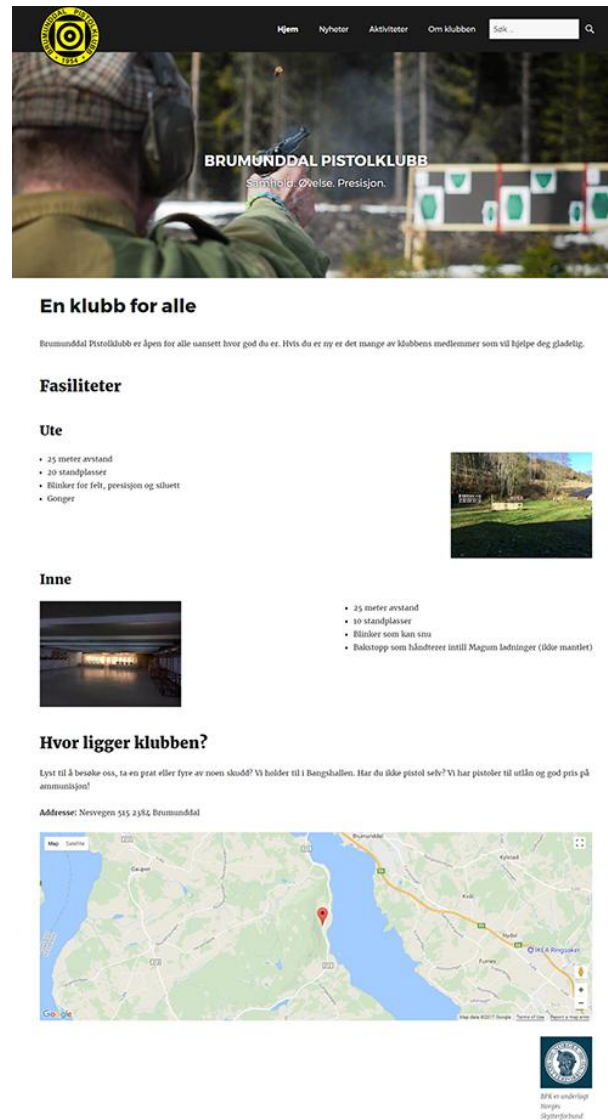


Figure 12: Initial new design

4.4 Survey

The intension of this survey was to gather more opinions about the current website and to gather opinion about the initial design proposition. Most of the data gathered was qualitative and was analysed using the categories established during the interviews (see 4.2) using the same content analysis and emergent coding approach.

The survey was completed by a total of 25 people.

60% of participants answered "yes" to having heard of BPK previously contrary to 40% who answered "no". This seems to indicate somewhat of a bias of 20% towards people who have some familiarity to with the club answering the survey. Other biases might have occurred due to sampling techniques see 4.4.5.

During the counting of themes and cooccurences of the survey answers one new category was found. This is reflected in table 5.

Readability - Colour contrast: Some participants mentioned colour contrast. This refers to the contrast between the background and foreground this is particularly important in regards to text. If the background and foreground have too little contrast the text will be hard or even impossible to read.

Credibility type	Website element	User comment
Earned credibility	Readability	Colour contrast

Table 5: category table

4.4.1 Organization

The impression of the club was similar to the those in the interviews.

Some criticized the domain name for sounding old and not very descriptive while others thought it sounded like a sports club.

When asked about what they think of the club name it was perceived as a place to practice shooting with a pistol. To practice concentration, accuracy, precision and to compete in target shooting. A good social environment with positive people engaged with their sport. Some described the name itself as easy to understand and to the point, they understood that it was a Pistol club located in Brumunddal

Others thought about the town of Brumunddal or the the building they are located in.

4.4.2 Current Design

The participants described the current design as old, outdated, uninteresting, inconsistent, unfinished and not very informative. However one did refer to it as informative and one did refer to it as a very nice and easy to understand website.

The visual design was criticized for its gray colour scheme with many referring to it as boring others criticized the usage of many different fonts, a few referring to it as amateurish. Many criticized the information design referring to it as messy, confusing and not very informative.

The colour palette was referred to as gray and boring. Some referred to it as cold, monotonous and uninviting. Others referred to it as messy and without direction. One referred to it as not representing the club and its colours. Some criticized the background and foreground contrast of the header calling it hard to read. The links in the text was seen as hard to find. One referred to the colours as nice colours who fit together well on the screen.

When it came to the images they were referred to as uninteresting and irrelevant. One suggested the images were not representative of the sports others suggested that the main image may imply that the club is unpopular by showing empty parking spaces. Most suggested that the main image had nothing to do at all with the club.

Most participants thought the logo was alright. Others referred to it as classic and traditional. The main criticism was that the logo was too small and hidden and not fitting with the design one criticized the logo design itself suggesting that a circular logo with a square centre did not make much sense. The text on the logo was seen as too small to be intelligible. One suggested it was easy to recognize and nice.

When asked about which organization the club was associated with 5 out of 25 correctly suggested either the Norwegian Shooting Association or the Norwegian Sports Confederation. Others suggesting a local used car dealership, the local municipality, local general store, with most suggesting none or simply not knowing.

When asked about the menu it was referred to as hard to use and non-standard. One suggested that it might be hard to see due to not standing out. One criticized the amount of options it had. One simply asked "what do I click on?". One suggested that the menu could be hidden. One simply referred to it as messy. Some suggested that it looks organized and easy to use.

When asked about what the website could need it was suggested that it should show and make it clear that the club shoots pistols. One suggested newer information which is easier to find and showing that there is activity in the club.

4.4.3 Design Proposal

It was suggested that the visual design clearly brings forward what the club was about. It was referred to as professional, informative and "straight to the point". One suggested that it was simple yet informative. One suggested that it was eye catching. It was also referred to as a bit messy with certain images and text too far apart, one suggested that the content under might be a bit boring. Some suggested that it creates curiosity.

When referring to the colour palette of the design proposal it was referred to as clean and clear, serious and overall neutral. Others suggested that it has a lot of contrast, maybe too much contrast. and colourful. Others suggested that it was coherent and more correct in relation to the logo. Some suggested that the colours gave a good overview of the site content. One suggested that the colours were conservative. One

suggested that it looked natural. Some simply answered good or ok. One suggested that the colours were not good and lacking.

When it comes to the logo the placement and larger size was appreciated. One suggested that it has some previously mentioned issues such as a round logo with a square centre.

The images were appreciated as representing the club and being relevant especially in context with club activities. One participant suggested that it was stylish with a focus forward. One appreciated that pictures were not overused. One suggested that the pictures were poor.

When it came to association with another organization 18/25 suggested that the club was associated with either the Norwegian Shooting Association or the Norwegian Sports Confederation. One suggested that it was associated with an organization that rents shooting ranges. One suggested the military (due to the jacket), 4 suggested nothing.

The navigation was seen as easy to find and straightforward. Some suggested that it needed a "contact us" section or a section with prices. One suggested a clearer indication of which page was active. One described it as messy.

Some features suggested was a schedule and result list. Others suggested more focus on safety, contract information and price information. It was not directly mentioned by anyone, but it was indirectly hinted at: a mobile version.

4.4.4 Main survey findings.

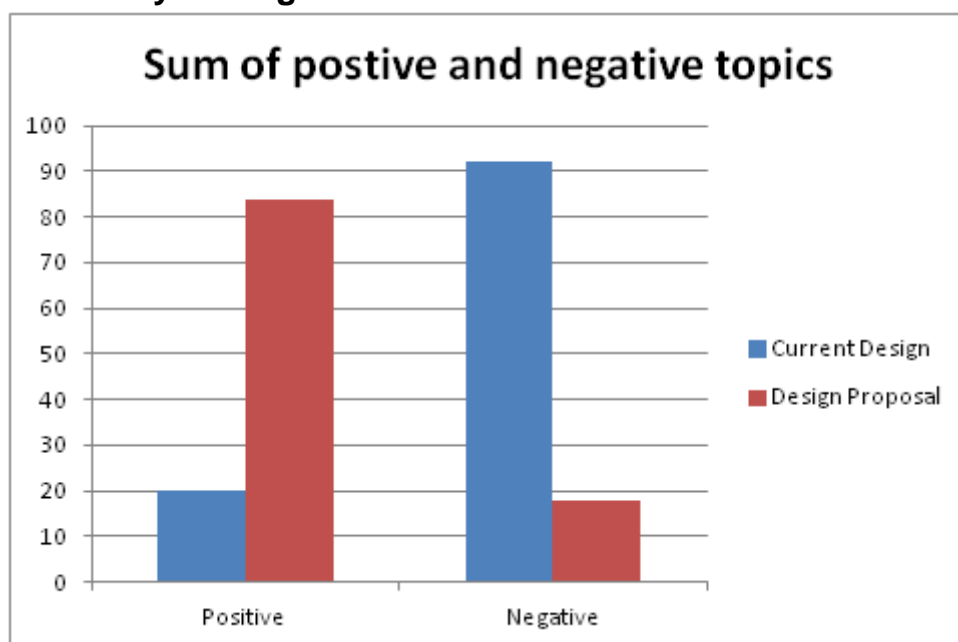


Figure 13: Diagram of negative and positive comments

Figure 14 is a diagram showing a comparison of the sum of positive and negative topics found between the current design and the design proposal. This diagram shows that the design proposal received the majority of the positivity contrary to the current design. The possible reasons for which are further described below in summaries and descriptions of other diagrams. The codebooks this figure is based upon can be found in **[Appendix F]**.

Summary of organization

As previously seen in the interviews the club was seen as a place to do a fun hobby. To socialize, to compete and to train the skills needed in competitive shooting such as calmness, focus and precision.

Summary of current design

The survey response to the current design was similar to the interviews. It was seen as a complex website with a uninviting and boring design. Using a complex non-standard main menu. The content was seen as boring and irrelevant. The content was perceived as not having much relevance to each other.

Summary of design proposal

The response to the proposal was generally positive. The proposal was seen as easy to use, fairly well organized and straight to the point. The use of images was generally seen as descriptive even though the images intended to describe outside and inside facilities were not seen as optimal in addition the location of these images were seen as being too far away from the descriptive text. Despite having the logo of the Norwegian Shooting Association on the page there was still some confusion of what the club was associated with.

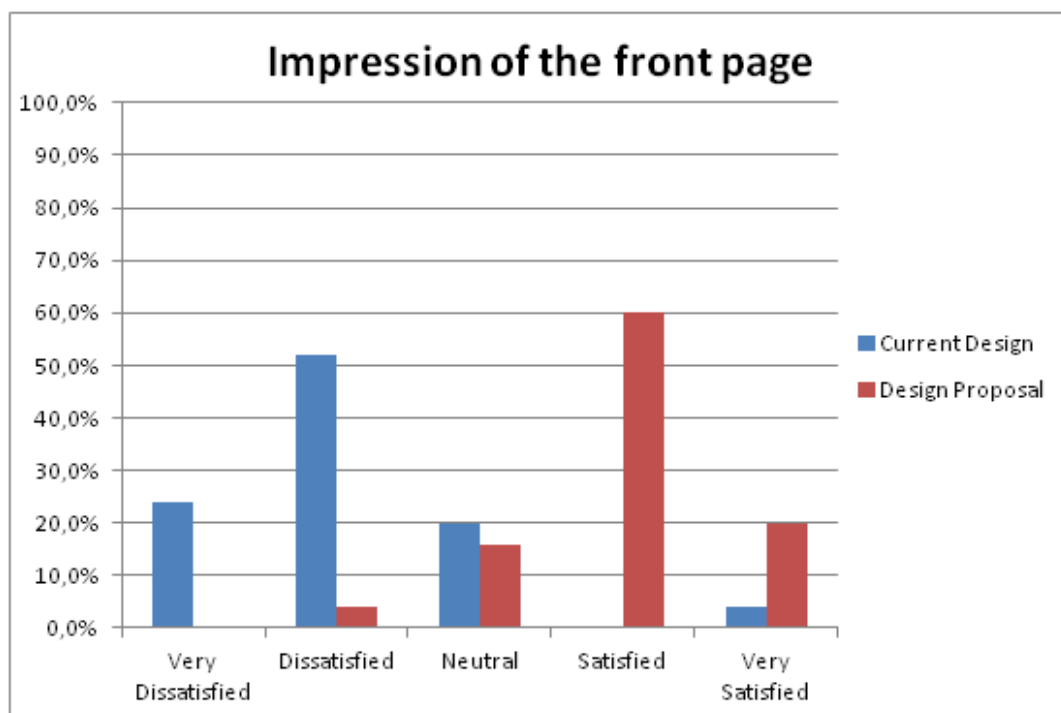


Figure 14: Impression of the front page in percent

Figure 14 shows the satisfaction in regards to the users general impression of the website design. For the current design 24% of participants chose that they were "very dissatisfied", 52% choose "dissatisfied", 20% chose "neutral", 0% chose satisfied and 4% chose "Very satisfied."

