Master Thesis

A valuable user experience:

Utilizing the Q-method as a
Human-Centered Design approach
to enhance the user experience

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Abstract

Background. Human-Centered Design (HCD) is a design process which improves the value of products by including users in the design process. This design process consists of gathering user requirements through methods like interviews, surveys, or focus groups. Based on these results, a design is created and then evaluated, and improved through usability testing. Although the approach is often proven to be successful, the research methods in HCD often focus on solving a problem rather than developing technologies that assist users in their activities. This is due to unclear guidelines on how to use these methods for requirements elicitation. The Q-method can form a solution for this problem, as it focuses on one's subjectivity and how different participants can be grouped based on their views and opinions.

Research Question. The aim of this research was thus to find out if the Q-method can successfully be applied to elicit user requirements. This translates to the following research question: To what extent can the Q-methodology be utilized as a HCD approach to identify customer segments and needs to develop digital interfaces that enhance the customer experience? Sub research questions were formulated to understand the subgroups that exist within the sample and how different stakeholders evaluated the Q-method.

Method. This research had an exploratory and qualitative research design consisting of a case study that utilized the Q-method and a focus group to answer the research questions. The Q-method was done with 14 participants in the target group of marketing and e-commerce managers. The focus group consisted of five employees of the company that was part of this case study.

Results. The results showed that four distinctive user segments exist; those who value (1) information availability, (2) usability, (3) visual and emotional appeal, and (4) service representatives. Both the participants and the company evaluated the method positively; as it required them to thoroughly consider their choices, they viewed the method as enjoyable and more engaging than other methods. They added that post-sorting interviews and, if possible, existing data are needed to understand the behavior and choices of users.

Conclusion. It can be concluded that the Q-method has potential as a HCD method. However, more research is needed on optimizing the use of the Q-method in HCD, the extent of its application, and its performance in comparison to current HCD methods.

Keywords: Human-Centered Design, Q-method, user experience, digital interface design

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1.   Introduction

Human-centered design (HCD) is considered a design strategy in which designers collaborate with end users through methods like interviews or focus groups. It allows users to influence one or more aspects of the design process to co-create valuable products (Abras et al., 2004); the user becomes part of the design team rather than solely an end user. This creates the HCD approach that is user-centered with an emphasis on accommodating the demands of different users (Isa & Liem, 2015; Rose, 2016; Harte et al., 2017; Leung et al., 2020). As this emphasis on including the user creates products that are better tailored to their needs and wishes, the influence of the user increases. Overall, the influence that customers have is increasingly important in many domains. One example is e-commerce. The focus has diverted from selling products to selling customer experiences; consumers increasingly expect excellent, seamless, integrated, and holistic customer experiences (Dwivedi et al., 2020). This has made consumers active contributors in their own customer experiences and requires organizations to prioritize the creation of optimal digital customer experiences. Consumers are viewed as experts of their own experiences and can offer valuable insights and ideas that support design choices made by designers (Sanders & Stappers, 2008; Van Velsen et al., 2008).

When it comes to generating great customer experiences, it's critical to understand consumer demands, how a product satisfies those demands, and how customer experiences are developed in digital, physical, and social domains (Teixeira et al., 2012; Bolton et al., 2018). Hence, it is feasible to incorporate consumers' needs and ideas into the design of digital interfaces to make the user experience as pleasant as possible. HCD can help organizations understand consumers, their requirements, circumstances, and feedback to improve the customer experience. This requires designers, through the creation of empathy, creative thinking and establishing delight, to immerse themselves in the lives and experiences of consumers (Chen et al., 2020).

Older literature already addressed the flaws of often-used HCD methods, such as interviews and questionnaires, and called for new methods and approaches. Current methods are not an optimally feasible approach to discover and understand user requirements in a human-centered design approach. This is due to several reasons. First, using such goal-directed methods for the design process, which operate based on a set of goals that have been defined at the start, miss the chance to gain knowledge from what is discovered during the process (Gasson, 2003). In other words, HCD methods look at the development of something as a singular act, rather than an act as a part of a larger sequence (Norman, 2005). This translates into products that work well on their own in a singular task, but do not operate smoothly when used within a sequence of tasks. Second, developers of computer systems believed the development of computer systems to be a technology-driven phenomenon in which users adapt to the technology rather than the technology adapting to the user (Oviatt, 2006). Hence, HCD techniques place a predefined emphasis on technology-centered issue resolution rather than augmenting or modifying technology to complement human activities and interests (Gasson, 2003; Hornbæk, 2006). This is also visible in the practical field of HCD, where most time is spent on design optimization through iterative rounds of usability testing. A third reason and another problem caused by currently used methods is that they can make products overly complex. Wanting to comply to all wishes and needs of users can lead to complex designs (Norman, 2005). As different users might have opposing needs, accustoming to all needs can lead to lead to products that negatively affect the user experience of some or all users. This also threatens the needed balance between adhering to user demands and basing decisions solely

on the knowledge of experts (Steen, 2011).

As can be concluded from the above, these problems with current requirement elicitation methods have been apparent in HCD for quite some time now. They imply that it would be beneficial to look at other methods or develop a new method which properly uncovers user requirements without losing the balance of when to adapt to user needs or expert knowledge. Some suggest that the Q-methodology, which focuses on understanding people's perspective and what they deem relevant and significant (Coogan & Herrington, 2011; Dang et al., 2021), should be incorporated into the field of design science and user-centered design (e.g., Nurhas et al., 2019 & Matzner et al., 2015). The Q-method is a sorting method in which participants sort statements based on their subjectivity with the goal of finding consistencies between participants. This creates the ability to differentiate between different segments of people with their own needs and wishes. In multiple studies, the Q-method already is deemed applicable as a main support tool for the evaluation of a system that is based on user preferences (Nurhas et al., 2019). Therefore, the focus of this research is on utilizing the Q-method as a HCD method to enhance the development of technology that supports human activity. This will be done by using the Q-method in a HCD approach. Based on this, this research aims to answer the following research question: To what extent can the Q-methodology be utilized as a HCD approach to identify customer segments and needs to develop digital interfaces that enhance the customer experience?

2. Theoretical Framework

2.1. Defining the customer experience

The shift from selling products to selling experiences was already visible in the late 1990s when Pine & Gilmore (1998) classified experiences as "the progression of economic value", coining the term "experience economy" (p. 97). They noted that consumers increasingly want positive experiences, and more organizations are aiming to design and promote these experiences. Meyer & Schwager (2007) define the customer experience as "the internal and subjective response customers have to any direct or indirect contact with a company" (p. 2) and is considered to cover all elements of a company's offering, both inside and outside their control (Verhoef et al., 2009). The customer experience is also viewed as originating from "a set of interactions between a customer and a product, company, or part of the organization, which provokes a reaction. This experience is personal and implies that customer involvement takes place at different levels; its evaluation depends on the comparison between customer expectations and the stimuli coming from the interaction and its offering in correspondence of different touch-points" (Gentile et al., 2007, p. 397). Within the customer journey, websites play an increasingly important role as consumers spend more time online, indicating a significant influence on purchase decisions. Hence, optimizing digital interfaces to enhance the customer experience is very beneficial in attracting and engaging customers.

2.2. Researching user requirements to improve the customer experience

Digitalization has influenced human movement, communication, consumption, and experience (Shrivastava, 2017). Because of this, the internet has become an important source of revenue as organizations are continuously adopting and implementing new technologies to sell products and services (Bolton et al., 2018). Therefore, organizations need to create innovative technology-mediated environments that allow co-creation between consumers and designers to create optimal digital

customer experiences (Betzing et al., 2018). As a result, consumers expect customer experiences that are seamless, stimulating, sensitive, synchronized, and smart (Shrivastava, 2017). To further illustrate the requirements of digital environments to enhance the customer experience, Parise et al. (2016) define four influential factors that influence the customer experience in technology-mediated environments. These factors influence the way a website should be designed to attract, engage, and convince the consumer.

First is the factor of immersion, describing the extent to which a consumer feels involved in the digital environment, which is an important factor in co-creation (Parise et al., 2016). As the digital environment must assist consumers' creativity and ability to be involved, organizations should possess extensive knowledge about their consumers to create possibilities for co-creation (Long, 2010). A strong customer experience activates customers to adapt the role of advocate, which is especially important within online channels (Verhoef, 2020).

The second factor is the flow of the consumer, referring to the capacity to properly navigate through many touchpoints (Parise et al., 2016). Flow is determined and enhanced by (1) their degree of expertise and control, (2) the level of difficulty and arousal, (3) concentrated attention, and (4) the use of technology to create experiences and improve engagement (Novak et al., 2021). Retailers should evaluate and find opportunities in their omnichannel offerings to adapt new consumer behaviors and preferences (Briedis et al., 2020); they should bring the feel of the physical store to the digital experience of consumers. This also includes designing digital environments that are optimized and adapted to consumers shopping online, providing them with an optimal experience (Briedis et al., 2020).

Third is the cognitive fit, referring to the ability of technology-mediated environments to deliver information with excellent usability (Parise et al., 2016). The cognitive value of the internet may be characterized as increased information availability from the customer's perspective (Hoyer et al., 2020); firms, in turn, may increase the value of data by utilizing it for providing higher information availability. Due to the COVID-19 pandemic, customers need alternative touch points that are digital, at-home, and low-touch (Diebner et al., 2020). It is argued that the (1) Internet of Things, (2) AR/VR/MR, and (3) virtual assistants, chatbots, and robots are three influential technologies that will influence and create a new type of customer experience in the next twenty years (Hoyer et al., 2020).

The emotional fit, referring to the offering of a visually pleasant experience in a digital environment, is the fourth component (Parise et al., 2016). The emphasis must be on simultaneously delivering a functional interface with the essential material and providing an aesthetically appealing digital environment to improve the user experience (Bollini, 2017; Reydet & Carana, 2017). The (1) channel attributes, (2) marketing activities, (3) prior channel experience, and (4) customer heterogeneity have been identified as the drivers that influence the customer channel choice (Melero et al., 2016).

2.3.   The use of human-centered design in digital information systems

The modern-day form of HCD originated in the 1980s and is rooted in the fields of human-computer interaction, ergonomics, computer science, and artificial intelligence (Friess, 2010; Giacomin, 2014; Zhang & Dong, 2009). The HCD process is considered to consist of four steps, briefly outlined in Figure 1 (ISO, 2010). This figure shows how essential the role of defining the correct user context and requirements is as the basis for the HCD process. It shows that the whole process is based on the user context and requirements and if any problems occur during the design process, the designers will refer to the user context and requirements to enhance the design.