This indicates that 76% of participants were at least dissatisfied with the website based upon their impressions contrary to the 4% who were at least satisfied. For the design proposal 0% chose "very dissatisfied", 4% chose "dissatisfied", 16% chose "neutral", 60% chose "satisfied" and 20% chose "very satisfied."

This is seems to indicate that 4% of participants were at least dissatisfied and 80% were at least satisfied.

The difference in general between the designs could be the more modern design and current more descriptive imagery. As the prototype intended to follow current design trends, used recent and relevant imagery this is also suggested by figure 17 where 88% of participants reported that they perceived the current design as having the latest information. It could also be the higher perceived readability as suggested by figure 17 where 84% reported they perceived the current design as easy to read.

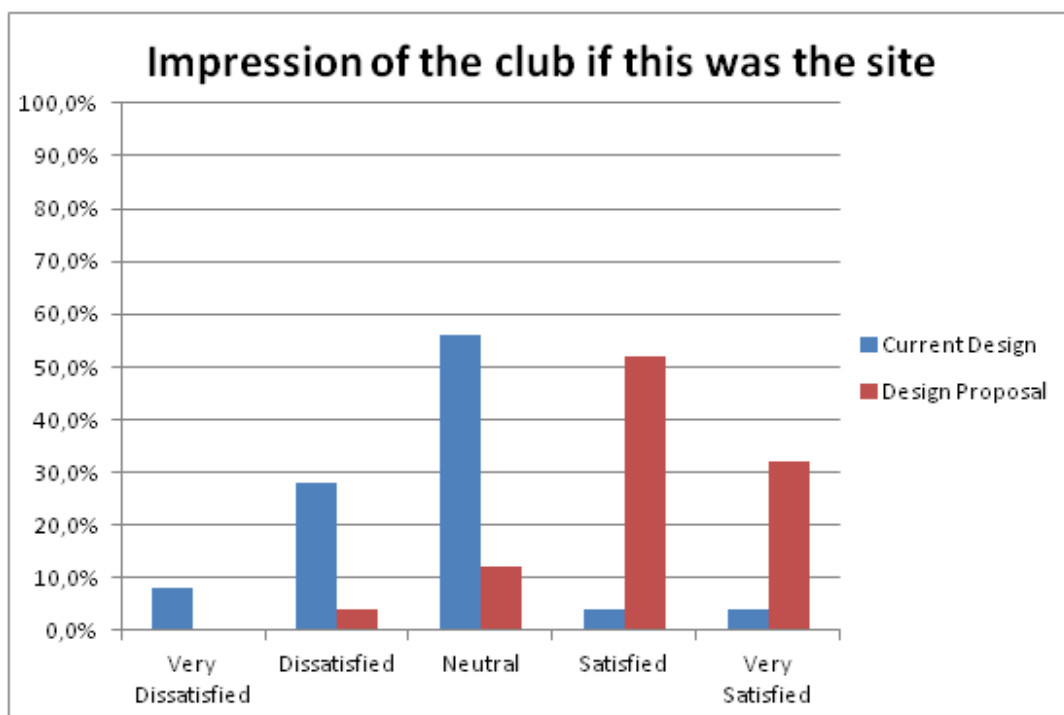


Figure 15: Impression of the club is this was the website in percent

As seen in figure 15 when answering how this website has affected their opinion of the club. For the current design 8% chose "very dissatisfied", 28% chose "dissatisfied", 56% chose "neutral", 4% chose "satisfied" and 4% chose "very satisfied". This seems to indicate that 36% of participants were at least dissatisfied and 8% being at least satisfied with the most significant amount of participants staying neutral at 56%. For the design proposal 0% were "very dissatisfied", 4% were "dissatisfied", 12% were neutral, 52% were "satisfied" and 32% were "very satisfied".

It is interesting that 56% of participants chose neutral in regards to the current design. This might suggest those participants are used to local sites having similar designs. The diagram seems to suggest that most participants would have a positive impression of the club if the design proposal was the website design. This is also suggested by figure 14 where the design proposal received the most positivity.

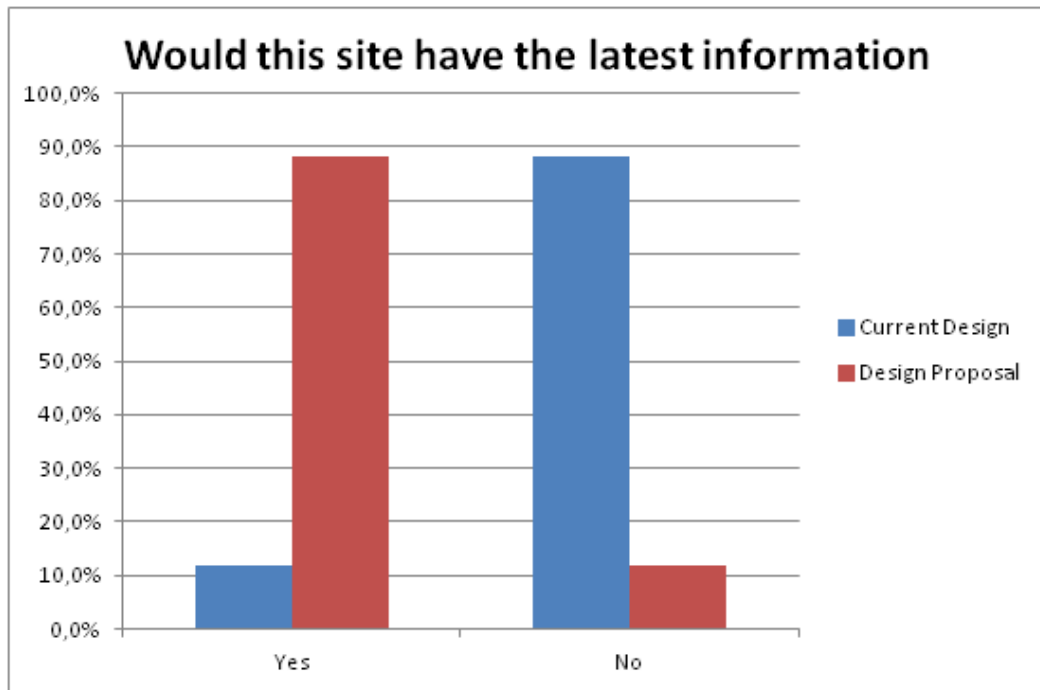


Figure 16: Participants perception on if the design would have the latest most relevant information

Figure 16 is a diagram showing whether or not the participants believed the design would have the latest most relevant information. For the current design 12% answered no and 88% answered yes. For the design proposal 88% chose yes and 12% chose no. Possible reasons for this could be the perception that the proposed design was perceived as more modern, organized and professionally designed and that the current design was seen as old and amateurish.

Finally figure 17 shows which design the participants saw as most readable. When asked about the current design 20% answered yes, and 80% answered no. When asked about the design proposal 84% answered yes and 16% answered no. Possible reasons why the current design was rated higher on readability is more contrast between foreground and background and a clearer, more organized message.

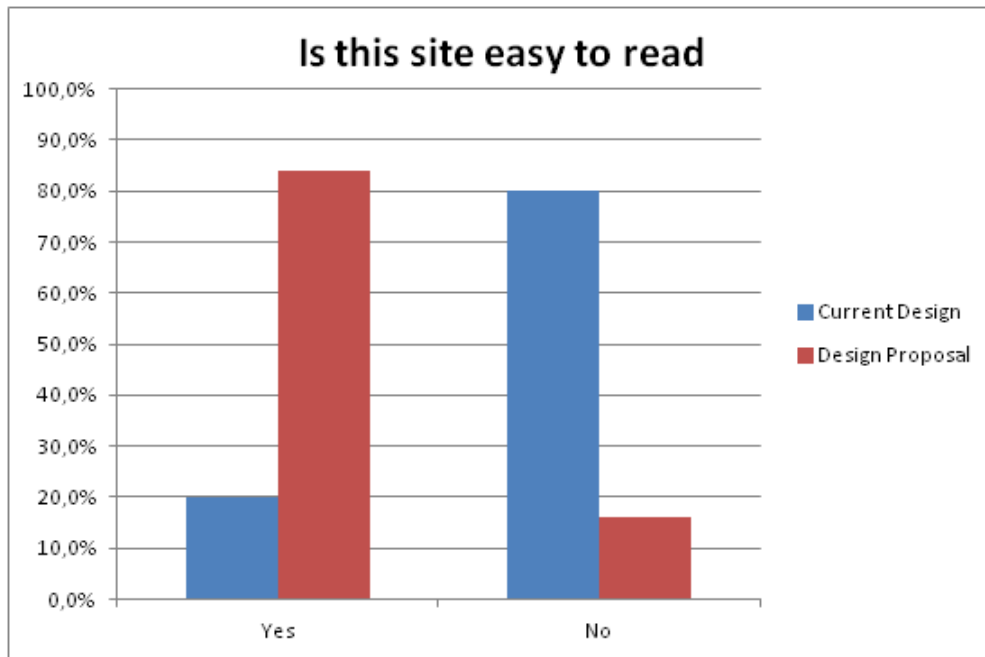


Figure 17: Participants impression on the readability of the design in percent

4.4.5 Sampling technique

As seen in the diagrams of this survey one interesting thing stands out. This is the overwhelming positive reaction to the design proposal compared to the current design. While as the diagrams show there are dissenting opinions these are rather small compared to the amount of positive opinions. This could be due to the sampling method used and perhaps some of the nature of conducting surveys online.

Snowball sampling is a non-probabilistic type of sampling. Therefore not many considerations are made to reach a random set of a population. Instead snowball sampling depends on the people sharing it and who they share it to. If for example the Facebook post was seen by a person concerned with web design and if the person shares it further it may attract the web designers in the persons circle. Likewise as the survey was shared on the pistol clubs Facebook page it may attract the attention of club members interested in the website of whom may massively prefer the new site perhaps out of novelty, not out of merit due to the current design of the website.

4.5 Prototype

The prototype is live at <http://tore29.com/bpkproto/> at least until January 15th 2018.

Based upon the findings from the interviews, sketches and survey a prototype was created.

The results from the survey, potential sampling or novelty issues aside, was positive in compared to the current design however there were some issues discovered. For instance a sizable portion of participants did not realize which association the club was a part of, there was some issues with horizontal space between text and descriptive images and the current page indicator not clearly showing which page the user was on.

Figure 18 shows the updated front page of the prototype. The changes since the initial design are these.

Moving the logo of the Norwegian Shooting Association up: Even though most participants in the survey managed to correctly guess which association the club was under some still failed to guess correctly. By moving the NSF's logo up to a more prominent place it will hopefully make the logo more noticeable, moving the logo up was suggested by a survey participant as well and in turn help raise the reputed credibility of the website.

Safety section on the front page: As suggested by a survey participant a section about safety was added as the second section of the front page, this section further links to the safety instruction given to beginners seen in figure 21. This section is intended to make the club be seen as a more professional actor.

Larger and more integrated inside and outside facilities section: As suggested by the survey some participants pointed out that the images and descriptive text in the facilities section was too far apart and the images too small. To help correct this the section was redesigned so that the images act as backgrounds to the descriptive text and the different subsections put side by side to help present unnecessary scrolling.

Grammar: In addition a few grammar and spelling mistakes were fixed. As some participants mentioned it gave a amateurish feel. Therefore it can be seen as affecting surface credibility by looking amateurish and earned credibility by making it difficult to read.

Page indicator: The current page indicator was made yellow like the logo to better help show which page is active as indicated by the survey answers. This should contribute to earned credibility by telling the user where they are in the menu system.

Responsive Design: As hinted at by the survey some users would prefer mobile versions. Therefore when creating the prototype focus was made on making it adapt to screen sizes. This is referred to as responsive design. (22)

Figure 22 shows the new contact page. This page is intended to provide multiple ways to contact the club and help suggest that there is a real and serious organization behind the club as suggested by the Stanford credibility guidelines (23) and the survey. This is also the intension of the honorary posts page as seen in figure 26 which shows who in the club administration is responsible for what and contact details.

Figure 23 shows the training page. This is a replacement of the activities page. This page shows the prices for training, the current activities in the facilities and a description of the shooting exercises the club does. The header shows a recent image of a practice session. As exercises, activities and prices are all related to training this should make it easy for a user to find information and therefore create earned credibility.

Figure 20 shows the news page. This page is intended to give users the latest news related to the club. For those interested in only a certain topic such as results and schedules it allows filtering. For further discussion on results and schedule see the discussion chapter (5.3)

Figure 24 shows the layout of a news article.

Figure 19 shows the club information index. This page provides links further to honorary posts, safety instruction and the club statute.

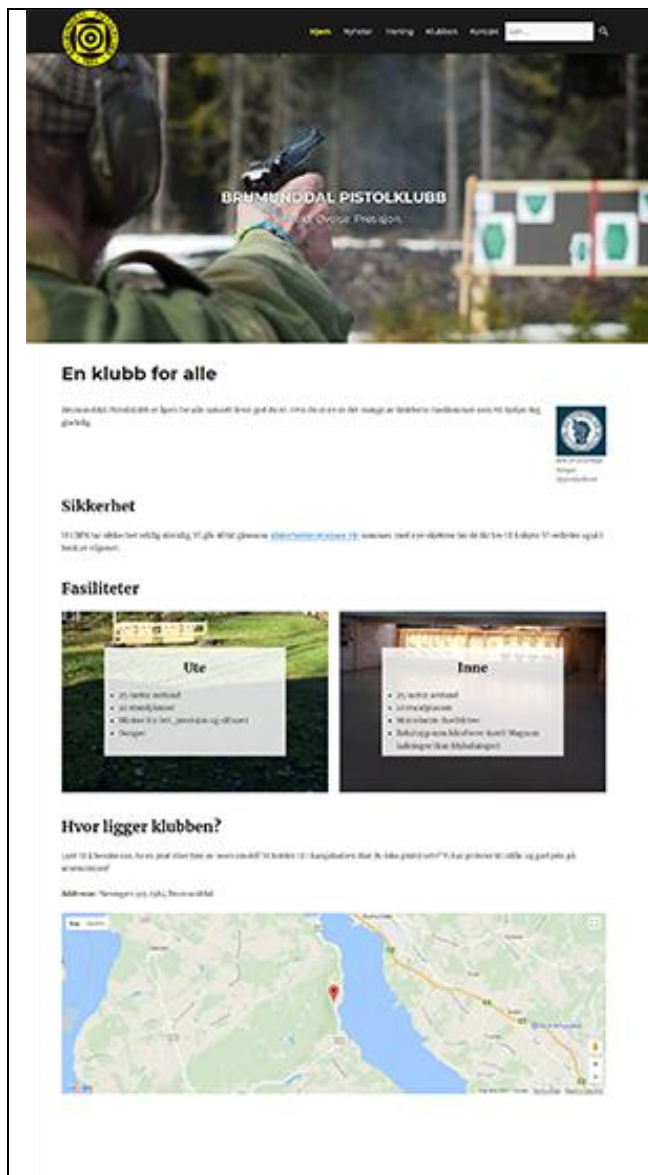


Figure 18: Front page

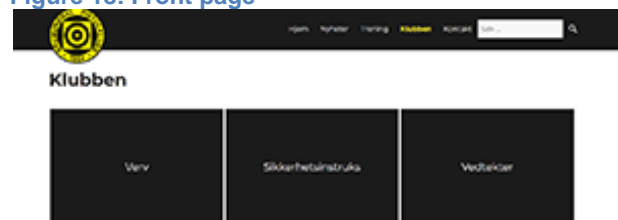


Figure 19: Club information index

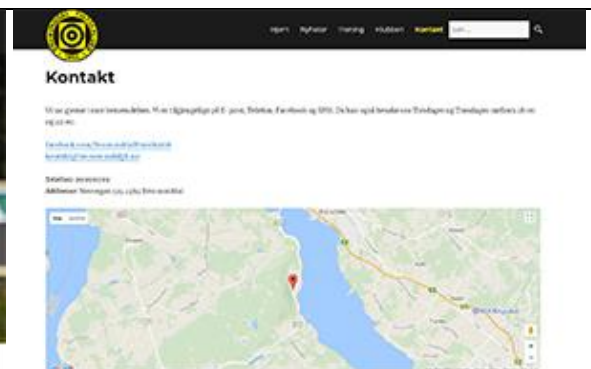


Figure 22: Kontakt page

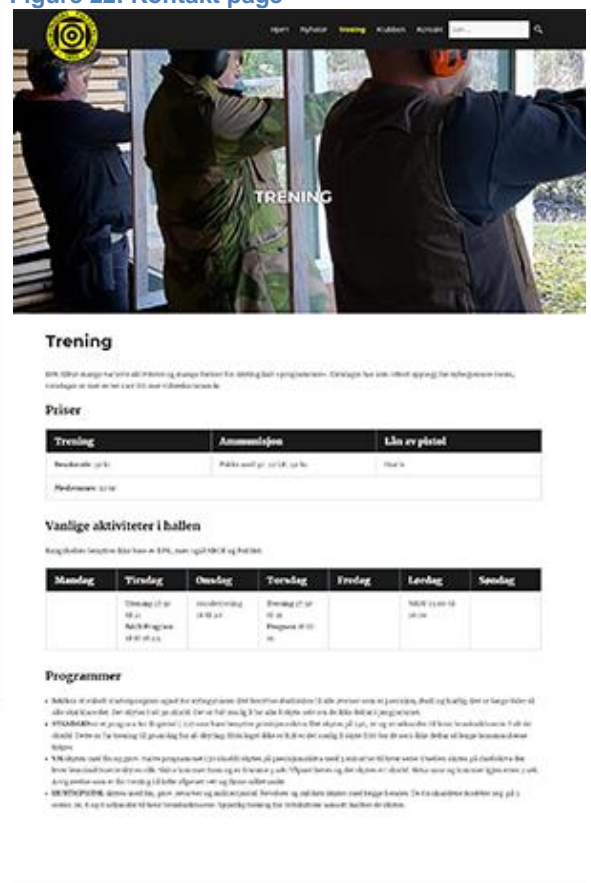


Figure 23: Training and activities page

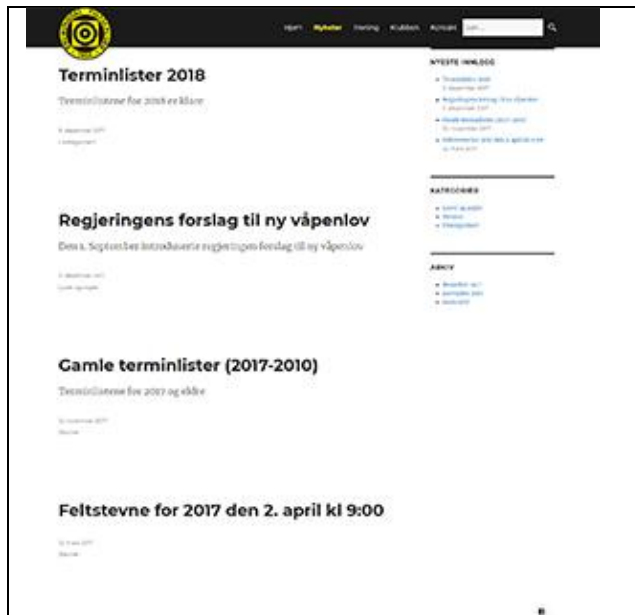


Figure 20: News page



Figure 21: Safety instruction

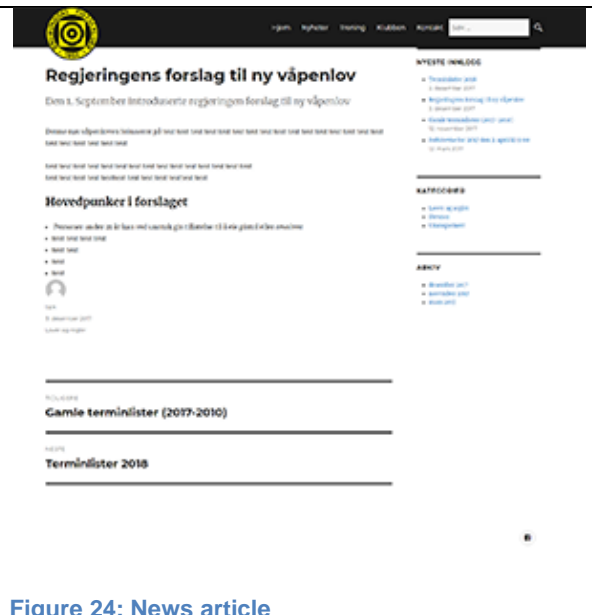


Figure 24: News article

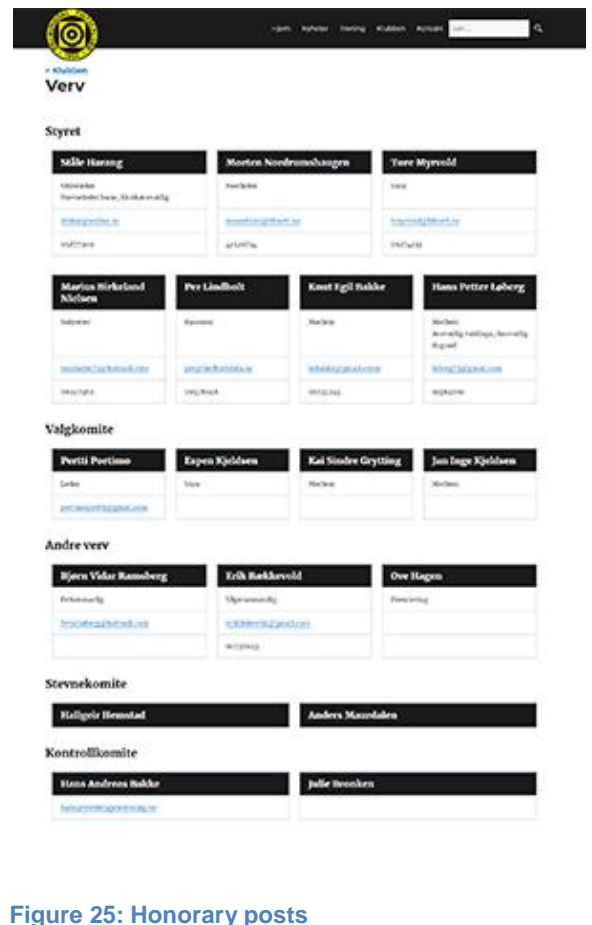


Figure 25: Honorary posts

4.6 Usability testing

The usability tests were conducted by using tasks based upon the information gathered from the survey and interviews.

Task 1: Is related to the reputed credibility of the club. By having the user look for which association they are under. By knowing which association they are under the user may get an indication of which type of shooting they do.

Task: 1.1: Is about finding which shooting exercises the club does this is about further strengthening the clubs connection and meeting some of the users presumptions.

Task 2, 2.1, 2.2, 3 and 4: Is about earned credibility, how quickly can a user find important information such as opening times, pricing, location and news and activities ?

A total of 4 people participated in usability testing. The usability tests found that the old website's navigation structure and information design was difficult to use with some tasks taking minutes to complete if the participant could complete the task at all (see figure 26).

In contrast none of the participants failed to complete the tasks on the new design. The time to completion was measured in seconds (see figure 26)..

The tasks, notes and time measurements can be found in **[Appendix G]**

The changes to made to the prototype as a result of the testing was:

Darker splash page images: The splash page images was made a tad darker to increase contrast between the images and the titles.

Contract and opening info on front page: Opening hours and contact information was added to the "Where is the club" section on the front page as some participants looked there.

Correcting misspelling: Some words were misspelled on certain pages, these were found and corrected.

Clickable boxes on club page: Some participants attempted to click on the boxes on the about the club page, therefore the clickable area was expanded to include the boxes rather than just the text.