Figure 1

The Human–Centered Design Process

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                    │   Preperation for the project │
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                                  ▼
                    ┌─────────────────────────────┐
                    │  1. Identifying and specifying │
                    │        the context of use      │
                    └─────────────────────────────┘
                      ▲                         │
                      │                         ▼
      ┌──────────────────────┐      ┌──────────────────────┐
      │ 4. Analysing and     │      │  2. Identifying user  │
      │    testing the design │      │     requirements      │
      └──────────────────────┘      └──────────────────────┘
                      ▲                         │
                      │                         ▼
                    ┌─────────────────────────────┐
                    │     3. Developing design       │
                    │           solutions            │
                    └─────────────────────────────┘
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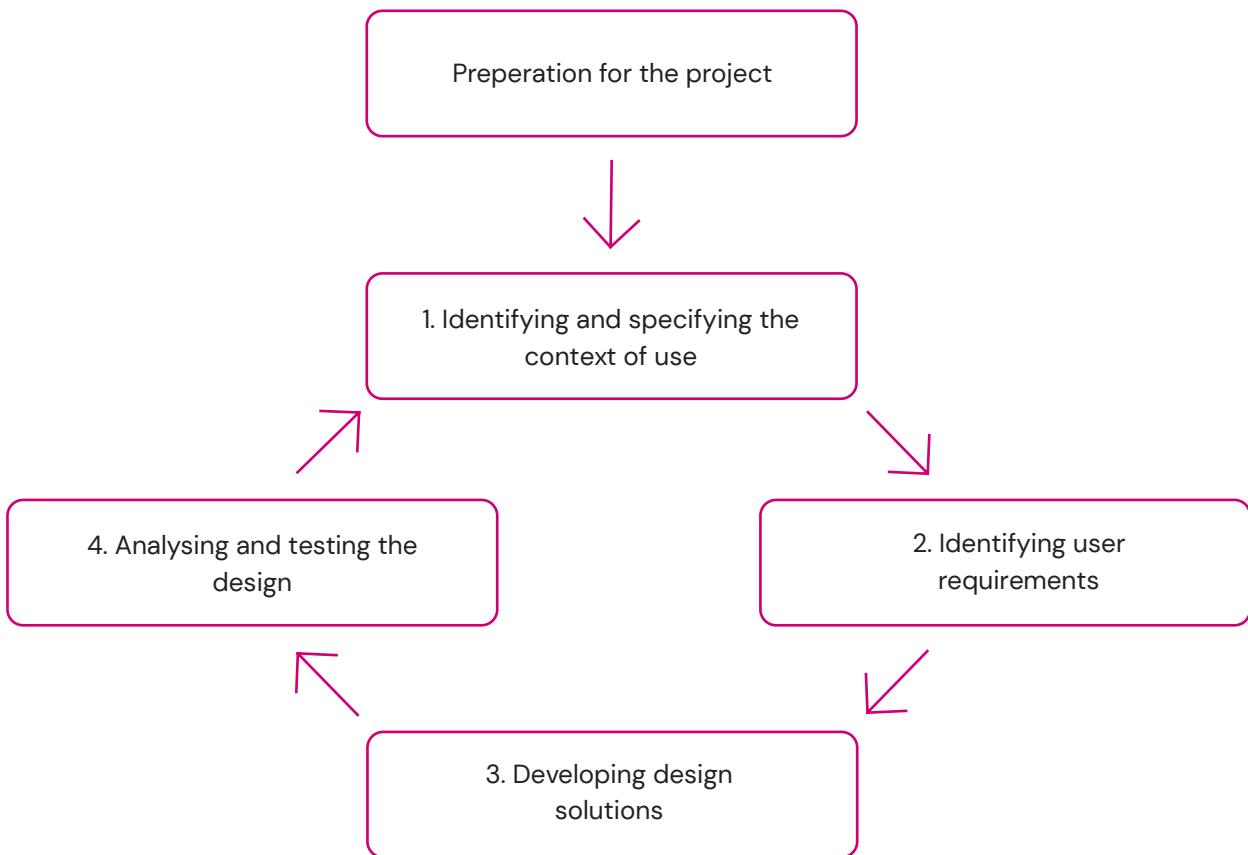
As the development of technology continued rapidly, the principles of good design could not be integrated quickly enough; this resulted in new technologies with poor usability (Norman, 2013), leading to a division in corporate design and engineering. Within this division, engineering dominated design and the needs of people were considered after the technology had been developed (Boy, 2017). As time progressed, in which designers studied and experimented with design, the right design principles could be applied to make the needed design improvements (Norman, 2013). However, the need for a new approach that would minimize the gap between technology and design persisted, for which HCD was developed.

As argued by Steen et al. (2004), HCD approaches consider the individual in different contexts as a central element in the design process. One of the earlier definitions by Norman, who can be considered a large influence in the field of HCD, defines HCD as "an approach that puts human needs, capabilities, and behavior first, then designs to accommodate those needs, capabilities, and ways of behaving" (Norman, 2013, p. 8). Within the domain of design, HCD is considered a design mindset that requires a balanced approach between different types of knowledge in order to create valuable products; aspects of fine arts, engineering, and social sciences are considered essential in optimizing the use of HCD (Buchanan, 2004). Norman (2013) added that good design is rooted in a substantial understanding of psychology and technology and that HCD guarantees that the designs are appropriate for the requirements and abilities of those utilizing them. This highlights the importance of understanding the user and their needs within the HCD process; the user and their needs are the reference point for any design decisions. This

demonstrates that the user requirements combined with the context of product use are essential in optimizing designs to assist individuals in performing tasks with the highest usability and enjoyment possible.

HCD differentiates itself from other design methods as it aims to reinvent engineering and design within a process of co-creation with the end user rather than testing and optimizing ready-made designs (Boy, 2012; Kimbell & Street, 2010). As a result, HCD offers outcomes that are inclusive and meaningful when the target audience is rather heterogenous or the sociocultural setting is considered complex (Andersson et al., 2021). It can be used as a method to include and reflect on collectively shared human values within development of technology, objects, and systems used to pursuit life (Zachry & Spyridakis, 2016); this results in products that possess intrinsic qualities that assist users in the formation of interpersonal relationships and interactions. Organizations can use this to identify new, profitable user paths (Junginger, 2005). The literature above also shows another essential value of HCD: highlighting the needs of the user prior to the design process to create a strong foundation for the design, product development, and usability phase. This forms a balance between design and engineering in which the design functions as the foundation and engineering transforms the design in a functioning product with optimal usability. However, the need to find and develop HCD methods to properly assess user requirements remains.

2.4. The use of current HCD methods to elicit user requirements in information systems

It is important to first look at how existing requirement elicitation methods currently used in HCD lack in researching requirements. Within HCD, interviews, focus groups, and questionnaires are the most frequently used methods to elicit user requirements. Originally, these preference assessment methods have been created to assess consumer preferences for product development; however, these are now also used in measuring user preferences in information system design decision-making, although they are intended to capture 'one-time' preferences (Lenz, 2018). As HCD is an iterative process, requirements are more dynamic as the development continues and end-user groups can be very heterogenous. As a result, methods like interviews and questionnaires cannot be used to capture the dynamic domain of requirements discussions in their current state; however, negotiation processes aid in understanding the dynamic nature of requirements (Lenz, 2018). As the Q-method is often combined with an interview to understand participant's choices, this can form an opportunity to understand how the requirements have changed for participants. It is possible that the participant becomes aware of new needs or wishes that they have, or new perspectives arise among participants that researchers were not aware of. These post-sorting interviews will uncover these changes or developments in requirements or perspectives after the Q-method has been done.

In different contexts, each method has its benefits and drawbacks. This section aims to understand the differences between these methods and their feasibility in the field of HCD. The first method that is often used by HCD practitioners, is the user requirements interview. This is the most frequently used technique to elicit requirements, where the interviewer asks the participants questions within a conversational setting. However, some drawbacks exist that make the user requirements interview not optimally feasible for eliciting user requirements. One of the main drawbacks is that the quality of the user requirements could be affected by biased interview questions (Bahurmuz et al., 2021); based on this and the need for clarifying information afterwards, the interviews might have to be reviewed afterwards. Additionally, interviews cost a lot of time as it remains difficult to choose an appropriate

time for the interview duration (Bahurmuz et al., 2021; Yousuf & Asger, 2015). Lastly, oftentimes, a small number of people is involved (Yousuf & Asger, 2015) which might cause problems with reliability and equal representation of all possible users.

The second method that is often used by HCD practitioners, is the survey. This research method aims to composite individual views across a representative sample (Danielson et al., 2012). This method overall leaves little room for the discovery of new ideas and fails to gather an elaborate explanation of the answers given by users (Bahurmuz et al., 2021). As the method makes discussion surrounding the topic rather difficult, it is difficult for those analyzing the data to create an image of what the use context would look like (Yousuf & Asger, 2015). This might lead to inaccurate results which do not represent the user requirements optimally.

The third method is the focus group discussion. The main advantage of this method is that participants can both share their opinion and learn from others in the same group (Danielson et al., 2012). This method was originally created to gain a better understanding of survey data (Escalada & Heong, 2014). Although this method provides rich data, it requires an experienced practitioner to perform the focus group (Danielson et al., 2012). Additionally, it is difficult to bring a whole group of people together at the same place and time, and what people say might not be consistent with their behavior (Bahurmuz et al., 2021).

2.5.   The potential of the Q-method as a collaborative design method within HCD

The Q-method has been developed by William Stephenson as a methodology for subjective science without rejecting modern science (Stephenson, 1993). Stephenson wanted to create a method that allowed the reveal of subjectivity in any situation (Brown, 1996). Therefore, he introduced the Q-method was as a qualitative research method to investigate people's subjectivity and discover relationships between individuals, their viewpoints and characteristics, or what they consider important regarding a specific topic (Yang, 2016; Coogan & Herrington, 2011; Watts & Stenner, 2005; Danielson et al., 2012). The Q-sort functions as the basis for the Q-method, which consists of statements ranked by participants based on what they agree with most and least (Brown, 1996); these statements are ranked in the q-grid. Based on the answers of each participant, the Q-grids are used to look for overlaps in opinions and perceptions which is comparable to performing a factor analysis. The difference between a regular factor analysis and the Q-method is that the Q-method correlates the persons based on their answers rather than the answers themselves. This method can easily be coupled with other approaches to create solutions tailored to the target audience (Dang et al., 2021).

This research proposes the Q-method as a potential HCD method to elicit user requirements. The first argument for this choice is the ability of the Q-method to combine the clear benefits of quantitative research and qualitative research (ten Klooster et al., 2008). The method has an exploratory nature that helps understand the participants' views and offers data that can be analyzed statistically. With this comes one unique feature and the second argument for choosing the Q-method, namely the ability to differentiate segments that have similar views and opinions rather than background characteristics (ten Klooster et al., 2008; Ramlo, 2021). In other words, the method uses a by-person factor analysis, where it correlates persons based on the similarity in their answers instead of test items (Moree, 2017). This unique feature allows for a more thorough understanding of not solely the user needs, but what different subgroups exist and what different needs they have. An added benefit is that the Q-method requires a rather small sample size (ten Klooster et al., 2008). A third argument for choosing the Q-method is that

it forms a change to the usual research methods, as participants have shown to enjoy the Q-method and with little issue (ten Klooster et al., 2008). Overall, participants believe that they can express themselves well through their answers and that they spend their time efficiently (Danielson et al., 2009).

Sjöström & Goldkuhl (2010) emphasize the importance of collaborating with stakeholders in designing information systems. The Q-method can also be of valuable use here. First, collaborating with stakeholders creates an understanding of the context and problem. This includes understanding internal and external stakeholders (Brown, 2004). The Q-method is feasible in that it assists in understanding subjectivity and meaning that individuals give to things (Yang, 2016), providing a summary of the structure, substance, strength of conflict, and agreement among stakeholders (O'Leary et al., 2013). Second, the requirements must be in line with the needs of the organization (Sjöström & Goldkuhl, 2010). Using the Q-method in a HCI context compresses a vast quantity of data into a few factors (O'Leary et al., 2013) and can provide a better insight into what the favorable management directions are (Brown, 2004). Third, including individuals in the initial development stages improves acceptance and implementation (Sjöström & Goldkuhl, 2010). Matzner et al. (2015) showed the Q-method to be successful in uncovering user preferences in information systems and individuals were confident of the influence their participation has. It assists in analyzing areas of disagreement, agreement, and conflict (Brown, 2004). Additionally, the Q-sort can offer more valuable outcomes when time and participants' satisfaction are critical (Matzner et al., 2015). Fourth, it is necessary to manage relationships beyond organizational boundaries as this has an impact on the ability to commit to desired changes (Sjöström & Goldkuhl, 2010). The Q-method differentiates between different user groups, providing managers with knowledge of these segments and helps the development of strategies tailored to their needs (Klaus et al., 2010). As the Q-method groups those with similar opinions together, it can help understand the needs of groups of individuals (Brown, 2004). Fifth, it is important to manage the relationship with parties that can influence the feasibility of the project (Sjöström & Goldkuhl, 2010). To design adequate systems that assist users in performing tasks as intended, it is necessary to select participants that will use the system. The Q-method simplifies this task as it generally involves a small sample selected based on their viewpoints or characteristics (Yang, 2016). The sixth aspect refers to the development of open innovation business models offering growing possibilities for organizations to innovate through the generation of ideas with external actors (Sjöström & Goldkuhl, 2010). The Q-method is an appropriate way to systematically examine patterns of thought as it combines qualitative exploration of individual opinions with quantitative statistical analysis (Yang, 2016). It also highlights the gaps that exist in the shared understanding of a specific topic (Brown, 2004).

Though machine and expert techniques can uncover significant features of websites, they overlook the customer's perspective, which is the final judge of a site's performance (Sai Kumar & Haripriya, 2016). Information system researchers frequently attempt to investigate group attitudes and beliefs, considering both technological and sociological factors (Thomas & Watson, 2002). The Q-method is possibly feasible for investigating the sociological factors, as it computes correlations between individuals across statements rather than a standard correlation between features across a group of individuals (Danielson, 2009); it offers participants the opportunity to define their subjectivity rather than considering their mind as a measurement object. This is done with the objective to differentiate between consumer groups and their demands (Barry & Proops, 1999) and can be coupled with other approaches to create solutions tailored to the target audience (Dang et al., 2021). The Q-sort is a beneficial technique for this purpose as it is web-enabled, capable of evaluating response to statements

and web pages, photographs, or scents and is effective for in-depth exploration of subjectivity (Thomas & Watson, 2002). The results can assist in (1) understanding group-specific subjectivity, (2) confirm or reject subjective reality predictions, and (3) promote reformulation of the interpretive knowledge when scientific disconfirmation exists (Thomas & Watson, 2002). However, no research has been conducted into the feasibility of the Q-method as a HCD approach to develop websites, leading to the following main research question: To what extent can the Q-methodology be utilized as a HCD approach to identify customer segments and needs to develop digital interfaces that enhance the customer experience? Additionally, the following sub-research questions have been formulated:

1. Which requirements for the design of a digital web interface can be derived from performing the Q-method as a HCD approach?
2. Which different sub-target groups within the complete target group can be derived from utilizing the Q-method as a HCD approach?
3. How do participants value the Q-methodology as a way of participating in the HCD process and contributing to the development of an interface?
4. How does the company whose website is developed through the Q-method value the outcomes?