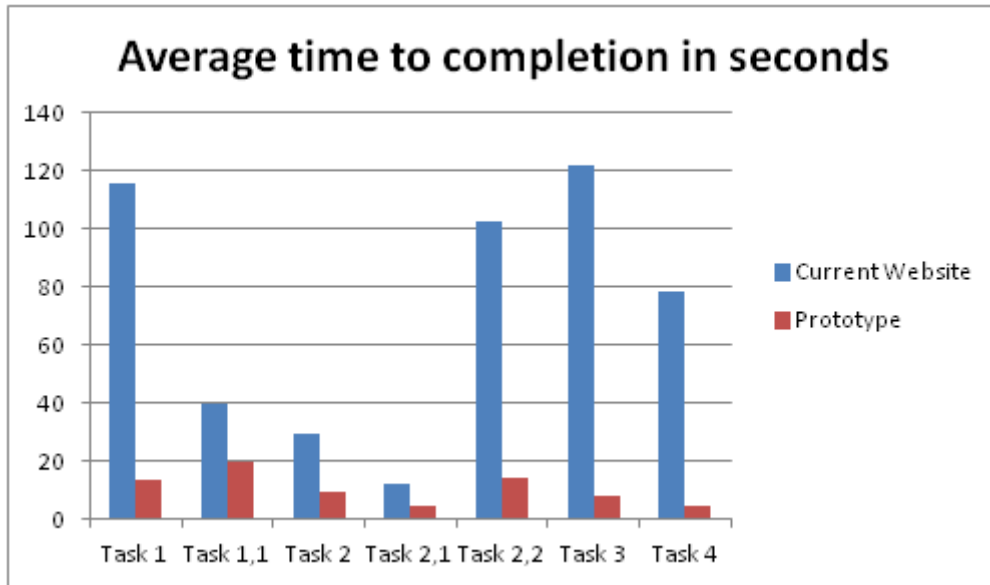


Figure 26: Average time to completion of usability tasks in seconds

4.7 The final design

In this study the qualitative methods content analysis and emergent coding were combined with A-priori categories from source credibility theory in order to help analyse findings of semi-structured interviews by extracting themes and topics, counting when they occurred and giving them positive and negative weights . In these interviews participants were asked what they thought of different websites related to shooting sports. The interview themes were then combined into actionable website characteristics and sketches were made.

Information design with a focus on relevance: By focusing on placing relevant information together seems to create a creates more unifying appearance and makes it easier to find information therefore increasing surface credibility.

Unique relevant imagery: The usage of unique and relevant imagery seems to be appreciated as it creates a more living looking website therefore increasing surface credibility and by using relevant imagery might match the presumptions of a

Large enough logo: The logo should be large enough to be noticed and large enough for the text to be readable however should not be too large. A professionally designed logo should create surface credibility.

Activity and news: Users seem to appreciate when the site is updated with the latest information and reflect the latest news. Being updated with the latest information creates earned credibility as it provides the information users expect to get.

Follows design trends: By following design trends the website might be seen as active and recently updated creating earned credibility.

Simple navigation: Having a simple navigation system that does not hide navigation items with a descriptive labels creates earned credibility as the user gets the information they need.

By doing simple usability tests on the sketches and gathering comments a new unconsidered characteristic was found.

Straight to the point: By being straight to the point and emphasising the fun, social and competitive nature of the club the user will instantly know what the club is about therefore creating surface credibility and by being straight to the point the website might match the presumptions of a user.

By looking at SCT based theory this characteristic was found.

Displaying association: By displaying what organizations the club is associated with creates reputed credibility as it displays that the organization does not operate alone and if the organization is already credible to the user increases the credibility of the organization behind the website more.

The characteristics found after the sketches were tested was then implemented into a digital design, in which elements such as colour were relevant and tested in a survey where the users would decide how much they liked the current design and the new design proposal. The new design proposal was appreciated and a new web characteristic was found **responsive design**.

Consistent and useful use of colour: By being consistent and useful in the use of colour seem to create a unifying appearance making the website seem professional . In addition using colour to highlight certain interactive elements such as links and menus makes them more noticeable. This creates higher surface credibility.

Responsive Design: As users indirectly requested a mobile version in the survey the website was made responsive and adapts to the users device. This can be seen in figure 28, the mobile version was however not tested due to time constraints.

Meeting the user's needs the design proposal was amended by for example placing images and text closer together, creating a contact page and making which page the user is on clearer. A prototype was created and assumptions were tested in a usability test. The usability tests showed that users would spend minutes finding information on the old design, If they could find it, compared to seconds on the new design.

Following the usability tests concerns such as making the backgrounds darker for better text eligibility was met and contract info was added to the front page.

This leaves us with table 6 describing the websites characteristics, their relation to the comments made by the users and which credibility type they may fall into.

User comment category	Characteristic	Matched to credibility type
Fun, sports, social	Straight to the point	Presumed credibility
Relevance, age, social	Unique relevant imagery	
Referrals	Displaying association	Reputed credibility
Relevance, social, readability, activity	Straight to the point	Surface credibility
Age, composition, information design	Follows design trends	
Relevance	Information design with focus on relevance	
Social, relevance, age	Unique relevant imagery	
Composition, highlighting	Consistent and useful use of colour	
Size, theme	Large enough logo	
Complexity, relevance	Simple navigation	Earned credibility
Activity, age, relevance	Activity and news	

Table 6: Final characteristics and what type of credibility they might be associated with

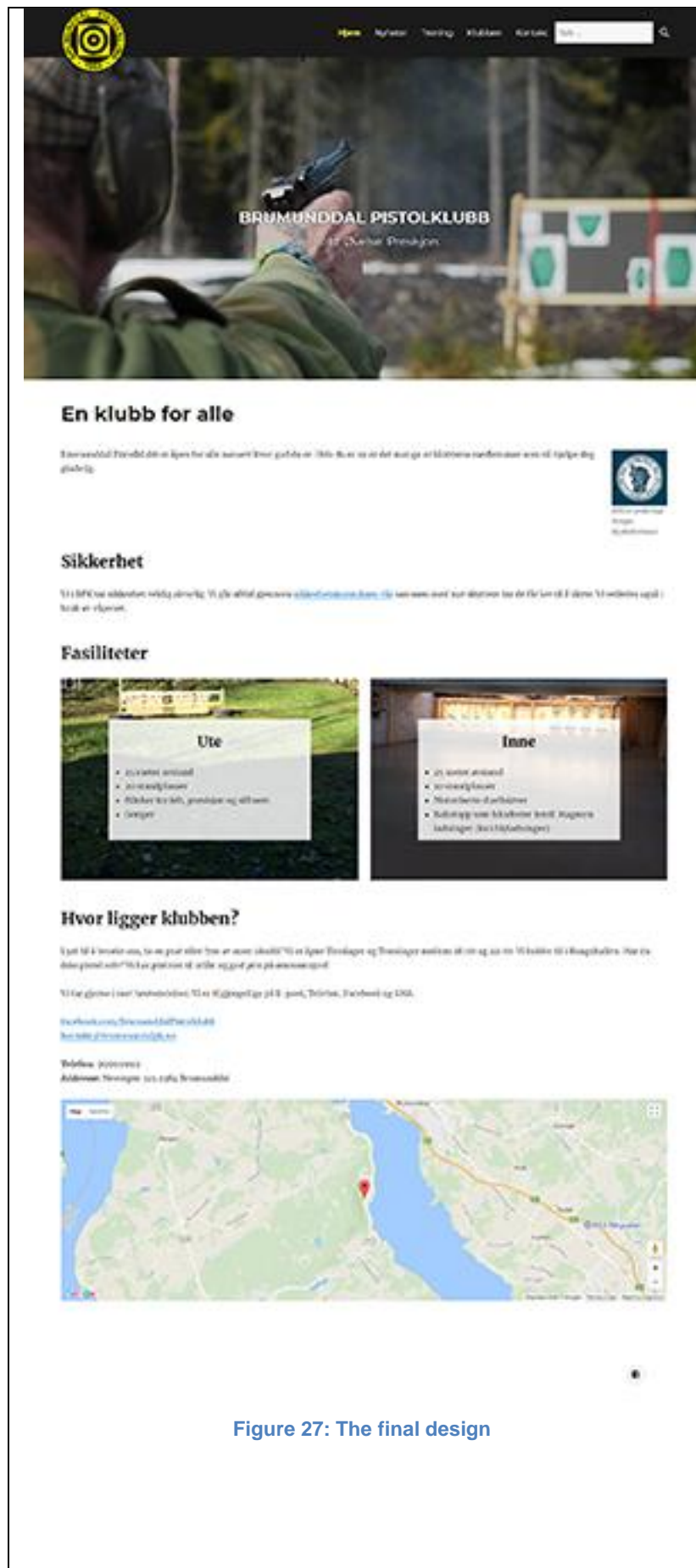


Figure 27: The final design



Figure 28: Mobile version

5 Discussion

The main objective of this study was to see if Source Credibility Theory could be used in a User Centred Process to create credible websites. This chapter reflects upon the methods used and findings presented in the previous chapters. First by reflecting upon what UCD and SCT could learn from each other and second how SCT ideas could be combined into a UCD process then finally study limitations and additional ethics considerations.

5.1 What UCD and SCT could learn from each other

RQ1: What do people look for when assessing the credibility of a web site related to sports shooting?

By performing user research using qualitative methods such as semi-structured interviews and comparing 4 different sites related to shooting sports it was discovered that they were mostly associated with sports, shooting, focus and events and that users preferred the websites using images of people or other relevant imagery to describe their content and websites follow designing trends such as using as much of the screen as possible and bright colours.

By sketching suggestions for a new design and giving them users to comment it was discovered that users appreciated a "straight to the point" approach to the websites design. In order to be straight to the point it seems like that the organizations nature should be explained quickly though the usage of images and slogans. Such as the pistol clubs sports, social and fun nature.

By conducting a survey with a design created to follow the characteristics of the most popular websites discussed during the interviews and findings from the sketches it was found that again the "straight to the point" nature of the site was appreciated as was the usage of images, navigation and colour. When compared to current old design the design proposal was preferred by the majority of users.

Taking the design proposal further by implementing the feedback from the survey such as better current page indicator, moving related text and closer images together and making the clubs associations clearer by moving the logo of the association up a prototype was created.

By conducting usability testing on both the prototype and current design it was found that it took longer time to find information on the current design if the participant was even able to find it while on the prototype the information was found fairly quickly with no failures to find. This seems to be the combination of the different characteristics working together. Such as being straight to the point describing the organization quickly. Consistent and useful use of colour separating the navigation items from the rest of the content making them easier to find. By displaying the clubs association connecting it with the rest of the world. Focusing on placing related items together

such as training exercises and prices. Showing unique imagery taken by club members showing the clubs activity and social nature and using them to help describe certain sections.

RQ2: Can source credibility theory be used in a user centred design process to create credible web sites?

By asking users through interviews and surveys what they think of the organization gave some indication of what users perceive what the organization is about. In this study this gave the design a focus such as being straight to the point, describing the helpful and social aspect of the club. By asking about image usage this gave an indication of what the users expected from a pistol club leading to the choice relevant images such as images of target shooting, images out the outside and inside facilities and images of shooting practice. By asking about colour gave an indication of what the users wished as a colour palette, this lead to a colour palette suited for the logo.

In essence focusing on SCT gave the website a focus and a message. Creating a website with the content, images and features the users might expect.

By focusing on UCD in this study it was the users themselves that steered the direction of the site. By suggesting which type of images that should be used, by suggesting which type of content the website should have and which colour palette the website should have.

The interviews helped determine what the users liked or presumed about the different organizations by asking them what they think about their names and what they think they do. This helped give the design something to focus on, by focusing on the clubs positive aspects. By asking the users about the user interfaces of different websites and elements such as image usage and colours helped inform the visual style by taking the best elements from different websites.

The survey helped inform the design further by presenting the designs to a larger group of people. This helped clear up issues such as a unclear current page indicator, that some images and text were too far apart, spelling mistakes and other aspects to focus on such as the clubs safety procedures. These aspects having their own small effects on credibility such as in the case of the page indicator, possibly enhancing earned credibility by telling users where they are.