3.   Methods

3.1.   Case study: Chatkracht

This study is based on a case study, as it gathered data from collaborating with a company who aims to innovate their digital interface to enhance the customer experience. The company who was the subject of this research was called Chatkracht, which is a small start-up located in the Netherlands. The company specializes itself in outsourcing live chat and other customer service channels from their clients in the B2B and B2C markets. These solutions can either be an automated system, i.e., a chatbot or a flowbot, or a personal approach in which their specialists communicate with the customers of their clients. They aim to enhance and optimize the customer experience of the website visitors of their clients as much as possible. They want to achieve this by customizing their services based on the needs and wishes of their clients and offering a service that is optimally available for website visitors. With this, they aim to continuously improve their services and cater to the demands of (potential) clients and website visitors of these clients. To attract more potential customers, they aim to customize their website based on the wishes and needs of (potential) clients to enhance the customer experience. In other words, the website had to function as a (1) first touch point in the customer journey and (2) a channel that informs, interests, and convinces potential clients when they are looking into the possibilities of outsourcing their customer service.

3.2.   Research Design

This exploratory study aimed to deploy the Q-method as a HCD approach in the field of web information systems. This research deployed two research methods to answer the main and sub research questions. Both will be further elaborated on below. First, the Q-method and additional interviews were performed to answer the main research question and sub research questions 1, 2, and 3. In addition to these results and to test their feasibility in practice, a focus group with employees of Chatkracht was performed as the second research method to answer sub research question 4.

3.2.1.   Q-methodology

The first research method consisted of a sample of participants participating in the Q-method to determine its potential as a HCD approach. The exact target group will be elaborated on below. To further assess the value of the Q-method in the discipline of HCD, the perceptions, opinions, and expertise of these participants as relevant stakeholders were an important addition to the results. Therefore, each participant has been asked to participate in a small, semi-structured interview in order to understand how they perceived and valued the Q-method and their participation as an influence on the design process of a business website.

3.2.1.1. Concourse and Q-set

The Q-method's base consists of a set of statements which is frequently derived from literature or interviews, providing a solid foundation for the analysis and design process (Nurhas et al., 2019). Within the Q-method, this collection of literature is referred to as the concourse. From this concourse, a set of statements is formed. These statements together, also referred to as the Q-set, are reflective of the issue and represent the topic from several standpoints (Coogan & Herrington, 2011). The Q-set in this research was based on WebQual, as designed by Loiacono et al. (2002). WebQual is aimed at assisting website designers in effectively designing websites in order to influence users' impressions of interactions (Zeithaml et al., 2002). In addition, this measurement has successfully been validated multiple times (Blut et al., 2016). WebQual differentiates between twelve different factors that together determine the quality of the website: (1) ease of understanding, (2) intuitive operations, (3) informational fit-to-task, (4) tailored communications, (5) trust, (6) response time, (7) visual appeal, (8) innovativeness, (9) emotional appeal, (10) online completeness (11) relative advantage, and (12) consistent image (Loiacono et al., 2002). To guarantee that all elements were covered, all statements are classified into several groups (Coogan & Herrington, 2011).

One quality of the Q-method is that different groups can be derived based on how well the Q-sorts correlate with each other. One of the goals of this research was to research whether such subgroups existed among the target audience of Chatkracht. Originally, Loiacono et al. (2002) have divided the statements of WebQual into four categories: (1) Usefulness, (2) Ease of Use, (3) Entertainment, and (4) Complimentary Relationship. In addition, Corpuz (2016) researched the optimization of live chat for online businesses. He found that the process of online businesses implementing live chat consists of four steps: acquire, organize, optimize, and distribute. The process begins with the acquiring knowledge ("Acquire") to evaluate online businesses' technological capabilities and identify their needs for live chat implementation and relevant, related information (Corpuz, 2016). Then comes the organization of knowledge ("Organize"), which includes structuring, encoding, and formatting their necessary information (Corpuz, 2016). Then comes knowledge optimization ("Optimize"), resulting in various tiered degrees of solutions to the live chat challenges (Corpuz, 2016). And finally, knowledge distribution ("Distribute"), which involves delivering relevant expertise to an online business that requires it (Corpuz, 2016). In this study, these steps were linked to the statements that are based on WebQual, as visualized in Appendix 1.

Originally, the statements of WebQual were defined to evaluate a website rather than discovering the requirements of a website. However, as this scale has been validated to cover all aspects that influence or determine the quality level of a website, this scale was adapted to this research. The existing

statements have been rephrased to form requirements that participants could order within a Q-grid, as shown in Figure 2. These statements are written in English, but as the study took place in Dutch, the statements were translated to Dutch (Appendix 2). Participants were instructed to sort the statements from what they viewed as most and least important in a business website when making a business purchase.

Figure 2

An example of the Q-grid used in this research

Disagree					Neutral					Agree
−5	−4	−3	−2	−1	0	1	2	3	4	5
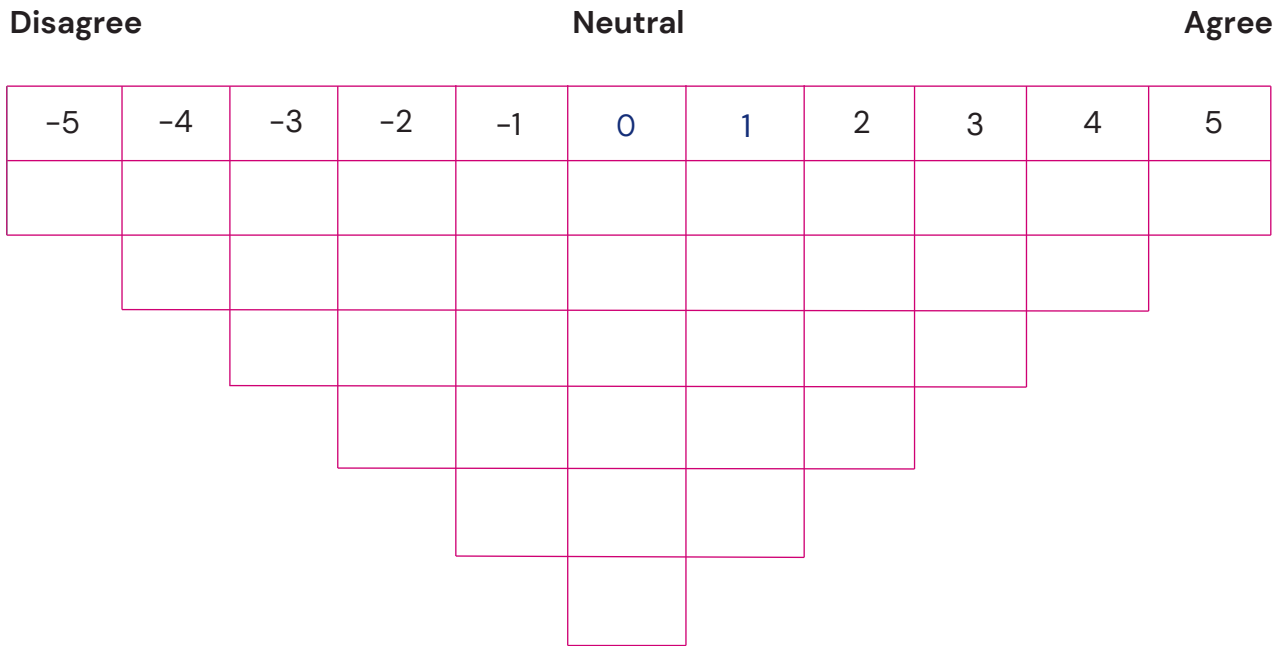
3.2.2. Focus group

The second research method focused on Chatkracht as a relevant stakeholder by clarifying how they perceived using the Q-method as a HCD approach to enhance their website. This part of the research was completed through a focus group, which is a research technique that gathers information through group interaction on a subject chosen by the researcher (Morgan, 1996). Focus groups generally have two aims: (1) create interaction between participants and (2) maximizing the amount of collected data that is of high enough quality in a small timeframe (Acocella, 2011). They must take place between individuals who are on an equal footing and have comparable interests (Acocella, 2011); this will decrease the likelihood of conflict and helps participants open up. Within this specific focus group, the results of the Q-method have been discussed between employees of Chatkracht. The aim was to create an interaction between employees of Chatkracht to discover their opinions regarding the feasibility and possibilities of the Q-method for their website. The data was utilized to discover potential topics of investigation or to clarify subject matter that is outside the scope of conventional research tools (Powell & Single, 1996).

3.3. Respondents

3.3.1. Stakeholders

Within this research, there are two important stakeholders, the first being the target audience of Chatkracht, who were asked to participate in the Q-method. The greatest value of this research for this stakeholder overall was a method that helped better identify their needs and requirements for a business website. This would simultaneously lead to websites that fit the needs and wishes of the target audience better. The second stakeholder was Chatkracht, who had the objective of convincing more potential consumers to contact Chatkracht to gather additional information and become a customer. Most valuable to them would be the results which form recommendations for the improvement of their website.

3.3.2. The research sample for the Q-method and focus group

Based on the number of statements derived from the concourse, the number of participants was determined. Within q-methodology, one participant is required for every three statements, according to the general rule of thumb of the Q-method (Webler et al., 2009). The final Q-set consisted of 43 statements, meaning that 14 participants were needed for this research (Table 1). The sample consisted of the target group of Chatkracht, which are marketing and e-commerce managers employed at companies who were either in the growth or maturity stage of the product life cycle. Their main aim was to engage with consumers in an earlier stage of the customer journey, offer their customers the opportunity to communicate with a representative outside of business hours, or to enhance the existing customer experience by providing extra customer service in the digital environment. Additional factors were the added benefits of live chat, in terms of more efficient time management and possible sales as a result of outsourcing live chat.

Table 1 *The research sample for the Q-method*

Participant number	Gender	Age	Position
1	Male	49	Interim manager
2	Male	30	Sales manager
3	Male	32	Online marketeer
4	Male	32	Business manager
5	Male	30	Marketing manager
6	Male	31	Director, owner
7	Male	51	Marketing manager
8	Male	35	Online marketing strategic
9	Male	27	Team lead marketing
10	Female	27	PR, marketing, and
11			communications manager
	Male	27	Director, owner
12	Female	24	Marketing manager
13	Male	27	Customer service and online marketeer
14	Male	32	Director, owner

The sample was selected through purposive sampling to include those who fit the target audience. A persona of a potential participant, their characteristics, goals, and needs are visualized in Appendix 3. The final sample for this research consisted of two women and twelve men (N=14). The participants had a mean age of 32, with 24 being the youngest and 51 being the oldest. All participants worked as a director, marketing manager or e-commerce manager. Years of experience often differed somewhat, but all had at least a few years of experience. The sample for the focus group consisted of employees of Chatkracht: the director, the unit manager, one senior employee and two junior employees (N=5); the oldest employee being 31 and the youngest being 19.

3.4.   Procedure

Prior to data collection, this research has obtained an approval by the Ethics Committee of the faculty Behavioural, Management and Social Sciences at the University of Twente. Additionally, an informed consent form was formulated to inform participants about the activities, goals, and their role in the overall research (Appendix 4 and 5). Additionally, it was explained how the data would be collected and stored and all participants were given the option to consent to either all or only specific elements of the data collection process. All nineteen participants partaking in the Q-method or the focus group agreed to partake and have the collected data used for this research. First, the procedure of the Q-method will be explained, followed by the procedure for the focus group discussion.

In preparation for the Q-method, the Q-set was developed. As mentioned prior, the Q-set for this research is based on WebQual by Loiacono et al. (2002). Other remarkable elements of the concourse were also included in the development of the statements, which can be found in English in Appendix 1 or in Dutch in Appendix 2. These statements have been reformulated from designations to statements, so that participants can identify with them and order them based on the extent that these fit their perspective on a business website. The statements have gone through two rounds of testing with employees of Chatkracht to ensure that all statements and the sorting process were clear. Both within the pre-testing and the data collection round the participants were briefed about the research, what their role was and what tasks were connected to this. These tasks consisted of (1) dividing the statements into three categories of least important, neutral, and most important, (2) sorting them in the Q-grid, and (3) taking part in a short post-sorting interview.

The data collection took place in either of two settings for the first participant group; one setting was an in-person meeting with the participant and another setting consisted of an online meeting through Microsoft Teams due to COVID-19 restrictions. During physical meetings, the participants were given a sheet with the Q-grid and the statements printed on cards. In the online sessions, the digital program Miro was used to design the same Q-grid and statements which participants could move themselves, allowing them as much freedom as possible in an online environment. In this case, participants were asked to share their screen with the researcher during the sorting process. In both scenarios, the research started with introducing the participant to the research scope, the goal of the research and the different steps that they would have to perform. This was followed by signing the informed consent. The complete sessions were recorded through a mobile recording device or Microsoft Teams.

During the session, the participant first was asked to divide all 41 statements into three categories of what they considered "Most important", "Neutral", and "Least important" based on what they found most important in a business website when making a business purchase. The number of statements per category was noted in order to gain an understanding of the distribution that participants made between

all statements. Next, they were asked to order all statements in the Q-grid, ranging from least important to most important in a range between −5 and +5. When they completed this task, their answers were registered for further analysis. Afterwards, participants were interviewed regarding their opinion on the method, performing the method and its implementation in HCD. These questions can be found in Dutch and English in Appendix 5. These questions aimed to understand who the participants were, how they viewed taking part in the Q-method, and how they viewed the potential of using this method as a HCD approach. Finally, the participant was thanked for their participation in the research. On average, each session took 45 minutes to an hour. Afterwards, the data of all participants was anonymized and transcribed for further coding and analysis.

For the second part of the data collection process, a focus group was held with five employees of Chatkracht to discuss the results of the Q-method. This was done in order to understand the feasibility of the results for the optimization of the website of Chatkracht. The participants were sampled based on their role within Chatkracht; the sample consisted of junior and senior employees, ranging from six months experience to three years of experience. The focus group was held by creating a PowerPoint which showed a simplified version the results and specific quotes made in the interviews with participants of the Q-method. First, the group was introduced to the research and their role within the overall research. This consisted of introducing the researcher, their role within the research, and the data collection process. This was followed by explaining the rights the participants had in participating and they were given an informed consent form to fill in (Appendix 6). Afterwards, the participants were presented with all results and quotes. They were asked to discuss how they viewed these results and how they recognized them within their current customer base. For the next part, they were asked how they viewed the use of the Q-method to discover different segments within their customer base. Afterwards, they were thanked for their participation in the research. The whole session was recorded with a mobile recording device for later transcription and further data analysis.

4.   Results

The data was analyzed using SPSS under the license of the University of Twente and PQMethod 2.35, which is a free-to-use software developed by Peter Schmolck. This software is specifically developed to analyze Q-method data by correlating all Q-sorts through a factor analysis (Coogan & Herrington, 2011). To uncover general themes or opinions, the data from the interviews was coded. In this chapter, the study sample, data analysis, and the results will be discussed. Four factors were extracted from the data, which will be discussed in more detail to understand each factor and their relationship to the participants' opinions, needs, and wishes. Afterwards, the results of the post-sorting interviews will be discussed along with the results of the focus group.

4.1. Sample Characteristics

When looking at the way the participants categorized the statements prior to sorting, it can be concluded that participants most often categorized a statement as being the most important (M=18.14, SD=5.586). After that, many statements were also categorized as neutral (M=15.93, SD=4.122). Participants overall categorized the lowest number of statements as least important (M=6.93, SD=3.832). The complete overview can be found in Table 2.

Table 2 *The categorization of the statements by participants*

	Statements sorted as most important	Statements sorted as neutral	Statements sorted as least important
N	41	41	41
Mean	18.14	15.93	6.93
Std. Deviation	5.59	4.12	3.83
Minimum	6	12	1
Maximum	27	28	13

4.2. The factors derived from the Q-sorts

First, the Q-sorts were digitalized and given a unique code in order to link them to the anonymized sample characteristics. Table 3 shows the characteristics of the factors. The data shows that five participants loaded onto factor 1, four participants loaded onto factor 2, one participant loaded onto factor 3, and three participants loaded onto factor 4. Furthermore, the composite reliability of all factors is well over the required .70, indicating a good internal consistency of the construct and proves the factors to have a high reliability.

Table 3 *The factor characteristics of each factor*

	Factor 1	Factor 2	Factor 3	Factor 4
No. of Participants	5	4	1	3
Average Rel. Coef.	.80	.80	.80	.80
Composite Reliability	.95	.94	.80	.92
S.E. of Factor Z-Scores	.22	.24	.45	.28

The required criteria for a factor to be considered a factor were that they (1) have an eigenvalue > 1, (2) each factor should explain at least 5% of the variance, and (3) the total explained variance should be over 60%. Based on these criteria and the factor characteristics, the data provided by the q-sorts show that there are four distinctive factors that adhere to these criteria (Table 4), which, when combined, explain 67% of the total variance within the sample. Appendix 7 shows how each statement on average is ranked in the Q-sort per factor.

Table 4 *The factors derived through the principal components factor analysis (PCA).*

	Eigenvalues	As percentages	Cumulative percentages
Factor 1	5.06	36.14	36.14
Factor 2	1.82	13.01	49.15
Factor 3	1.46	10.41	59.55
Factor 4	1.14	8.15	67.70

Appendix 6 shows the Q-sort value per statement for each individual factor. An automatized Q-varimax analysis was performed to automatically rotate the factors in order to further understand the factors and their relationship with the individual participants. Afterwards, the factors were flagged using automatic flagging, of which the results can be found in Table 5. This shows that only the participants that had a loading of at least .5 loaded onto one of the factors. Hence, 13 of 14 participants loaded onto one of the four factors; only participant 1 did not load onto any of the factors due to a non-significant loading (< .5) on all factors. Each factor and the according statements will be discussed more elaborately in the following sections.

Table 5 *The factor loadings per participant through the q-varimax analysis.*

	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	.53			
	.89			
	.65			
	.59			
	.67			
Factor 2		.87		
		.66		
		.80		
		.54		
Factor 3			.84	
Factor 4				.63
				.82
				.68

4.2.1. Factor 1: Information availability

Table 6
The participant characteristics for factor 1

Participant number	Gender	Age	Position
2	Male	30	Sales manager
3	Male	32	Online marketeer
7	Male	51	Marketing manager
9	Male	27	Team lead marketing
12	Female	24	Marketing manager

Factor 1 had an eigenvalue of 5.06 and explains 36.14% of the study variance. Five participants loaded onto this factor, four males and one female, who had a mean age of 32.8 years (Table 6). On average, they categorized 16.2 statements as most important, 18.4 statements as neutral, and 6.4 statements as least important. All participants have a position in marketing (four participants) and sales (one participant), of which almost all participants have the role of manager (four participants). This factor shows information availability to be the significantly important overall element for participants. When their motives for making specific choices came to discussion, they mentioned that the availability and completeness of information on a website was specifically important to them: "I also think (loading) speed is important, but I think that is less important than a website being well-organized to easily make a transaction". As can be seen in Table 6, all participants in this factor had a position in marketing or sales. Oftentimes, marketing and sales managers focus on gathering information before making decisions due to factors such as a marketing budget and specific marketing goals. This might form a possible explanation for this outcome. However, due to the small sample size and the fact that this study was not replicated to test this notion, this cannot be proven with certainty.

Table 7 *Distinguishing Statements for Factor 1*

N	Category and Statements	Z-score	Q-SV
31	**Trust:** The website must not misuse my personal information for other purposes.	1.61**	5
9	**Online Completeness:** A website must allow me to make a purchase directly through the website	1.45**	4
7	**Online Completeness:** A website must offer the possibility to go through and successfully complete the purchasing process on the website.	1.32**	3
33	**Response Time:** The website must load quickly.	–.23**	–1
8	**Online Completeness:** A website must provide me with all the information which helps me understand what tasks I need to perform on the website.	–.79**	–2
13	**Decision Support Function:** The website must offer functions or tools which help me as a user with questions or problems in an empathic way.	–1.68*	–4

* $p < .05$

** $p < .01$

Q-SV: Q-sort value, the value of the statement within the Q-sort

For this factor, six statements showed to be significant. As can be seen in Table 7, participants significantly valued statements 31 (the website allows me to receive the information I need specifically for my question), 9 (the website must make it possible to make a purchase directly through the website), and 7 (a website must offer the opportunity to go through the purchasing process on the website and to complete it successfully) positively. On average, statement 31 is placed at +5 in the Q-grid, indicating that participants valued this statement as the most important factor on a website. This statement is

part of the category trust while the other two statements fall under the category of online completeness. These statements are valued less positively than the first statement but are still considered important in defining this factor.

In contrast to this, the data shows that the participants significantly valued 33 (the website must load quickly), 8 (a website must provide me with all the information that helps me understand what tasks I need to perform on the website), and 13 (the website must offer functions or tools that help me as a user with questions or problems in an empathetic way) less. From these statements, statement 13 is valued as least important with a Q-sort value of –4, followed by statement 8 with a Q-sort value of –2, and statement 33 with a Q-sort value of –1. Statement 33 falls under the category of Response Time, while statement 8 falls under the category of Online Completeness, and statement 13 falls under the category of Decision Support Function. Although some statements that were ranked with a lower Q-sort value still referred to the availability of information on a website, there might be a logical explanation to this. Participants mentioned that the element of seeing the ability to easily and quickly make a purchase as completing the task on a website to be very important: "It should just be easy to find and order something there", rather than a visually pleasing design: "(…) as I have seen it, it's very much the design and feel versus functionality (…)". Although statement 8 and 13 do refer to providing users with information and help in making decisions, they do not specifically focus on the ability to quickly gather information and perform a task on a website, which was named as a specific motive for these participants to use or not use a website. This might explain why these statements are not grouped together. One participant specifically mentioned: "the statement is about the need for sufficient information (on a business website), which I think is important. But there are also cards that refer to information needs that are indirectly about information completeness. For example, the statement about the need for information about completing tasks (on a business website)". These underlying factors of information availability in other statements might be the reason that these are placed to be more important by participants. Additionally, it should be mentioned that statement 33 was important to participants in varying degrees. For example, one participant mentioned: "something loading quickly is very important to me because I don't have that much patience, I guess", whereas another participant valued speed of the website overall, but valued other elements more: "I also think loading speed is important, but I think that's less important than a website being well-organized to easily make a transaction". This statement specifically was mentioned by multiple participants, also outside of this factor, to be more of a standard requirement that many value but do not realize: "(…) because I think that, if it doesn't load quickly, you just click away. Then I'm like, it takes too long, I don't have time for it, so I'll go to another one". Hence, this might explain the placement in comparison to the value that participants give to this statement.

4.2.2. Factor 2: Usability

Table 8 *The participant characteristics for factor 2*

Participant number	Gender	Age	Position
5	Male	30	Marketing manager
6	Male	31	Director, owner
10	Female	27	PR, marketing, and communications manager
14	Male	32	Director, owner

Factor 2 had an eigenvalue of 1.82 and explains 13% of the study variance. Four participants loaded onto this factor, three males and one female, who had a mean age of 30 years (Table 8). On average, they listed 19.25 statements as most important, 14.25 statements as neutral, and 7.5 statements as least important. All participants have either a position as a marketing manager (two participants) or as a director/owner (two participants). All participants in this factor had a position as manager, director, or owner. This indicates that participants with these characteristics prefer usability over other factors in a website. This could indicate that they want to be able to easily navigate through a website to get the information that they need or finish the tasks that they have; they do not care too much for innovative websites or modern designs but want to be able to operate the website easily and quickly.

This factor shows usability to be the significantly important overall element for participants. The data shows that the categories of Informational Fit-To-Task and Ease of Understanding are valued as the most important categories within this factor. This was confirmed by participants: "…perhaps the target group thinks "the website must be innovative". I don't need that; the website should just be simple and fast" and "I think, in any case, that a website should load quickly, that is very important".