Usability testing helped by observing users trying a working prototype. This showed that users spent more time finding information on the current design compared to the prototype. The testing also found issues on the prototype itself such as bad contrast between titles and backgrounds, that users would prefer clicking on the black squares in the club section. All these small issues could steal valuable time from a user which could harm earned credibility in the long run.

In essence SCT helps a UCD process to create credible websites by giving it a focus on credibility in turn UCD helps SCT by focusing on users and their needs and perceptions over the needs of the organization.

RQ3: Does credibility affect usability?

As suggested by the interviews and survey the clubs current design for a website is a low credibility website. One participant suggested that they would rather go somewhere else than using a website like this. This could be due to the perception of the website design being old, or it's confusing design making it hard to find useful information.

The usability testing seems to confirm that finding information on the current site is difficult. This is however mostly due to the main menu being non-standard and requiring the user to read how to use it. This could mean that the issues with the website is more usability and information design related. In the interviews some participants did refer to the content as being credible, however they perceived the website itself as amateurish and thus not credible.

This seems to suggest that the visual design, information design and usability of the website is related to a users motivation to use the website. When looking back at the definitions of Fogg and Tseng's credibility types visual design and information design is related to what they defined as "surface credibility" defining surface credibility as credibility gained upon first impression. In the interviews one participant suggested that due to what the clubs website looks like they would prefer to go somewhere else suggesting that surface credibility is important to a users motivation to use the website. This suggests that there is a connection with the usability concept of satisfaction, referring to a users perceptions, feelings and opinions, and the concept of surface credibility.

Earned credibility, based upon firsthand experience over time might be connected to usefulness, the degree in which a user can achieve their goals and effectiveness, the extent the product behaves in a way the user would expect. During the interviews and survey many participants referred to the website as hard to use, many referring to the menu and the nature of finding information. This seems to suggest that when a website is low in usefulness and effectiveness it cannot gain earned credibility as it depends upon successful firsthand experience over time. This is also suggested by the usability testing as certain participants simply gave up trying to find certain information on the current website.

As suggested by the survey the initial design proposal could be a higher credibility website as it received most of the positivity compared to the current design. As suggested by the usability tests the prototype is easier to use compared to the current design. This seems to suggest that a higher credibility website is more usable.

However due to the sampling techniques and small sample sizes this data might lack validity and reliability. Because of this further research is suggested on this topic using probabilistic sampling techniques like random sampling and true experimental designs to test the interactions between the different variables in an attempt to determine more causal relationships.

5.2 Combining SCT and UCD

During this study a user centred design model was combined with source credibility theory. Based upon interviews with users a design focus was created based upon desirable aspects of related websites thus providing user requirements. These user requirements was then mapped to the credibility types established by Fogg and Tseng. This helped relate which user requirement affected which type of credibility. By focusing on these credibility types the UCD process was informed with not only what the user wished to have as features, but also help suggest what a user might expect of the organization based upon the type of organization.

During the different phases SCT helped to inform UCD.

Gather user requirements: During the process of gathering users requirements through interviews and surveys. SCT helped creating credibility related questions while still opening for usability related answers.

Design alternatives: When designing alternatives SCT gave context to what and where users may prefer certain content and what style which may be appropriate for the website. This was done by mapping different needs and topics together in order to create website characteristics, in essence assumptions about what users would like based upon their answers.

Prototype: When developing a potential solution as a prototype. The input from the interviews, sketches and survey gave an indication of what the users wanted of the website and which pages should be created.

Evaluate: When evaluating a design SCT gave a framework on why users may like what they did. During the content analysis and coding of interview answers SCT helped determine which type of credibility the user requirement was related to. Testing the design or the prototype with users using usability testing confirms or denies which assumptions were correct.

In essence in this study SCT was useful in order to categorize the responses of users and map them to different aspects of the website. With perceptions of the organization mapped to presumed credibility then divided into categories describing a users perception of the website gave a indication of how the users perceived the organization. This was then used to give the website a focus, focusing upon the positive aspects of the organization such as the welcoming, social, helpful and competitive nature of the pistol club.

To focus on these aspects the most positive aspects of related websites were combined such as relevant usage of images, images of people active in shooting exercises and other related imagery such as images of the outside and inside facilities. These were then mapped to surface credibility and focused upon creating a good first impression.

When an organization was related to another or not this was mapped to reputed credibility. Leading the design to suggest to the user that the club was associated with another.

Finally comments about general usability was mapped to earned credibility. This created a focus upon making the website useful to the users and relevant to their needs.

This focus on the different types of credibility lead to the creation of a "Model for informing user centred design with credibility" (figure 29). This model suggestion is based upon Rubin et. al's (3) description of user centred design. It is not intended as a replacement of UCD, but rather as an extension. It is an iterative model where the designer can iterate back and forth the different phases, the only starting point being gathering user requirements.

This model starts with gathering user requirements by using interviews, surveys and informal discussions. In the initial phases the questions should probably be of a exploratory and qualitative nature by as the process goes forward these more opening ended questions should probably be replaced with more quantitative questions suggesting features and design elements based upon themes in the answers from the previous more qualitative answers. One method of gathering input could be as in this study be asking questions about different designs.

As user requirements are gathered alternatives should be designed, such as through sketches and tested on users to receive their opinions. These designs should be based upon combinations of user needs already mapped out during a evaluation of users requirements.

The prototype should be a mix of the impressions from users and by using theory give context to the users needs.

In the evaluation stage user responses should be categorized and mapped to credibility types. Usability testing is a good tool to evaluate if the design meets expectations. From a credibility standpoint users should be able to find what they need in seconds therefore time is a useful measurement.

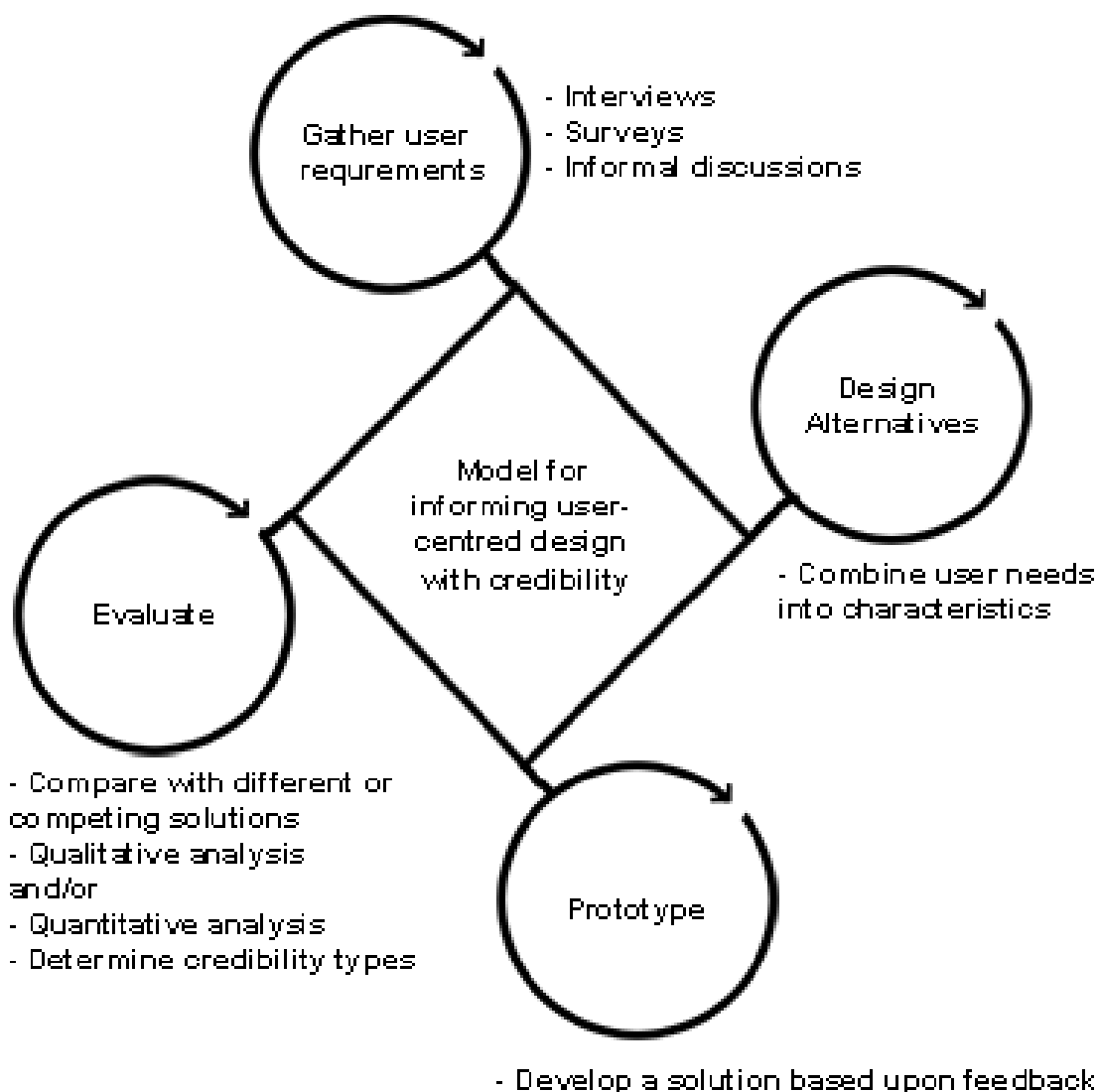


Figure 29: Model for informing user centred design with credibility

5.3 Future development and research

In the interviews and survey there were a few feature requests that were not addressed in this study due to lack of time. One was a event schedule related to the club where users could see the current events and events forwards in time. This feature would be useful to both new and returning users to help better organize events. Another feature request was a results page where users can see the latest match results.

The Norwegian Shooting Association, Brumunddal Pistol Clubs parent association, already provides a schedule and result list (see figure 30) though in the interviews one participant referred to it as hard to use. One potential design for a schedule and result list could be similar to Dynamic Sports Shooting's (see figure 31). This design seems preferable as it prominently displays the date of the event, the title and contains information such as place and time.

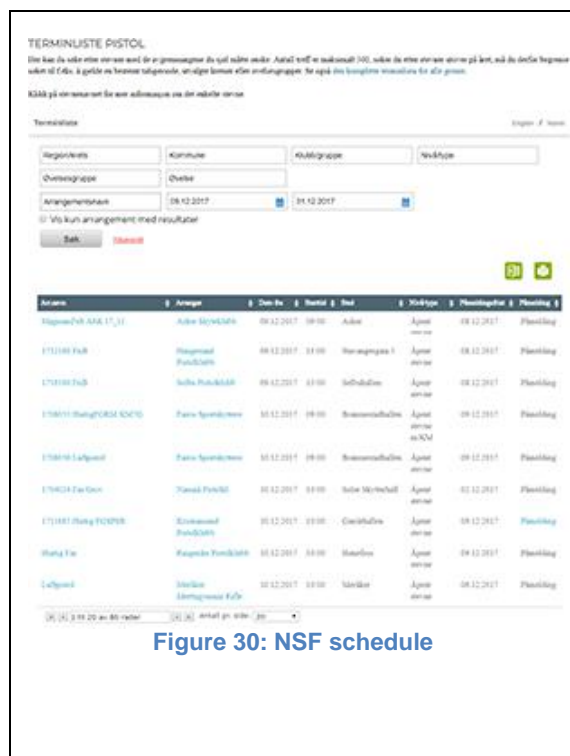


Figure 30: NSF schedule

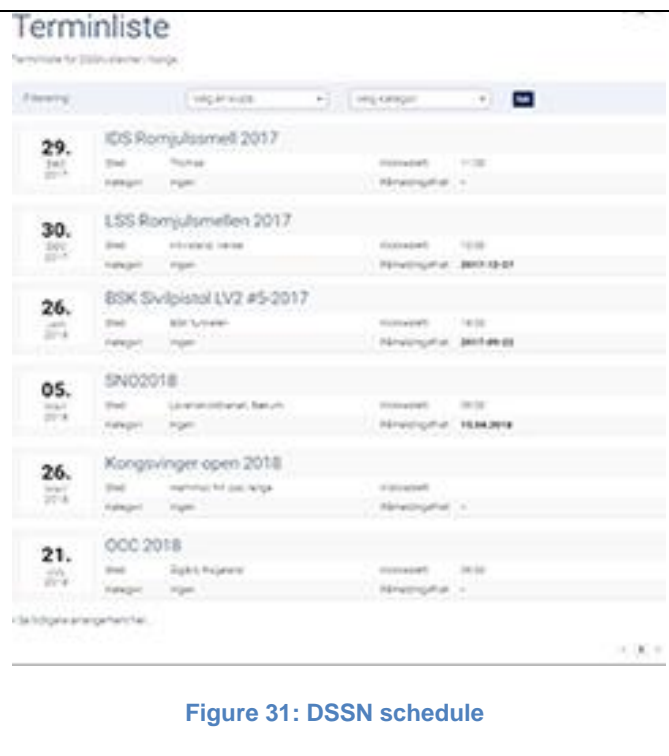


Figure 31: DSSN schedule

Having these features could contribute to the websites earned credibility by providing the uses with features they may expect and need.

5.4 Study Limitations

Qualitative research has great benefits regarding exploratory research allowing a researcher to explore issues that might not have been seen previously. However one potential issue with qualitative research is a researchers subjectivity and the potential for error. In order to help alleviate some researcher subjectivity Lazar et. al. recommends that multiple coders be used and reach some consensus by quantifying the percentage of coders agreeing with different codes and statements. This for example is useful in establishing more reliability in coding. (18) In addition the small sample sizes in this study makes it difficult to generalize towards any greater population.

In an attempt to increase external validity and reliability of the study the methods and processes used have been explained thoroughly. In addition the interviews and user tests were always conducted in the same manner as described by the interview guide and user test guide. Except for when during interviews when an open topic emerged as per the nature of semi-structured interviews. The survey was not altered during the time it was open except for the adjustments made during the pilot study.

This study sought to implement Fogg's credibility categories into a user centred design process. This study has focused on the credibility of the organization (reputed credibility), organization type (presumed credibility), and the users first experience regarding use of images and aesthetics, but one type of credibility regarding meeting

a user's needs consistently over time (earned credibility) did not get much attention. It was considered by focusing on readability and the perceived ease of use of website navigation. While the user tests gave some indication these tests are more isolated uses. For better measurement of earned credibility it could have been beneficial to launch the website and do interviews or surveys about the website usage over time to help give an indication of issues regarding earned credibility.

This study used interviews, usability tests and surveys to help gather user requirements. However what features implemented into the prototype was mostly decided by the perceptions the designer gathered from the data making the features somewhat designer centred. In order to make idea generation and feature selection more user centred one could recruit participants for a workshop or focus group and use methods such as gamestorming (24) and a game fit for idea generation then choose ideas based upon votes.

5.5 Ethics

Credibility is often misused to spread false information or in "phishing" scams in which a user's personal or sensitive information is stolen by criminals though the use of fake websites such as copies of their banks interface or other important web pages such Google login forms. Often spreading through the use of E-mail, social media or instant messaging. (11, 25)

As this study is mainly concerned about creating new credible websites phishing scams are not much of a concern. Phishing scams usually employ copies of other websites and as such are not new designs in themselves this study will not be of much use to them.

This study might be useful for those creating websites designed for spreading misinformation, to make the website appear credible. However the creation of a credible website requires considerable time and resources. This is a complex issue which Fogg suggests that the most effective defence against false information or predatory persuasion techniques is education. (11)

6 Conclusion

The findings in this study seems to suggest that there is some connection between users motivation to use a website and a sites credibility. Based upon findings from the interviews and survey suggests that in certain circumstances a user would rather leave to different websites and seek their information elsewhere if they could. This study has examined the concepts of credibility and usability and how they interact from a user centred perspective by developing a new website for Brumunddal Pistolclub. In order to guide this design in the right direction an interview study was conducted where the clubs current website was compared to the websites of other shooting organizations and the best elements of each were identified. To develop these ideas further sketches were drawn based upon the assumptions gathered from the interviews then after feedback on the sketches an initial digital design was created and tested and compared to the current design through a survey. Then based upon the feedback from the survey a prototype was created and finally the prototype was tested on users.

This study has 3 main contributions.

It puts BJ Fogg's ideas of computer credibility into a user centred context as requested by his critics, mainly his ideas of the 4 types of computer credibility. By using these categories as a guide to help the designer categorize findings to find what matters most to the users and what they expect. By focusing not only upon the website itself and what the user might find useful, but also what the user may associate with the organization the designer can more easily make choices related to colour scheme, content and imagery.

Secondly this study gives insight into what a user might expect of a pistol clubs website the main findings being: (A) by being straight to the point, (B) reflecting the activities of the club, (C) reflecting the social aspect of said activities and (D) providing the latest news on events and activities. (E) prove to the user the club is serious and (F) prove to the user that people still visit the club.

In order to meet these criteria:

- (A) Tell a user what the club is about. Use headers and slogans, descriptive images and provide short reasons to practice there.
- (B) Provide the user with information about the club activities such as which exercises they do and which safety procedures they have.
- (C) The website has to emphasize the helpful and social nature of the club in text, but also prove it through unique images taken by club activities.
- (D) Provide the latest news about events and when they are done post results
- (E) Show that the club is connected with an association.
- (F) By following current design trends and by meeting (B), (C) and (D).

The third contribution is related to what and when SCT concepts work in a UCD process. By suggesting a model (figure 29) in which SCT can be used in a UCD

process. The model suggests that SCT can guide the designer in creating questions based upon credibility types for gathering user requirements. That in evaluation cases SCT can be used to map themes gathered using content analysis to credibility types and in prototyping and design phases give context to when and where users suggestions can be used.

Further research should be focused on increasing sample sizes and use more probabilistic sampling techniques, at least in surveys, in order to gather more valid and robust data, doing follow up interviews or similar after a website has launched to see if they still use the website and seeing if their assumptions were truly correct.

Further development should be focused on creating a usable schedule and results system.

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Appendixes

Appendix A - Interview Informed Consent Form (translated)

Request for participation in research project

(Master's thesis: Improving credibility through user-centered design)

Background and purpose

The purpose of this project is to develop a new design for the Brumunddal Pistol Club (BPK) website. The background for this new design is to create greater transparency about BPK's activities and create greater credibility and trust between the gun club and the community. This project is part of a master's thesis (MIXD490) in interaction design at NTNU in Gjøvik.

What participation in the project involves

Participation in this project involves asking you questions about what you think about BPK's website and other websites related to shooting. This interview will take about 15 to 25 minutes.

The information about you will be anonymized so that you can not be identified as a participant in the project. Information such as name is not taken along and age is converted to an age group. For example, "26" becomes "19 to 29".

What happens to the information collected

The information is written down in the form of notes either in the form of digital notes stored on a computer or in the form of a paper note. These notes are treated confidentially and will not be uploaded or shared with a third party. All information that may not be anonymized will be destroyed when the project ends on December 15th. Anonymized data will be destroyed after 1 year.

Voluntary participation

Participation in this study is voluntary. You can withdraw your consent of participation whenever you want without giving any reason. If you withdraw, all information about you that is not anonymized will be destroyed.

If you have any questions related to the study, please contact Tore Svendsen by e-mail to toresven.stud@ntnu.no or call 47 70 45 70. You can also contact the supervisor Frode Volden by sending an e-mail to frodv @ ntnu. no if you have any other questions related to the study.

Consent to participate

I have received and understood the information about what the study entails and gives my consent to participate.

(Name, Place, Date)

Appendix B - Interview codebooks

Positive and negative comments about BPK in categories

Credibility type	Website element	User comment	Positive	Negative	Sum
Presumed credibility	Domain name	Descriptiveness	1	3	4
	Organization type	Fun	2	0	2
		Sports	5	0	5
		Social	3	0	3
Reputed credibility	Referrals	Association	0	0	0
Surface credibility	Visual design	Age	0	2	2
		Motivation	0	6	6
	Information design	Relevance	0	2	2
	Images	Age	0	1	1
		Social	0	0	0
		Relevance	0	1	1
	Colours	Composition	0	1	1
		Highlighting	0	1	1
	Logo	Theme	2	0	2
		Age	1	0	1
		Size	0	0	0
	Activity	Dates	0	0	0
Age		0	0	0	
Earned credibility	Usability	Complexity	0	4	4
	Readability	Motivation	0	5	5
Sum			14	26	

Domain name

Descriptiveness: Most of the participants made comments about how descriptive the name was even when they were familiar with the website. One made a comment that at the very least it indicated about something in Brumunddal.

Organizational type

Fun: Some participants made comments associating the organization with fun or people who like to shoot.

Sports: Most participants made a comment associating the organization with competition or at the very least hobby.

Social: Most participants made comments about the social aspects of the organization

Visual Design

Age: Most participants made a comment about their perceived age of the design. Making comments about the colours and the images especially. One making a comment referring to it as looking like a "middle school assignment".

Motivation: Most participants made comments about the visual design and a negative motivation to browse or even read the content on the site. One making a comment saying it was "boring" and "not inviting".

Information Design

Relevance: Some participants made negative comments about the information design of the site some referring to it as messy and confusing with little relevance to the topics it was supposed to discuss. One expressing frustration about links hidden in text.

Images

Age: Some participants made negative comments about the age of the images on the site referring to them as old.

Relevance: Some participants made comments about the relevance of the images used one referring to the image on the front page as "nothing to do with [a] front page".

Colours

Composition: Some participants made comments about the colour composition referring to the colours as "natural", but "drab" and "sad".

Highlighting: One participant expressed confusion about the usage of highlighting on the page. Certain links like those in text were highlighted as blue, but on the menus there was nothing indicating that they were clickable.

Logo

Theme: Some participants made comments about the theme of the logo. "It's alright, it's a target".

Age: One participant made a comment about the age of the logo. "It's nice, it has been like this forever".

Usability

Complexity: Most participants made a comment about the complexity of the website. Participant commenting "No logical structure", "I forget the menu".

Readability

Motivation: Most participants commented that they lack the motivation of reading anything on the website referring to the text as "boring" and "hard to read".

Positive and negative comments about NSF in categories

Credibility type	Website element	User comment	Positive	Negative	Sum
Presumed credibility	Domain name	Descriptiveness	0	4	4
	Organization type	Fun	0	0	0
		Sports	4	0	4
Social		3	0	3	
Reputed credibility	Referrals	Association	1	0	1
Surface credibility	Visual design	Age	2	0	2
		Motivation	0	0	0
	Information design	Relevance	2	1	3
	Images	Age	0	0	0
		Social	2	0	2
		Relevance	1	0	1
	Colours	Composition	2	1	3
		Highlighting	0	0	0
	Logo	Theme	1	0	1
		Age	0	0	0
Size		0	0	0	
Activity	Dates	0	0	0	
	Age	5	0	5	
Earned credibility	Usability	Complexity	3	1	4
	Readability	Motivation	1	0	1
Sum			27	7	

Domain name

Descriptiveness: Most participants expressed confusion about the domain name. One suggested it was a private website about shooting

Organization type

Sports: All participants associated the organization with sports correctly guessing the NSF as a association of shooting sports organizations.

Visual Design

Age: Most participants expressed the website as being recently updated.

Information Design

Relevance: Some participants saw the website as nicely organized, however one participant expressed that the front page should have some information about the purpose of the organization.

Images

Social: Some participants saw the usage of images on the site as giving it a social, "lively" feel.

Relevance: Some participants saw the usage of images as relevant to the news articles.

Colours

Composition: Some participants appreciated the colour usage one appreciating "neutral" tones and another describing as "not gray and boring". One criticized what they perceived as a inconsistent use of colours.

Logo

Theme: Some participants commented on the logo and said it was alright, while others had difficulty understanding what it was.

Size: Some participants perceived the logo as too small and thus could not see what the logo represented or read the text on the logo.

Activity

Age: All participants saw the website as active and representing current events.

Usability

Complexity: Most participants saw the website as easy to use, however one expressed difficulty on using a feature of the website.