Table 9 *Distinguishing Statements for Factor 2*

N	Category and Statements	Z-score	Q-SV
1	**Informational fit-to-task:** The information on a website must give me sufficiently good information about the tasks I have to perform.	1.88**	5
6	**Ease of Understanding:** The structure of the website must be easy to understand.	1.81**	5
4	**Ease of Understanding:** The web pages and the content on the web pages must be easy to understand.	1.56**	4
18	**Intuitive Operations:** I must be able to use the website in an intuitive way.	1.38**	3
33	**Response Time:** The website must load quickly.	0.67*	2

N	Category and Statements	Z-score	Q-SV
29	**Tailored Communications:** The website should offer the possibility to receive tailor-made information.	0.18**	O
36	**Relative Advantage:** Using the website should be easier than calling the organization.	-.69*	-1
13	**Decision Support Function:** The website must offer functions or tools which help me as a user with questions or problems in an empathic way.	0.93*	-2
17	**Trust:** The website must not misuse my personal information for other purposes.	-1.31**	-3
35	**Relative advantage:** The website must function as an alternative to contacting customer service or sales representatives.	-1.61**	-5

* $p < .05$

** $p < .01$

Q-SV: Q-sort value, the value of the statement within the Q-sort

For this factor, ten statements showed to be significant. As can be found in Table 9, participants significantly value statements 1 (the information on a website must give me sufficiently good information about the tasks I have to perform) and 6 (the structure of the website must be easy to understand) both with a Q-sort value of +5 as most important element in a website. After that, statement 4 (The web pages and the content on the web pages must be easy to understand) and 18 (I must be able to use the website in an intuitive way) with Q-sort value +4 and +3 are valued as most important, followed by statement 29 (the website should offer the possibility to receive tailor-made information) with a Q-value of O. This indicates that participants do not specifically value this statement as being either very important or unimportant. Participants mentioned that, when they noticed the existence of specific themes and what themes they found most important, they made their choices more consciously: "Well, I think I have now gained the insight that I find functionality more important than the design of a website. I did notice during the process of sorting the cards that I started to make my choices accordingly". This possibly indicates that they are more consciously aware of their preferences and priorities while laying out the statements after noticing specific themes within the statements that fit their wishes and needs. The data shows that the participants significantly valued statements 36 (using the website should be easier than calling the organization), 13 (the website must offer functions or tools that help me as a user with questions or problems in an empathetic way), 17 (the website must not misuse my personal information for other purposes), and 35 (the website must function as an alternative to contacting customer service or sales representatives) less. From these statements, statement 35 is valued as least important with a Q-sort value of -5: "I focus on putting structure in place. And I'm a little less set on hospitality and design". This shows that the participants do not view the website as a substitute to customer service, but more so as a tool that assists them in accomplishing their goals.

4.2.3. Factor 3: Visual and Emotional Appeal

Table 10 *The participant characteristics for factor 3*

Participant number	Gender	Age	Position
4	Male	32	Business manager

Factor 3 had an eigenvalue of 1.4567 and explains 10,41% of the study variance. One participant loaded onto this factor, one male, who had an age of 32 years (Table 10). He listed 27 statements as most important, 13 statements as neutral, and 1 statement as least important. The participant has the position of business manager. This factor shows Visual and Emotional Appeal to be the significantly important overall element for the participant. It is difficult to conclude anything about the relationship between the characteristics of the participants and his answers, as the factor only consists of one person.

Table 11 *Distinguishing Statements for Factor 3*

N	Category and Statements	Z-score	Q-SV
24	**Visual Appeal:** The design of the website must be pleasant to use.	1.88**	5
25	**Visual Appeal:** The website must present the products or services in a visually attractive way.	1.81**	5
21	**Innovativeness:** The website must be innovative		
38	**Emotional Appeal:** The website should make me feel welcome.	1.56**	4
39	**Emotional Appeal:** The website must make me feel happy.	1.38**	3
3	**Information fit-to-task:** The information on a website must be useful for the purpose I have.	0.67*	2
20	**Intuitive Operations:** The website must be easy to use.	0.18**	0
4	**Ease of Understanding:** The web pages and the content on the web pages must be easy to understand.	–.69*	–1
15	**Trust:** The organization's website must guarantee the security and privacy of my personal data.	0.93*	–2
34	**Relative advantage:** It should be possible to perform tasks on the website myself more quickly than asking for help from a representative of the organization.	–1.31**	–3
11	**Consistent Image:** The image of the website is consistent with that of the organization.	–1.61**	–5

* $p < .05$

** $p < .01$

Q-SV: Q-sort value, the value of the statement within the Q-sort

For this factor, 11 statements showed to be significant. As can be seen in Table 11, the participant valued statement 24 (the design of the website must be pleasant to use) the most, with a Q-sort value of +5. This was followed by statement 25 (the website must present the products or services in a visually attractive way) from the same category of Visual Appeal. Less important, but still significantly important according to the participant, were statements 21 (the website must be innovative), 38 (the website should make me feel welcome), and 39 (the website must make me feel happy). Overall, this indicates that the third factor values visual and emotional appeal in terms of website design, product presentation, and the overall look and feel. These elements should leave a lasting, positive impression on the target group.

On the other hand, the data also shows that the participant valued statements 11 (the image of the website is consistent with that of the organization), 34 (it should be possible to perform tasks on the website myself more quickly than asking for help from a representative of the organization), 15 (the organization's website must guarantee the security and privacy of my personal data), the least important elements in a website. These statements mostly refer to the elements of usability and information availability, which were very prevalent in the first two factors, but show to be considered less important in this factor. This is an indicator for the existence of substantial differences between different subgroups.

4.2.4. Factor 4: Service Representative

Table 12 *The participant characteristics for factor 4*

Participant number	Gender	Age	Position
8	Male	35	Online marketing strategic
11	Male	27	Director, owner
13	Male	27	Customer service and online marketeer

Factor 4 had an eigenvalue of 1.1415 and explains 8.15% of the study variance. Three participants loaded onto this factor, all male, who had a mean age of 29.67 years (Table 12). On average, they listed 15.33 statements as most important, 15 statements as neutral, and 10.67 statements as least important. All participants have either a position as an online marketeer (two participants) or as a director/owner (one participant). This factor shows service representatives to be significantly important element (Table 13). The participants of this last factor are more diverse; therefore it is more difficult to make clearly indicate what participant characteristics influence the choices made by participants in this factors.

Table 13 *Distinguishing Statements for Factor 4*

N	Category and Statements	Z-score	Q-SV
41	**Service Representative:** The customer service representatives or similar tools on the website must be able to handle my requests properly.	1.38**	3
40	**Service Representative:** The website needs to offer quality service options which I can use to contact me when I encounter a problem on the website.	.87*	3
20	**Intuitive Operations:** The website must be easy to use.	.10*	O
24	**Visual Appeal:** The design of the website must be pleasant to use.	–.60**	–1
25	**Visual Appeal:** The website must present the products or services in a visually attractive way.	–.95*	–3
38	**Emotional Appeal:** The website should make me feel welcome.	–1.70**	–4

* $p < .05$

** $p < .01$

Q-SV: Q-sort value, the value of the statement within the Q-sort

For this factor, six statements showed to be significant. It clearly shows that the participants who loaded onto this factor value the statements 40 (the website needs to offer quality service options which I can use to contact me when I encounter a problem on the website) and 41 (the customer service representatives or similar tools on the website must be able to handle my requests properly) in the category Service Representative as most important.

In contrast to this, the data also shows that the categories of Emotional Appeal and Visual Appeal are valued as being less important; statement 38 (the website should make me feel welcome), 25 (the website must present the products or services in a visually attractive way), and 24 (the design of the website must be pleasant to use) all have Q-sort values of –4, –3, or –1. From this, it can be concluded that visual and emotional appeal is not as important as being able to operate the website and contact a service representative if needed. This is also verbalized by participants: "(…) if you are making a business purchase, then at least I think that visuals and all that matters less to me. I just want the information I need; I want to find it." This element is often named in combination with the importance of data protection. This can possibly be linked to both the data protection through the website and the service representatives: "but data protection, for example, is very important to me when I go on a website. It must be reliable and all that". Another participant added: "I look at a website in a very functional way and in terms of design and things like that, that doesn't interest me that much. It's nice if it's there, it's a kind of plus if you have that. But it's not what's important. The important thing is that my data is safe there, that it is not shared with others without me knowing".

4.3. The consensus statements

Lastly, a set of four statements were classified as consensus statements, which do not distinguish between any of factors. This means that these statements were all non-significant at neither p < .01 nor p < .05 in all four presented factors. The statements and their according Q-sort value can be found in Table 14. Of these statements, three statements referred to the functionality of the website (statement 2, 5, and 32), whereas only one statement referred to the visual aspect of the website (statement 10).

Table 14 *Consensus Statements*

N	Category and Statements	Q-SV per factor			
		1	**2**	**3**	**4**
2*	**Informational fit-to-task:** The information on a website must inform me sufficiently so that after I have visited the website, I no longer have any questions about this information.	1	0	1	1
5*	**Ease of understanding:** The text on the website must be easy to read.	2	1	1	0
10*	**Consistent Image:** The website must have a professional image.	0	1	–1	1
32*	**Response time:** The waiting time between my action and the response from the website should be short.	0	0	1	2

* All statements are still non-significant at p < .05
Q-SV: Q-sort value, the value of the statement within the Q-sort

4.4. The participants' perception of the Q-method

4.4.1. Completing the Q-sort

Participants were asked to express their experiences performing the Q-method after completing the Q-sort. All participants experienced the method as being easy to perform and did not experience too many difficulties: "You can very easily indicate, (…), what you consider important and unimportant based on the scale here. So that is clear, and it gave me the feeling that I could place everything so easily". Many participants mentioned that they liked the overview that the Q-sort gave them and how they got an insight of what is important to them when it comes to business websites: "It also makes a list of what you consider important, so that's also kind of nice, even if you don't use it as research but to make a list of things for yourself (…)". Some minor difficulties that occurred were that participants saw many similarities in the statements and had some difficulties choosing which to place where: "I have to say, based on the cards I see and the things they contain, a lot of things are the same; they have a lot in common. (…) There are things you can group together (as being similar or the same). That does make it confusing for this method, because you don't really have a proposition with two extremes, to put it that way." Something else that was mentioned was that some participants sometimes lost the overview

of the method as a whole: "What I do find difficult is to keep an overview of how you, once you have organized what lies roughly there and what lies roughly there. In my head, I have grouped it a bit like, well, privacy is important to me, I think it's important that you can complete it all at once, a purchase, so to speak". However, as mentioned prior, this did not lead to major difficulties in performing the method, according to participants.

4.4.2. Categorizing the statements

Prior to sorting the statements, participants were asked to divide all statements into the three categories that were also represented in the Q-grid: least important, neutral, and most important. All participants sorted most cards under "most important", some expressing that they found most statements to be important values in a business website. This indicates that the topics represented in the statements matched the wishes and needs of the target group well. However, this might also mean that the statements in the Q-set were not optimal for this case study. This resulted in some problems for participants during the sorting of the statements: "I sometimes have the feeling that I put things on least important that I thought were most important (...). And there are specific formulations, which I found just a bit more important than (the statements placed as) the least important, so I hope that the essence of my goal (i.e., what the participant finds most important) is included". Another participant specifically added: "...so if you put in two cards that you had first thought of as neutral, which are now at –3, so that one is then equal to least important. From my perception, I then value them the same even though I had first placed them in a different column". Participants weren't always as sure of the results in the end as they were asked to only use the designated columns to place the statements, leading to statements being placed in a lower ranking column as participants were forced to choose the most important statements to them. Many participants mentioned this but added that what was ranked more towards least important wasn't necessarily something they did not want to see in a website: "...by putting it at –1 you still have the feeling that you don't think it is important, while it might be. But just because you must categorize it like that, it doesn't mean it is not important". They mentioned that the factors seen as most important could give a good indication of what is most important, but the other statements should not be disregarded as not important.

4.4.3. The potential of the Q-method as a HCD approach

Regarding the use of the method and its implementation in HCD, participants were asked if they thought that the Q-method would be a valuable method in designing websites: "Yes, technically speaking, completely. Also looking at the rules of web shops and websites, I think it's absolutely right (to use the Q-method)" and "I think that all the points that you have in this method are all the points that consumers consider important". Participants mostly added that they would add two things to go with the method to make it completer and more accurate: "But I can imagine, in the optimal situation, that you really have to look at the three things: the practical side, the theoretical side and the feelings side so to speak (...)".

The first thing they named is using data from programs like Hotjar to compare what participants want indicated in the Q-method with how they behave on a website. Hotjar is a statistical program that, among other things, can track the mouse movement of website visitors on a website. It can give an impression of what elements attract attention through creating heat maps. Based on an analysis of both the Q-method and Hotjar, a website design should be made: "But what I see myself is that the theory

and the practice when creating a design, that it very often differs from each other. So, people think that things should be done in a certain way, but when we put Hotjar on the website (...) they see that the website is used in a completely different way than they initially thought". Another participant questioned the value of q-method as many studies already exist regarding the optimal website but recognized that the Q-method might add some more insights that are more suited to the specific target group at hand: "I would include your own target group in any case, because the other studies may not apply to your target group. But I think if you use this method and adapt the questions to the specific target group you have, you can get a lot of useful information out of it".