Readability

Motivation: One participant expressed that the text was not exactly boring

Positive and negative comments about DSSN in categories

Credibility type	Website element	User comment	Positive	Negative	Sum
Presumed credibility	Domain name	Descriptiveness	2	4	6
	Organization type	Fun	1	1	2
		Sports	2	0	2
		Social	0	0	0
Reputed credibility	Referrals	Association	0	0	0
Surface credibility	Visual design	Age	0	0	0
		Motivation	0	1	1
	Information design	Relevance	2	0	2
	Images	Age	0	1	1
		Social	0	0	0
		Relevance	1	0	1
	Colours	Composition	4	0	4
		Highlighting	1	0	1
	Logo	Theme	2	2	4
		Age	0	0	0
Size		0	0	0	
Activity	Dates	1	0	1	
	Age	1	0	1	
Earned credibility	Usability	Complexity	2	0	2
	Readability	Motivation	1	1	2
		Sum	20	10	

Domain name

Descriptiveness: Most participants was confused about the domain name, one person correctly identified it as DSSN, while another person commented "I don't know what this is, it might be a government website?"

Organization type

Fun: One person positively associated DSSN with fun while another negatively associated the fun DSSN has.

Sports: Some participants associated the website with sports, one suggesting it was the Norwegian team of some shooting sport.

Visual Design

Age: Some participants saw the website as modern and "fresh"

Motivation: Most participants saw the website as easy to use and well organized. However one participant did refer to it as "boring".

Information Design

Relevance: As previously mentioned the website was seen as well organized.

Images

Relevance: One participant mentioned that while the website used a small amount of images the few images that were there was used to describe.

Colours

Composition: Most participants saw the use of colour positively. Referring to it as "nice", "neutral" and "comfortable".

Highlighting: One participant commented on what they perceived as the usage of colour to highlight elements such as search.

Logo

Theme: The logo was perceived as alright, but some was confused at what it represented while another had some issue with the Viking ship theme.

Activity

Dates: One saw the usage of dates as very positive and it helped determine how new the information was.

Age: Most saw the website as frequently updated.

Usability

Complexity: The website was seen as easy to use.

Readability

Motivation: One participant perceived the website as having a lot of text, however most participants saw the website as readable.

Positive and negative comments about NJFF in categories

Credibility type	Website element	User comment	Positive	Negative	Sum
Presumed credibility	Domain name	Descriptiveness	3	1	4
	Organization type	Fun	0	0	0
		Sports	0	0	0
		Social	3	0	3
Reputed credibility	Referrals	Association	0	0	0
Surface credibility	Visual design	Age	0	0	0
		Motivation	0	0	0
	Information design	Relevance	2	1	3
	Images	Age	0	0	0
		Social	0	0	0
		Relevance	2	1	3
	Colours	Composition	4	0	4
		Highlighting	0	0	0
	Logo	Theme	1	1	2
		Age	0	0	0
Size		0	1	1	
Activity	Dates	0	0	0	
	Age	0	0	0	
Earned credibility	Usability	Complexity	3	1	4
	Readability	Motivation	1	0	1
Sum			19	6	

Domain Name

Descriptiveness: Most participants recognized the website and thus correctly identified who they were.

Organization Type

Social: All participants perceived NJFF as an organization that assists people in outdoor life such as with hunting and fish.

Information Design

Relevance: Participants saw the website as well organized, however one participant referred to it as "a little divided".

Images

Relevance: Most participants perceived that the images were highly relevant to the site as they depicted nature, hunting and fishing. However one perceived some of the images as stock photos which they reacted negatively to.

Colours

Composition: All participants saw the colour usage as nice. One referring to it as "natural".

Logo

Theme: Most participants referred to the logo was familiar to them and fairly known.

Size: One participant saw the logo as small and was unable to read what it said.

Activity

Dates: One participant said that it was hard to date the articles due to the lack of date stamps.

Age: Some participants referred to the site as frequently updated. One remarking that the "news were current".

Usability

Complexity: Most participants perceived the website as easy to use, however one commented that the website was easy to get lost in..

Readability

Motivation: Most participants referred to the site as easy to read.

Appendix C - Survey informed consent (translated)

Request for participation in research project

(Master's thesis: Improving web credibility through user-centered design)

Background and purpose

The purpose of this project is to develop a new design for the Brumunddal Pistol Club (BPK) website. The background for this new design is to create greater transparency about BPK's activities and create greater credibility and trust between the gun club and the community. This project is part of a master's thesis (MIXD490) in interaction design at NTNU in Gjøvik.

What participation in the project involves

Participation in this project involves asking you questions about what you think about BPK's website and how to improve it. In addition, you will be presented with a proposal for a new design and asked the same questions. There is no wrong answer to any of the questions since this is about your own impression of the page and BPK. Your answers will be used to inform the design further.

The survey takes about 25-30 minutes.

What happens to the information collected

The information collected as part of this survey is treated confidentially. Anything that can potentially identify you is deleted before the end of the study on December 15, you as a person will not be identified as part of the study.

The study is approved by NSD.

Voluntary participation

Participation in this study is voluntary. You can withdraw your consent of participation whenever you want without giving any reason. If you withdraw, all information about you that is not anonymized will be deleted.

If you have any questions related to the study contact Tore Svendsen by sending an e-mail to toresven.stud@ntnu.no. You can also contact the supervisor Frode Volden by sending an e-mail to frodv@ntnu.no if you have any other questions related to the study.

Consent to participate

I have received and understood the information about what the study entails and gives my consent to participate.

Appendix D - Interview questions (translated)

We are going to go through the front pages of 4 websites related to the shooting sport

1. brumunddalpk.no
2. skyting.no
3. dssn.no
4. njff.no

Presumed credibility

- What do you think when you hear the domain name?
- What organization do you think this name belongs to?
- What do you think this organization is about? Why?
- What do you think when you hear [organization name]
- Do you think the name sounds credible?

Surface Credibility

(Show website front page)

- What do you think of this websites appearance?
 - What do you think of the usage of imagery?
 - Colour usage?
- What do you think of the credibility of this website? Why?
- What do you think of the logo?
- Does this website look updated?

Reputed credibility

(If not mentioned before)

- Have you heard about this organization before?

Earned credibility

- Do you think this website is easy to read?

General

What do you think this website is missing?

Appendix E - Survey

These are the survey questions as presented on QuestBack. Empty questions indicate a repetition of a design image.

Masteroppgave: Forbedring av web troverdighet med brukersentrert design

Forespørsel om deltakelse i forskningsprosjekt

(Masteroppgave: Forbedring av web troverdighet med brukersentrert design)

Bakgrunn og formål

Formålet med dette prosjektet er å utvikle et nytt design for Brumunddal Pistolklubb (BPK) sin hjemmeside. Bakgrunnen for dette nye designet er å skape høyere gjennomsiktighet om BPK sine aktiviteter og skape høyere troverdighet og tillit mellom pistolklubben og samfunnet. Dette prosjektet er en del av en masteroppgave (MIXD490) i interaksjonsdesign ved NTNU i Gjøvik.

Hva deltagelse i prosjektet involverer

Deltagelse i dette prosjektet involverer at du blir spurt spørsmål om hva du tenker om BPK sin hjemmeside og hvordan du vill forbedre denne. I tillegg blir du presentert et forslag til et nytt design og stilt de samme spørsmålene. Det er ingen feil svar på noen av spørsmålene siden dette handler om dine egne inntrykk av siden og BPK. Dine svar blir brukt til å informere designet videre.

Undersøkelsen tar cirka 25-30 minutter.

Hva skjer med den innsamlede informasjonen

Informasjonen som blir samlet inn som del denne undersøkelsen blir behandlet konfidensielt. Alt som kan potensielt identifisere deg blir slettet før slutten av studien den 15. Desember deg som person vil ikke kunne bli identifisert som del av studien.

Studien er godkjent av NSD.

Frivillig deltagelse

Deltagelse i denne studien er frivillig. Du kan trekke samtykket ditt om deltagelse når du vil uten å gi noen grunn. Hvis du trekker deg blir all informasjon om deg som ikke er anonymisert slettet.

Hvis du har noen spørsmål relatert til studien kontakt Tore Svendsen ved å sende e-post til toresven.stud@ntnu.no. Du kan også kontakte veileder Frode Volden ved å sende e-post til frodv@ntnu.no hvis du har andre spørsmål relatert til studien.

Samtykke til deltagelse

Jeg har mottatt og forstått informasjonen om hva studien innebærer og gir mitt samtykke til å delta.

1) *Gir du ditt samtykke til å bli med i denne undersøkelsen?

- Ja
- Nei



2) *Hvilke tanker får du når du hører navnet brumunddalpk.no?

3) *Hvilke tanker får du når du hører navnet Brumunddal Pistolklubb?





Brumunddal Pistolklubb

- Hjem
- Trening
- Stevner
- Regler lover
- Pekere
- Klubben

Klikk svart trekant for å åpne undermenyer. Hul trekant har ikke undermeny.

Velkommen

Bangshallen, klubbhus og skytehall med utestandplasser.



[Aktivitetsoversikt hallen.](#)
Normalt skal det være program fra kl 18 torsdag. Tirsdag er det NAIS (kort program) fra kl. 18 tirsdag. Se aktiviteter i hallen.

Nyheter

[Nye rutiner for søknad om våpenkort](#)

Nytt

Se pekere og logg deg inn på Min idrett for Påmelding stevner og Startkort

Årsmøtet den 19. februar 2017 kl 18:00 i Bangshalle. Årsmelding, regnskap for 2016 skal behandles. Valg av styre. Vi håper flest mulig vil møte opp.

Feltstevnet i 2017 arrangeres på Bøverlund skytebane den 2 april. [Les mer..](#)

4) Hvordan siden ser ut nå

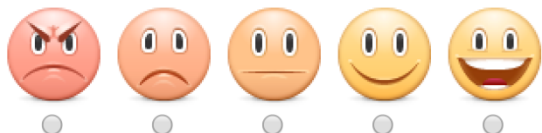
5) *.....Hvilke ord ville du ha brukt for å beskrive denne forsiden?

6) *.....Hvordan ville du ha beskrevet fargebruken?

7) *Hva synes du om bildebruken?

8) *Hva synes du om logoen?

9) *Hvordan er inntrykket ditt av forsiden?



10) Hvordan siden ser ut nå

11) *Har du hørt om Brumunddal Pistolklubb fra før?

- Ja
- Nei

12) *Basert på denne forsiden hvilke organisasjoner tror du Brumunddal Pistolklubb har tilknytning til, hvis noen?



13) Hvordan siden ser ut nå

14) *Tror du denne hjemmesiden har den nyeste mest relevante informasjonen?

- Ja
- Nei

15) *Er innholdet lett å lese?

- Ja
- Nei

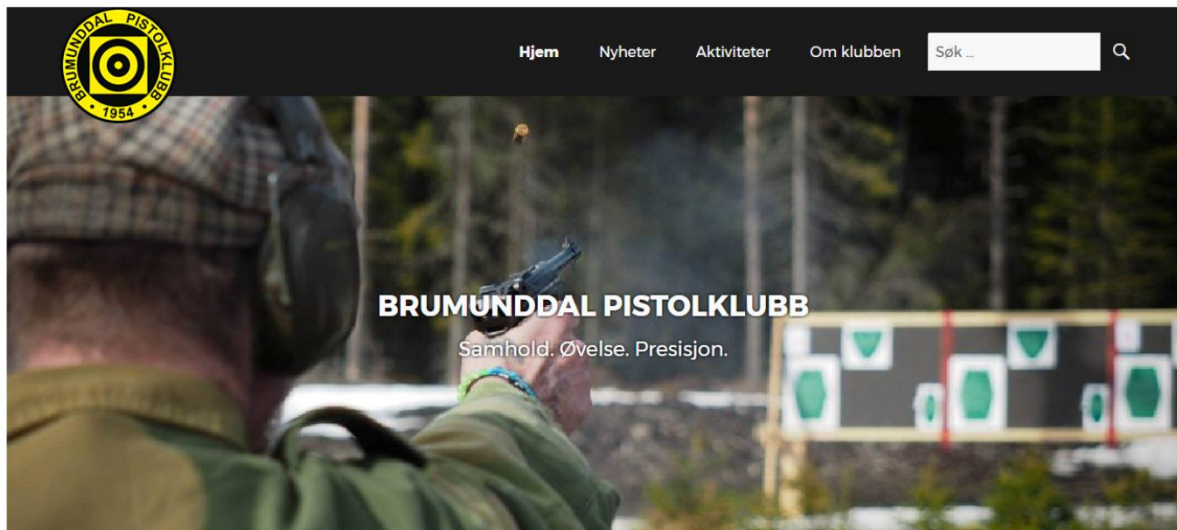
16) *Synes du navigasjonen ser enkel ut? Hva tror du er problematisk eller ikke-problematisk?