Another element that many participants named that was currently missing was the depth that the method itself offered. Overall, they agreed that the Q-method is a good basis for creating a website: "Well, I can imagine that if there is a company that says 'We want to have a web shop made (...), then you could use this as a kick-off. The questions that are asked (in the q-method) and the basis of the things that the internet and a web shop need to function properly, that's this method". However, they noted that they would add in-depth interviews with participants to further understand the choices they have made and why they have made these choices, as was done in this research: "Interviews and motivations, that kind of thing… Because you often want to know, what's behind that question, why do you find that so important? Then you often really get to the heart of the matter, so there are other methods attached to that, that you should also do". Another participant added: "But I would definitely take another small group and use them for in-depth interviews". This indicates that participants view the Q-method is a sound basis in the initial stages of the design process, but to understand the motives and opinions of participants further, in-depth interviews are necessary.

4.5.   Chatkracht's perception of the Q-method

In order to not only understand the meaning of the data itself and through the eyes of the participants, this research also aimed to understand the meaning of the data to the company who will be implementing it on their website. This was done by incorporating the business involved in this case study through a focus group. The results were discussed by a group consisting of the management and employees of Chatkracht in order to understand how these apply to their current cliental and how they perceive their customers' needs and wishes in relation to their website.

First, overall, the participants recognized most of the needs that were found in the data in their current cliental and the potential customers they often meet. Overall, participants evaluated utilizing the Q-method in this context positively: "I think this is indeed a good method of building the website and then, when it's built, that you then start testing with people as the next step. But I definitely do think this is a valuable method in that." However, they had some remarks with regards to the method: "What I'm curious about first, some of the things that you mentioned, I think are very important if you're a web shop, like security of personal data, that you can order easily and quickly. But that's obviously not applicable to Chatkracht. So, I think that for Chatkracht, it (some of the statements) has little added value." This shows one of the deficiencies of basing the statements on the WebQual scale, which was also mentioned by participants who performed the Q-method. The Q-set should be more specifically tailored to the research context and the overall end goal for which the data will be utilized. The Q-statements in this research are based on general requirements for creating a qualitative website, hence the elements important in the niche of web interfaces that offer the outsourcing of live chat were

not optimally represented. Therefore, this element should be considered when replicating this study and the further research into the Q-method in general.

Second, they added that they would use the method as a basis and further test what the needs of users are by using statistical programs like Hotjar: "I think it's a good method because from one side you have an idea of how the website should be built (according to the target audience). But I also agree that it's good to look at the factual side, because there's quite a difference between what people say and do, what they say they do and what they actually do.". Another participant stated the following "(…) I personally think that people react differently when they are actually searching (for information online), then what they say (they are looking for)." This was also mentioned by some of the participants of the Q-method. It adds the back-up that is perceived as necessary and essential in making choices in the web design process. Employees emphasized that people, when asked what they find important on a website, will often unknowingly say something different than what their behavior shows: "People say they think that something is important, (…), they say, "No we're looking at [a service that Chatkracht offers], but we see that they go to the "about us" page on our website. So, they say one thing, but do another." Hence, the importance of combining or testing the data provided by the Q-method is of importance. Participants named that they would compare websites of competitors, to research what elements competitors think the target audience finds most important and compare this with what the participants of the Q-method mention to be most important. They add that they would make decision based on this: "Because with this method, you ask people directly (what they want in a website). And I personally think that people react differently when they are actually searching (for information), rather than just what they are saying."

Third, like many participants of the Q-method, they mentioned that the Q-method is nice to gain a first insight, but further elaboration on these choices is needed. This research included additional post-sorting interviews, although it was more so aimed at understanding the perceptions and views on the Q-method itself rather than the content of their choices. When participants wanted to elaborate on their choices, they were asked what their reasons were behind their choices. Participants overall agreed that post-sorting interviews for understanding the choices of participants are needed. This is illustrated by the interaction below. They mentioned that these are needed to enhance the value of the Q-method and its results for further implementation into web interface design.

R1: "You also have to ask for explanations, so not just conclude with "Okay, and this is it.", but also have them explain it themselves, I think."

R2: "Yes, because there is always a reason behind why you make a choice."

R1: "You do get more out of someone then (when asking them questions about their choices afterwards), why someone makes a choice."

5.   Discussion

This research aimed to study the added value of the Q-method as a HCD method in the requirements elicitation phase. This section discusses the results from this research and its implications, both in the present and in the future. First, the main and sub-research questions will be discussed; this

is followed by the implications, limitations, and recommendations for future research. This chapter will be finished with a conclusion of the entire research.

5.1.   Discussion of the results

The first sub-research question was: "Which requirements for the design of a digital web interface can be derived from performing the Q-method as a HCD approach?". This research has shown that relevant user requirements can be derived from utilizing the Q-method as a HCD approach, which were reported in chapter 4. The developers of the WebQual scale defined predetermined segments consisting of statements that had similar topics. These were also applied in this research to identify what specific themes of user requirements existed among participants. It has been shown that multiple statements belonging to the predefined segments were also the most important to specific factors of participants. Some requirements were visible among most participants, indicating the existence of clear themes among participants.

This confirms the assertion made by Matzner et al. (2015) that, due to its low complexity, the Q-method is a valuable method for eliciting user requirements, especially when developers need to make difficult choices. This makes the Q-method very useful for designing a digital web interface for a heterogenous target audience for two reasons. First, the Q-method helps designers map the requirements of their users easier and more clearly. As discussed earlier, the method assists in differentiating between user segments, providing managers with knowledge for the development of specific strategies that are more optimally tailored to user needs (Klaus et al., 2010). This research shows that utilizing the Q-method to measure subjectivity can also be applied in requirement elicitation. Utilizing the Q-method in a HCI context helps compressing a large quantity of data, i.e., the opinions and requirements, into a few factors by grouping them together based on the way participants sorted the statements (O'Leary et al., 2013; Brown, 2004). Additionally, it becomes clear if and how the needs of participants overlap.

Second, as a result, it solves the problem of designers having to translate or guess what users want based on individual responses given in interviews or focus groups. As the method consists of multiple statements, it helps participants make their preferences clear and assist designers in understanding and formulating the requirements more clearly. To create more depth into the data derived from the Q-sorts, so-called post-sorting interviews were held. These are oftentimes held in combination with the Q-method to further understand the participants views, which forms a key advantage over other methods. This is because the participants' thoughts about the topic are triggered during the sorting process. This was also visible during the post-sorting interviews of this research. Each participant was requested to remark on the statements they ordered, propose more topics that should be included, and point out issues that were unclear. Therefore, this research shows that these interviews are also valuable in this context, as they assist designers in further making sense of the requirements and elements that are still missing. The use of open-ended questions in this research helped comprehend the sorting arrangement done by participants in the q-sort (Shinebourne, 2009). This helped uncover additional requirements or important factors that need to be taken into consideration, which would not have been uncovered otherwise. Combined with the ability to rearrange the cards during the sorting process, this makes the Q-method more of an iterative method. Participants are required to think twice about the choices they have made and reflect on their views once again after the sorting process. This gives them the ability to adjust some of their earlier choices or add feedback or ideas they felt were missing from the Q-set. This can solve the problem that current methods have of only capturing one-time

preferences. To conclude, the Q-method is a good technique to elicit user requirements, as it looks at thinking patterns in a structured way by blending qualitative investigation of individual beliefs, i.e., the post-sorting interviews, with quantitative statistical analysis, i.e., the Q-sorts (Yang, 2016).

The second sub-research question addressed the following: "Which different sub-target groups within the complete target group can be derived from utilizing the Q-method as a HCD approach?" During the data analysis process, the user requirements were grouped into four factors based on the correlation between the similarities in answers given by participants. This resulted in four user groups: those who value (1) information availability, (2) usability, (3) visual and emotional appeal, or (4) service representatives. As argued by Norman (2013) earlier, a substantial understanding of psychology and technology is required in order to develop good design. The Q-method creates this understanding through distinguishes user segments with their own requirements. This created a clear understanding of the participants' perspectives and what they thought to be the most important, without being too cognitively demanding and time consuming for participants (Matzner et al., 2015). This also allowed for the creation of a basis for producing systems that are well-received and can be used appropriately by most end users (Robey & Markus, 1984). Although all groups have their own characteristics, some statements were proven to be significantly important to multiple groups, meaning these groups have overlapping wishes and needs. This is beneficial for the development of digital web interfaces, as it shows that there are some core requirements that are important across many members of a target group. This simplifies the process of prioritizing certain elements over others, especially when many segments exist. As addressed in literature and confirmed in this research, participants of the Q-method must be knowledgeable or engaged in the subject to form a sufficient contribution to the research (Kougias et al., 2020). This also assists in developing technologies that boost task performance and organizational efficiency for those creating these web information systems, which is one of the primary goals of creating rational information systems (Robey & Markus, 1984).

The third sub-research question was: "How do participants value the Q-methodology as a way of participating in the HCD process and contributing to the development of an interface?" Participants mentioned to perceive the Q-method as a research method that triggered them to be actively involved in the topic, made it overall very easy to participate, and translate their preferences into clear requirements. As addressed by Gasson (2003), HCD creates a bridge between the social factor of human knowledge and activities and the technological factor of systems regulated by performance indicators. Within the study of Matzner et al. (2015), users of the Q-method have high trust that the approach accurately represents their perspectives and regard the method to being the easiest method to perform. This was confirmed in this research, where participants overall enjoyed performing the Q-method and were confident in their answers. This forms a substantial basis for optimizing the user experience of a digital web interface, as the user experience is intrinsically encoded in the software requirements (Atoum et al., 2021). Hence, thoroughly researching and understanding software requirements can assist in optimizing the user experience to design a successful artifact (Atoum et al., 2021).

The fourth and final sub-research question was: "How does the company whose website is developed through the Q-method value the outcomes?" This question was answered through a focus group with employees of Chatkracht. They viewed the Q-method as a good research method that can form a substantial basis for the design and usability testing. This confirms the ability of the Q-method to integrate qualitative and quantitative data collection methodologies (Reis et al., 2020). They specifically mentioned that the method is especially useful in its role of combining qualitative data, the opinions

of participants, with quantitative data, the statistical programs such as Hotjar; however, this would only be possible if this data already exists, which is not always the case with new products or services. Participants also mentioned the importance of making sure the statements fit the context of the research well for the most optimal outcome. Some elements were mentioned to not be relevant for the website of Chatkracht as they were not applicable to the services they offered. Hence, it is important for future research to consider the applicability of statements to the research context.

The focus group also addressed that post-sorting interviews are a good addition to the Q-method. This makes it possible to check whether all statements were relevant to the research context. Subjectivity can be revealed through communication in interviews and can, if accounted for in the analytical process, systematically and strictly statistically check subjectivity (Chen, 2021). Hence, the addition of interviews to the Q-method is very functional, as subjectivity is grounded in self-reference and the Q-method conforms to this methodological principle (Lógó & Török, 2016,); therefore, they can assist in understanding and making sense of the choices that participants made in their Q-sort.

The answers to the sub research questions assist in answering the main research question: "To what extent can the Q-methodology be utilized as a HCD approach to identify customer segments and needs to develop digital interfaces that enhance the customer experience?". To conclude, the Q-method shows to be a valuable contribution to the field of design science research and HCD in specific, due to the intimate connection to the human standpoint, as well as the presence of genre diversity in design science research (Nurhas et al., 2019). For HCD in specific, the Q-method can offer some benefits that existing methods like interviews, surveys, and focus group discussions do not offer or in a lesser extent. It helps solving the problem of HCD being too focused on technology-centered problem solving by considering the needs of the most prevalent user groups within the target group to assist human activity (Gasson, 2003; Hornbæk, 2006).

First, next to the requirements that are found through the Q-method, it helps uncover any idea or mindset that the user may unconsciously have and understand what the actual user requirements are. Rather than directly questioning users about what they want, it focuses on their subjective view regarding a specific topic. It helps uncover additions, ideas or opinions of the topic that participants were not directly or consciously aware of. With this, as is often already done within the Q-method, it is also valuable to hold an additional interview with each participant afterwards to understand and reflect on their choices. Second, the Q-method allows for the formation of distinctive factors which can be viewed as sub-groups within the overall target group. This research found there to be four user segments within the target group. This gives a more clear and complete image of who the target group is and what different people within that target group would need based on their characteristics. It can form the basis for the design process or further research. Hence, it is not only useful for this research context, but also for similar activities such as branding and marketing. This way, from a business standpoint, the multichannel customer experience can be improved based on these results. Third, the results can easily be tested. Knowing what each factor within the target group values most, a fitting design can be made into a prototype for further usability testing. These can test whether the specific requirements derived from the Q-method are implemented well. This makes that the prototype can be tested on whether it meets the specific requirements derived from the Q-method.

5.2.   Theoretical implications

First, earlier academical research has called for a new method to properly understand and

measure user requirements. This research has added to this body of knowledge by forming the first step to finding, optimizing, and developing a method that measures user requirements in a more efficient and sufficient way. This was done by venturing what is outside of what is already known in HCD and implementing a research method from the field of psychology and social sciences. This would imply that the theoretical field of HCD needs to breach outside of their own field in order to improve their own design processes.

Second, although the Q-method is an existing method, it is a new approach within HCD for understanding users that goes beyond existing methods as it focuses on understanding subjective perception. Participants also oftentimes indicated that they preferred this method over traditional methods as it required them to be more engaged. They were also required to really think about what they found important, rather than just answering a list of questions. This research implies that the field of HCD should focus on the psychological elements as an important factor in their design process.

Third, the discovery of four distinctive user segments provided this research with more in-depth insights into the overall target audience, their requirements and how these requirements might differ between subgroup within the same target group. The current research methods do not sufficiently go into depth on this topic. It shows that the focus should be more on what the target group itself looks like and the extent to which members of that group relate to one another. This remains a challenge, especially in situations where the target group is rather heterogenous and broad. This research shows that not all members of the target group should be seen as one and the same person with similar needs and wishes; the focus should be on discovering methods on how to understand the differences between members of the same target group and use them to the advantage of the product or service design.

5.3.   Practical implications

In addition to the theoretical implications, this research also has practical implications for the field of HCD. First, this research has contributed to creating a strategy for the use of the Q-method as a design method in a HCD context. This strategy, which can be used in practice by HCD and UI/UX designers, consists of the Q-method in combination with semi-structured interviews. The unique and practical addition of the Q-method to the field of HCD is the ability to discover segments with their own user requirements within the target group. This helps designers understand the user and their requirements better and creates the opportunity to create specific user groups. This, in turn, makes it possible to specifically aim the product or service at these groups. These insights can also offer a valuable basis for other activities within a specific company, such as marketing or design activities, which are very beneficial in practical scenarios where time and money can be scarce.

The second practical implication is that this research has set the basis for using the Q-method to elicit user requirements. This research has taken an existing, validated scale and a concourse to base the statements on. However, it has been shown that the statements were not always completely representative of the context. Therefore, the practical field of HCD should investigate the possibilities to adapt and improve the Q-method to different product types, user scenarios and target audiences. This raises the question on who should be determining the statements and how this can be as inclusive as possible, e.g., data, literature, designers, or developers.

Third, participants oftentimes indicated that they preferred this method over traditional methods as it required them to be more engaged and really think about what they found important, rather than just answering a list of questions. This might lead to more commitment from participants to give their

input. Existing research also shows that the Q-method is not very complex and thus comprehensible for many. Therefore, this method could be more widely applied as many people are able to do it without too many difficulties.

Fourth, this research has shown that the Q-method should be combined with statistical programs that measure how potential or current users currently behave on a website to make decisions. More specifically, the design results derived from the Q-sorts should be tested through using data based on the behavior of current or potential users. It is beneficial for practitioners who utilize the Q-method to also incorporate other data into in their design process to investigate whether what participants say and do matches up. An example named in this research is combining the Q-method with data collected through Hotjar. However, this would only be possible in the context that such data already exists or can easily be measured.

5.4. Limitations and future recommendations

The first limitation of this research might be the developed Q-set in this study. Due to resources and the time frame for this research, the Q-set has been based on WebQual, a validated scale to measure website quality. Although this scale covers most, if not all, of the important factors of a high-quality website, it is still rather general and not specifically aimed towards this research context. Hence, it might have influenced the end results of this research. The recommendation for future research is to formulate the statements that optimally fit the target audience and research context to possibly enhance the value of the results.

Second is the limited sample size of this study. While the research sample of 14 individuals offers valuable first insights, future research should expand the sample size to confirm these findings or perhaps provide additional insights. One participant was excluded during data-analysis, as they did not match the requirements for the data analysis to be included further. Keeping this possibility in mind, it might be more insightful to include more participants than the minimum required participants of one per three Q-statements. Future research should consider this in order to collect substantial and valuable results from a sufficient number of participants.

Another limitation is the fact that some of the interviews had to take place online, while others could take place in person. This might indicate that the results for participants could differ based on the context in which the research was done. Although literature indicates that no substantial differences exist between utilizing video-based internet interviews and traditional in-person interviews (Foley, 2021), this cannot be guaranteed. Therefore, the assumption that differences between the outcomes of different interview types might exist cannot be disproven. Within this research, no clear differences were noticed between online and offline sessions. Future research should interview all participants in the same context, either online or offline in order to exclude this possibility from happening.

When looking at future research in general, a few elements are important to consider for future research. First, future research should focus on comparing existing methods, e.g., interviews, surveys, and focus group discussions, to the Q-method to find out whether the Q-method is indeed more valuable. This research has shown that the Q-method is a feasible method in designing digital web interfaces via a HCD approach. However, based on this research alone, little can be said about the feasibility of its results in comparison with other methods like interviews, focus group discussions, and surveys.

Second, it should be researched whether utilizing the Q-method is feasible for all types of contexts in which HCD is applied. This research tested the Q-method in the context of digital web

interface design, and although the method seemed very feasible in this context, this cannot be said about all other fields yet. Hence, more research is needed to showcase how the Q-method performs in other fields, for example in health care.

Third, it is of importance to look at the statements used within the method, specifically the formulation of the statements prior to performing the Q-method. Within this current research, the statements were based on an existing scale which gave a pretty good overview of most requirements that participants had. However, such a scale does not exist in all fields in which HCD can be applied. Therefore, the question arises what the statements should be based on, as creating a very elaborate concourse may not be possible or feasible in all research contexts. Future research should investigate how results differ when the statements are based on data and research and when they are based on expert views.

Fourth, future research should focus on understanding the use of the Q-method on products or services that do not yet exist or about which not much research exists. This research utilized the Q-method to enhance an already existing website, indicating that it works well on products or services that already exists. However, the same cannot be said for products that need to be developed from scratch. Therefore, in order to research whether the Q-method is widely applicable on both existing and new products or services, more research is needed.

6.   Conclusion

This study aimed to answer the following research question: "To what extent can the Q-methodology be utilized as a HCD approach to identify customer segments and needs to develop digital interfaces that enhance the customer experience?". This research concluded that the Q-method overall is valuable in understanding users and eliciting their requirements for the improvement of an existing web interface; however, further research is needed to confirm and expand on these results. The results have shown four distinctive factors exist with each their distinctive characteristics: (1) information availability, (2) usability, (3) visual and emotional appeal, or (4) service representatives. Based on the interviews with participants and the focus group, it has been shown that participants overall experience the Q-method as easy and fun. This research also shows that the additional interviews are necessary in order to understand the choices made by participants. Additionally, if there is relevant data available, this should be used to enhance the data from the Q-method. When positioning the contributions of this research, it functions as an exploratory basis for future research due to the limited sample size and the lack of replicability in this research. However, this research is valuable for future research on understanding how to use the Q-method in HCD and the development a research method that optimally elicit user requirements. Therefore, more research is needed to further understand the added value of the Q-method in a HCD context and what is needed to enhance the current research methods.

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Appendix 1 The Q-set and the defined statements based on the concourse

Category	Factor	Elements of WebQual		Statements
Information Quality	Acquire & Organize	Informational fit–to-task	1.	The information on a website must give me sufficiently good information about the tasks I have to perform.
			2.	The information on a website must inform me sufficiently so that after I have visited the website, I no longer have any questions about this information.
			3.	The information on a website must be useful for the purpose I have.
		Ease of Understanding	4.	The web pages and the content on the web pages must be easy to understand.
			5.	The text on the website must be easy to read.
			6.	The structure of the website must be easy to understand.
		Online Completeness	7.	A website must offer the possibility to go through and successfully complete the purchasing process on the website.
			8.	A website must provide me with all the information which helps me understand what tasks I need to perform on the website.
			9.	A website must allow me to make a purchase directly through the website.
		Consistent Image	10.	The website must have a professional image.
			11.	The image of the website is consistent with that of the organization.
			12.	The website of an organization must radiate what the company stands for.
		Decision Support Function	13.	The website must offer functions or tools which help me as a user with questions or problems in an empathic way.
			14.	The website must have a support function which I can use when I encounter a problem.
System Quality	Optimize	Trust	15.	The organization's website must guarantee the security and privacy of my personal data.
			16.	I must be able to make a purchase safely via the Website.
			17.	The website must not misuse my personal information for other purposes.
		Intuitive	18.	I must be able to use the website in an intuitive way.

		Operations	19. It must be easy to become familiar with the website and its functions.
			20. The website must be easy to use.
		Innovativeness	21. The website must be innovative.
			22. The design of the website must be innovative.
			23. Website design must be creative.
		Visual Appeal	24. The design of the website must be pleasant to use.
			25. The website must present the products or services in a visually attractive way.
			26. The design of the web site must be visually attractive.
		Navigation	27. The website must have a clear structure which helps to navigate through the website.
		Support Function	28. The website must offer a support function that helps me to quickly find the information I am looking for.
Service Quality	Distribute	Tailored Communications	29. The website should offer the possibility to receive tailor-made information.
			30. The website should offer interactive features that help me complete my task on the website.
			31. The website should offer me the possibility to receive the information I specifically need for my question.
		Response Time	32. The waiting time between my action and the response from the website should be short.
			33. The website must load quickly.
		Relative Advantage	34. It should be possible to perform tasks on the website myself more quickly than asking for help from a representative of the organization.
			35. The website must function as an alternative to contacting customer service or sales representatives.
			36. Using the website should be easier than calling the organization.
		Emotional Appeal	37. Using the website must make me feel cheerful.
			38. The website should make me feel welcome.
			39. The website must make me feel happy.
		Service representative	40. The website needs to offer quality service options which I can use to contact me when I encounter a problem on the website.
			41. The customer service representatives or similar tools on the website must be able to handle my requests properly.

Information Quality

1. Informational fit-to-task

1. De informatie op een website moet mij voldoende goede informatie geven over de taken die ik moet uitvoeren.

2. De informatie op een website moet mij voldoende informeren zodat ik na mijn bezoek aan de website geen vragen meer heb over deze informatie.

3. De informatie op een website moet bruikbaar zijn voor het doel dat ik heb.

2. Ease of Understanding

4. De webpagina's en de content op webpagina's moeten goed te begrijpen zijn.

5. De tekst op de website moet goed leesbaar zijn.

6. De structuur van de website moet eenvoudig te begrijpen zijn.

3. Online Completeness

7. Een website moet de mogelijkheid bieden om het aankoopproces op de website te doorlopen en succesvol af te ronden.

8. Een website moet mij alle informatie bieden die mij helpt begrijpen welke taken ik moet uitvoeren op de website.

9. De website moet het mogelijk maken om direct een aankoop te doen via de website.

4. Consistent Image

10. De website moet een professioneel imago hebben.

11. Het imago van de website is consistent met dat van de organisatie.

12. De website van een organisatie moet uitstralen waar het bedrijf voor staat.

5. Decision Support Function

13. De website moet functies of hulpmiddelen bieden die mij als gebruiker op een empathische manier helpen bij vragen of problemen.

14. De website moet een supportfunctie hebben die ik kan gebruiken wanneer ik tegen een probleem aanloop.

System Quality

6. Trust

15. De website van de organisatie moet de veiligheid en privacy van mijn persoonlijke gegevens garanderen.

16. Ik moet veilig een aankoop kunnen doen via de website.

17. De website mag mijn persoonlijke informatie niet misbruiken voor andere doeleinden.

7. Intuitive Operations

18. Ik moet op een intuïtieve manier met de website om kunnen gaan.

19. Het moet gemakkelijk zijn om bekend te raken met de website en zijn functies.

20. De website moet eenvoudig te gebruiken zijn.

8. Innovativeness

21. De website moet innovatief zijn.

22. Het design van de website moet innovatief zijn.

23. Het design van de website moet creatief zijn.

9. Visual Appeal

24. De website moet een aangenaam design hebben waardoor ik het gebruik van de website als prettig ervaar.

25. De website moet de producten of services op een visueel aantrekkelijke manier presenteren.

26. Het design van de website moet visueel aantrekkelijk zijn.

10. Navigation Support Function

27. De website moet een heldere structuur hebben die helpt bij de navigatie door de website.

28. De website moet een supportfunctie bieden waarmee ik snel de informatie kan vinden die ik zoek.

Service Quality

11. Tailored Communications

29. De website moet de mogelijkheid bieden om informatie op maat te ontvangen.

30. De website moet interactieve functies bieden die mij helpen bij het volbrengen van mijn taak op de website.

31. De website biedt mij de mogelijkheid om de informatie die ik specifiek nodig heb voor mijn vraag te ontvangen.

12. Response Time

32. De wachttijd tussen de door mij uitgevoerde handelingen en de reactie van de website moet kort zijn.

33. De website moet snel laden.

13. Relative Advantage

34. Het moet mogelijk zijn om taken sneller zelf uit te voeren op de website dan het vragen van hulp aan een vertegenwoordiger van de organisatie.