17) *Hvordan har hjemmesiden påvirket din oppfatning av klubben?



18) Hvordan siden ser ut nå

19) *Er det noe du tror denne hjemmesiden trenger annet enn det du allerede har nevnt?



En klubb for alle

Brumunddal Pistolklubb er åpen for alle uansett hvor god du er. Hvis du er ny er det mange av klubbens medlemmer som vil hjelpe deg gladelig.

Fasiliteter

Ute

- 25 meter avstand
- 20 standplasser
- Blinker for felt, presisjon og siluett
- Gonger



Inne

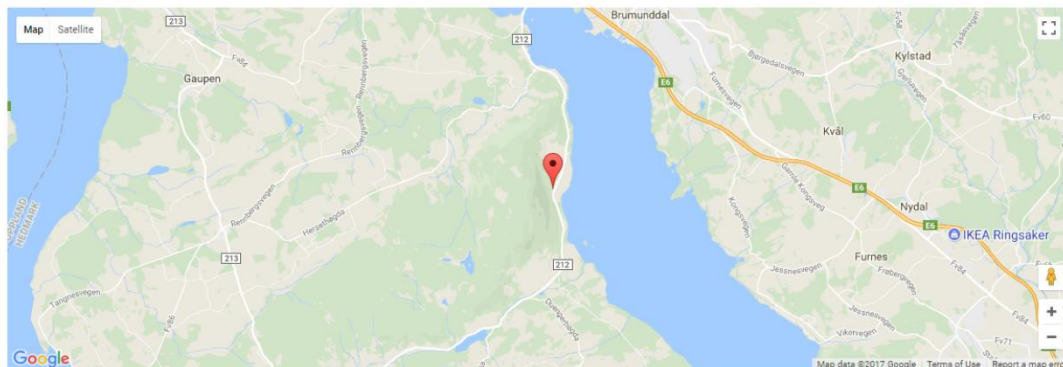


- 25 meter avstand
- 10 standplasser
- Blinker som kan snu
- Bakstopp som håndterer intill Magum ladninger (ikke mantlet)

Hvor ligger klubben?

Lyst til å besøke oss, ta en prat eller fyre av noen skudd? Vi holder til i Bangshallen. Har du ikke pistol selv? Vi har pistoler til utlån og god pris på ammunisjon!

Adresse: Nesvegen 515 2384 Brumunddal



BPK er underlagt
Norges
Skytterforbund

20) Forslag til nytt design

21) *Hvordan ville du ha beskrevet fargebruken?

22) *Hvilke ord ville du ha brukt for å beskrive denne forsiden?

23) *Hva synes du om logoen?

24) *Hva synes du om bildebruken?

25) *Hvordan er inntrykket ditt av denne forsiden?



26) Forslag til nytt design

27) *Basert på denne forsiden hvilke organisasjoner tror du Brumunddal Pistolklubb har tilknytning til, hvis noen?

28) * Hvis dette var forsiden ville du trodd nettsiden ville ha hatt den nyeste mest relevante informasjonen?

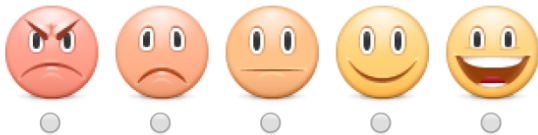
- Ja
- Nei

29) * Er innholdet lett å lese?

- Ja
- Nei

30) * Synes du navigasjonen ser enkel ut? Hva tror du er problematisk eller ikke-problematisk?

31) * Hvis dette var forsiden hvordan det påvirket din oppfatning av klubben?



32) Forslag til nytt design

33) * Er det noe du tror denne hjemmesiden trenger annet enn det du allerede har nevnt?

Appendix F - Survey Questions and codebooks [translated]

- What thoughts do you get when you hear the name brumunddalpk.no?
- What thoughts do you get when you hear the name Brumunddal Pistolklubb?
- What words would you have used to describe this front page?
- How would you describe the color use?
- What do you think about the image usage?
- What do you think of the logo?
- How is your impression of the front page?
- Have you heard of Brumunddal Pistol Club from before?
- Based on this front page which organizations do you think Brumunddal Pistolklubb has affiliated with, if any?
- Do you think this website has the latest most relevant information?
- Is content easy to read?
- Do you think the navigation looks simple? What do you think is problematic or non-problematic?
- How has the website influenced your opinion of the club?
- Is there anything you think this website needs other than what you have already mentioned?
- How would you describe the color use?
- What words would you have used to describe this front page?
- What do you think of the logo?
- What do you think of the picture usage?
- How is your impression of this front page?
- Based on this front page, what organizations do you think Brumunddal Pistolklub is affiliated with, if any?
- If this was the front page would you think the website would have had the latest most relevant information?
- Is content easy to read?
- Do you think the navigation looks simple? What do you think is problematic or non-problematic?
- If this was the front page how it affected your opinion of the club?
- Is there something you think this website needs other than what you have already mentioned?

Codebooks

Positive and negative topics about BPK in categories

Credibility type	Website element	User comment	Positive	Negative	Sum
Presumed credibility	Domain name	Descriptiveness	5	14	19
	Organization type	Fun	4	0	4
		Sports	6	0	6
		Social	2	0	2
Reputed credibility	Referrals	Association	2	0	2
		Sum	19	14	

Domain name

Descriptiveness: Most participants referred to the domain name as confusing or could not guess the site behind the domain name. Some participants at least correctly guessed it had something to do with Brumunddal.

Organizational type

Fun: Some participants associated the club with fun. One describing it as a hobby they had been doing for years.

Sports: Most participants associated the club with sports. Some describing elements of shooting sports such as calmness, focus and precision. Others associating it with sports in general.

Social: Some participants saw the club as a social place with positive and helpful people.

Referrals

Association: When it came to the organization itself a few people associated it with the Norwegian Shooting Association

Positive and negative topics about the current design in categories

Credibility type	Website element	User comment	Positive	Negative	Sum
Reputed credibility	Referrals	Association	5	19	24
Surface credibility	Visual design	Age	1	12	13
		Motivation	0	7	7
	Information design	Relevance	1	1	2
	Images	Age	0	1	1
		Social	0	1	1
		Relevance	1	10	11
	Colours	Composition	1	10	11
		Highlighting	1	2	3
	Logo	Theme	5	0	5
		Age	3	0	3
		Size	0	3	3
	Activity	Dates	0	1	1
Age		0	1	1	
Earned credibility	Usability	Complexity	2	15	17
	Readability	Colour contrast	0	5	5
		Motivation	0	4	4
		Sum	20	92	

Visual Design

Age: Most participants saw the website as old.

Motivation: Some participants saw the website as boring and not welcoming.

Information Design

Relevance: Most participants saw the website as cluttered with no logical structure. One participant saw it as organized.

Images

Age: One referred to the image as old.

Social: One participant perceived the use of images as not representative of the social aspect of the sport.

Relevance: Most participants questioned the purpose of the images on the front page describing them as irrelevant and confusing. One participant appreciated the images.

Colours

Composition: Most participants saw the website as dark and drab. With one appreciating the colours.

Highlighting: Some participants were confused by inconsistent use of colour. Links in text were highlighted, but colour on the menu was the same as the text.

Logo

Theme: The theme of the logo was mostly appreciated. The most negative comment about the logo was that it did not fit with the rest of the site.

Age: Some participants referred to the logo as old, but traditional.

Size: Some participants referred to the logo as too small.

Usability

Complexity: Most participants saw the menu as complex. Referring to it as difficult to notice, non-standard in its operation and difficult to use. One even stating that they would rather look somewhere else for information.

Readability

Colour contrast: Some participants referred to the text in the header as hard to read due to the light brown on white background.

Motivation: Some participants referred to the text as boring, uninformative and unmotivating to read.

Positive and negative topics about the design proposal in categories

Credibility type	Website element	User comment	Positive	Negative	Sum
Reputed credibility	Referrals	Association	17	6	23
Surface credibility	Visual design	Age	0	0	0
		Motivation	0	0	0
	Information design	Relevance	0	0	0
	Images	Age	1	0	1
		Social	2	0	2
		Relevance	7	3	10
	Colours	Composition	20	1	21
		Highlighting	0	0	0
	Logo	Theme	5	0	5
		Age	1	0	1
		Size	2	2	4
Activity	Dates	0	0	0	
	Age	0	0	0	
Earned credibility	Usability	Complexity	29	5	34
	Readability	Colour contrast	0	1	1
		Motivation	0	0	0
		Sum	84	18	

Referrals

Association: With the design proposal most participants managed to identify the club as being associated with the Norwegian Shooting Association. However some were still confused at what the club was associated with.

Images

Age: One participant noticed that the images were recent.

Social: Some participants appreciated using images of people and images representative of the sport.

Relevance: Most participants appreciated the use of relevant images. Some especially appreciating the splash image one remarking it gave them motivation to go shoot. Others appreciated the images illustrating the outside and inside areas, however some referred to the images as while relevant as unprofessionally made.

Colours

Composition: Most participants were positive to the usage of colour. Some referring to them as giving a unifying impression. One saying the colours made them "want to visit the club".

Highlighting: One participant was confused at which menu was active.

Logo

Theme: As before most participants appreciated the theme of the logo.

Age: As before the logo was seen as old, but traditional.

Size: The topic of logo size was interesting as some would have preferred it be larger and other would prefer it to be smaller. However the readable text on the logo was appreciated.

Usability

Complexity: Most participants saw the menu was as easy to use and located in a common place. However some saw it as messy.

Readability

Colour contrast: One participant had issue with the contrast of text overlaid on the images.

Appendix G - Usability test [translated]

Questions

1. Imagine you have just found out about BPK and you are interested about the type of shooting they do. Check out their website and find out which association they are under.
 1. Now that you have figured out which association they are under and you are interested which shooting exercises they do.
2. Imagine you are interested in trying pistol shooting at BPK. Find out when they are open.
 1. Now you know when they are open. You want to know the price of a pistol training session.
 2. Now that you know the price you want to know where the club is located.
3. Imagine you are concerned for safety and you want to know the clubs safety instructions.
4. You are interested in their latest news. Use their website and find their latest events.

Participant 1

Current design

Task	Comments	Time spent
1	Struggled with menu.	1.18 mins
1.1		15 secs
2		17 secs
2.1		11 secs
2.2		25 secs
3	Did not find	1.38 mins
4	Struggled to find.	1.19 mins

Prototype

Task	Comments	Time spent
1		1 secs
1.1		15 secs
2		11 secs
2.1		1 secs
2.2	Maybe add location to club tab	12 secs
3		16 secs
4		3 secs

Other comments: contact and opening info on the front page. Participant 2

Current design

Task	Comments	Time spent
1		33 secs
1.1		32 secs
2		23 secs
2.1		8 secs
2.2		2.17 mins
3	Did not find	2.35 mins
4		1.57 mins

Prototype

Task	Comments	Time spent
1		3 secs
1.1		9 secs
2		5 secs
2.1		4 secs
2.2		2 secs
3		4 secs
4		2 secs

Other comments: Fix typo on training page.

Participant 3

Current design

Task	Comments	Time spent
1	Struggled with menu	4.45 mins
1.1		1.11 mins
2		41 secs
2.1		17 secs
2.2	Struggled with menu. Did not find.	3.03 mins
3	Did not find	3.43 mins
4	Did not find	2.34 mins

Prototype

Task	Comments	Time spent
1		18 secs
1.1		43 secs
2		14 secs
2.1		3 secs
2.2		40 secs
3		7 secs
4		10 secs

Other comments: Make boxes clickable on "about club" page, not just the text. Make background images behind titles and slogans a bit darker to better show text.

Participant 4

Current design

Task	Comments	Time spent
1	Struggled with menu. Did not find.	1.52 mins
1.1		45 secs
2		36 secs
2.1		12 secs
2.2	Did not find	1.24 mins
3		56 secs
4		7 secs

Prototype

Task	Comments	Time spent
1		32 secs
1.1		13 secs
2		7 secs
2.1		11 secs
2.2		4 secs
3		4 secs
4		2 secs

Other comments: Make boxes clickable on "about club" page, not just the text. (2)