35. De website moet functioneren als een alternatief voor het contact opnemen met de klantenservice of verkoopvertegenwoordigers.

36. Het gebruik van de website moet gemakkelijker zijn dan de organisatie te bellen.

14. Emotional Appeal

37. Het gebruik van de website moet me een opgewekt gevoel geven.

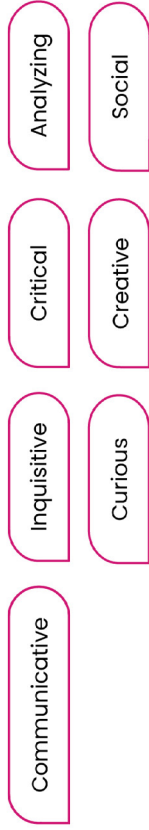38. De website moet me een gastvrij gevoel geven.

39. De website moet me een gelukkig gevoel geven.

15. Service Representative

40. De website moet kwalitatieve service-opties bieden waarmee ik contact kan opnemen wanneer ik een probleem op de website tegen kom.

41. De vertegenwoordigers van de klantenservice of soortgelijke tools op de website moeten in staat zijn mijn verzoeken goed te behandelen.

Laura Jansen

Communicative | Inquisitive | Critical | Analyzing

Curious | Creative | Social

Age: 29 years

Job: Online marketer & marketing manager

Character: Social

Goals:

- Communication towards website visitors should be more efficient and proactive. Coming into contact with potential
- Customers more quickly via multiple channels.
- Enhancing the brand awareness of the company she works at among the preferred target audience.

Pain Points:

- No tools are available to quickly, efficiently, and proactively engage with potential customers.
- Due to a lot of competition, a new way to differentiate the company must be found.
- To date, no solution has been found that can also be deployed outside office hours and on weekends.
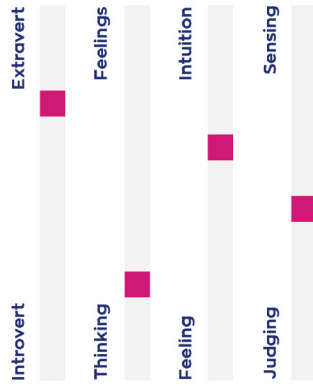
Type of organization

The target group is the marketing manager. The companies where the target group works are in the maturity phase, have at least 10 employees and multiple branches. The company has an annual turnover greater than 1 million euros and sells products with a high order value. Within the company there is a small marketing team that works with a marketing budget. The goal of this target group is to achieve more sales, offer better customer service both inside and outside office hours and save time for employees. With these clients, a long-term partnership between Chatkracht and the company's marketing team often develops, providing value for both parties. In this partnership Chatkracht provides a digital customer service channel, longer reachability and warm leads.

Personality

Introvert — Extravert

Thinking — Feelings

Feeling — Intuition

Judging — Sensing

Channels

Traditional advertising

Online & social media

References

Gurerilla & PR

Motivation

Customer goodwill

Cost savings

Time savings

Availability

Sales

Informatieblad voor het onderzoek als onderdeel van de master Communication Science: "A valuable customer experience: Utilizing the Q-methodology as a Human-Centered Design method"

Doel van het onderzoek
Dit onderzoek wordt geleid door Sanne Dubbelink. Het doel van dit onderzoek is het onderzoeken wat de meerwaarde van de Q-methode is binnen het veld van Human-Centered Design. Human-Centered Design is een designmethode waarin eindgebruikers betrokken worden in het designproces om zo de meest optimale producten te ontwerpen. De Q-methode is een sorteermethode waarbij de participant een aantal statements sorteert in een piramidevormig figuur op basis van de mate waarin hij het eens is met de statements. Het einddoel van dit onderzoek is om de data van diverse participanten te vergelijken en te achterhalen of de Q-methode een waardevolle methode is om de eisen van gebruikers van zakelijke websites goed in kaart te brengen.

Hoe gaan we te werk?
U neemt deel aan een onderzoek waarbij we informatie zullen vergaren om te achterhalen welke elementen voor u het meest en minst van belang zijn bij een zakelijke website. Dit onderzoek bestaat uit het uitvoeren van de Q-methode waarbij u een aantal statements over elementen van een zakelijke website zult ordenen op basis van de mate waarin u het eens bent met de statements. De resultaten van deze Q-methode worden gedocumenteerd voor verdere analyse.

Na afloop van de Q-methode neemt u deel aan een kort interview waarin gevraagd zal worden naar uw perceptie van de Q-methode. Dit interview zal opgenomen worden, waarna na afloop een transcript uitgewerkt zal worden. Deze data worden uitsluitend gebruikt voor de voltooiing van de master thesis. Uw deelname is geheel vrijwillig en u kunt zich op ieder moment terugtrekken uit het onderzoek. Echter, na afronding gaat u ermee akkoord dat de data die u verstrekt heeft wordt gebruikt voor het onderzoek.

Uitsluitend ten behoeve van het onderzoek zullen de conclusies die getrokken worden uit de vergelijkingen van de verzamelde onderzoeksgegevens worden gedeeld met Chatkracht, gevestigd in Hengelo (OV), Nederland. Dit zal zijn in de vorm van een adviesrapport op basis van de belangrijkste bevindingen uit data verstrekt door participanten.

Potentiële risico's en ongemakken
Er zijn geen fysieke, juridische of economische risico's verbonden aan uw deelname aan deze studie. U hoeft geen vragen te beantwoorden die u niet wilt beantwoorden. Uw deelname is vrijwillig en u kunt uw deelname op elk gewenst moment stoppen.

Vertrouwelijkheid van gegevens
Wij doen er alles aan uw privacy zo goed mogelijk te beschermen. Er wordt op geen enkele wijze vertrouwelijke informatie of persoonsgegevens van of over u naar buiten gebracht, waardoor iemand u zal kunnen herkennen. In een publicatie zullen anonieme gegevens of pseudoniemen worden gebruikt. De audio-opnamen, formulieren en andere documenten die in het kader van deze studie worden gemaakt

of verzameld, worden opgeslagen op een beveiligde locatie bij de Universiteit Twente en op de beveiligde (versleutelde) gegevensdragers van de onderzoekers.

De onderzoeksgegevens worden bewaard tot na afronding van de master thesis. Uiterlijk na het verstrijken van deze termijn zullen de gegevens worden verwijderd of worden geanonimiseerd zodat ze niet meer te herleiden zijn tot een persoon.

De onderzoeksgegevens worden indien nodig (bijvoorbeeld voor een controle op wetenschappelijke integriteit) en alleen in anonieme vorm ter beschikking gesteld aan personen buiten de onderzoeksgroep.

Tot slot is dit onderzoek beoordeeld en goedgekeurd door de ethische commissie van de faculteit BMS van Universiteit Twente.

Vrijwilligheid
Deelname aan dit onderzoek is geheel vrijwillig. U kunt als deelnemer uw medewerking aan het onderzoek te allen tijde stoppen, of weigeren dat uw gegevens voor het onderzoek mogen worden gebruikt, zonder opgaaf van redenen. Het stopzetten van deelname heeft geen nadelige gevolgen voor u.

Wilt u stoppen met het onderzoek, of heeft u vragen en/of klachten? Neem dan contact op met de onderzoeksleider.

Voor bezwaren met betrekking tot de opzet en of uitvoering van het onderzoek kunt u zich ook wenden tot de Secretaris van de Ethische Commissie van de faculteit Behavioural, Management and Social Sciences op de Universiteit Twente via ethicscommittee-bms@utwente.nl. Dit onderzoek wordt uitgevoerd vanuit de Universiteit Twente, faculteit Behavioural, Management and Social Sciences. Indien u specifieke vragen hebt over de omgang met persoonsgegevens kun u deze ook richten aan de Functionaris Gegevensbescherming van de UT door een mail te sturen naar dpo@utwente.nl.

Tot slot heeft u het recht een verzoek tot inzage, wijziging, verwijdering of aanpassing van uw gegevens te doen bij de Onderzoeksleider.

Door dit toestemmingsformulier te ondertekenen erken ik het volgende:

1. Ik ben voldoende geïnformeerd over het onderzoek door middel van een separaat informatieblad. Ik heb het informatieblad gelezen en heb daarna de mogelijkheid gehad vragen te kunnen stellen. Deze vragen zijn voldoende beantwoord.

2. Ik neem vrijwillig deel aan dit onderzoek. Er is geen expliciete of impliciete dwang voor mij om aan dit onderzoek deel te nemen. Het is mij duidelijk dat ik deelname aan het onder- zoek op elk moment, zonder opgaaf van reden, kan beëindigen. Ik hoef een vraag niet te beantwoorden als ik dat niet wil.

Naast het bovenstaande is het hieronder mogelijk voor verschillende onderdelen van het onderzoek specifiek toestemming te geven. U kunt er per onderdeel voor kiezen wel of geen toestemming te geven.

Indien u voor alles toestemming wil geven, is dat mogelijk via de aanvinkbox onderaan de stellingen.

		JA	NEE
1.	Ik geef toestemming om de gegevens die gedurende het onderzoek bij mij worden verzameld te verwerken zoals is opgenomen in het bijgevoegde informatieblad. Deze toestemming ziet dus ook op het verwerken van gegevens betreffende mijn meningen, ideeën en uitspraken.	☐	☐
2.	Ik geef toestemming om tijdens het interview opnames (geluid / beeld) te maken en mijn antwoorden uit te werken in een transcript.	☐	☐
3.	Ik geef toestemming om mijn gegevens geanonimiseerd of onder een pseudoniem te geven delen met een organisatie/instelling die gevestigd is binnen de Europees Economische Ruimte, namelijk Chatkracht, gevestigd in Hengelo (OV), Nederland.	☐	☐
4.	Ik geef toestemming om de bij mij verzamelde onderzoeksdata te bewaren en te gebruiken voor toekomstig onderzoek en voor onderwijsdoeleinden.	☐	☐
5.	Ik geef toestemming voor alles dat hierboven beschreven staat.	☐	

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Appendix 5: Interview questions in Dutch and English

Interview questions in Dutch

Onderwerp 1: Achtergrond

• Wat is uw naam?

• Wat is uw leeftijd?

• Wat is uw geslacht?

• Wat is de omvang van uw organisatie?

• Wat is uw rol binnen de organisatie?

Onderwerp 2: Mening over de methode

• Kunt u mij vertellen wat u vond van het uitvoeren van de Q-methode?

• Hoe moeilijk vond u het uitvoeren van de Q-methode?

• Wat vond u lastig? Kunt u dit verder uitleggen?

• Wat vond u handig, fijn of makkelijk? Kunt u dit verder uitleggen?

• Denkt u dat dit een nuttige methode is om input te verzamelen voor het ontwerp van een website? Kunt u dit verder uitleggen?

Onderwerp 3: Gebruik van de methode voor het ontwerpen van websites en in HCD

• Denkt u dat eindgebruikers via de Q-methode nuttige input kunnen geven voor het ontwerp van een website?

• Wat vindt u ervan als ontwerpers deze methode gebruiken om te beslissen welke elementen prioriteit moeten krijgen bij het ontwerpen van een website?

• Hoe denkt u over de haalbaarheid van deze methode als designmethode op grotere schaal?

Onderwerp N: Aanvullende onderwerpen

Interview questions in English

Topic 1: Background

• What is your name?

• What is your age?

• What is your gender?

• What is the size of your organization?

• What is your role within the organization?

• What do you find most important to have or know when deciding to make a corporate purchase?

• What do you find important when looking at a website to make a corporate purchase?

Topic 2: Opinion of the Method

• Can you tell me about what you thought of performing the Q-method?

• How would you describe the level of the difficulty of the Q-method?

• What did you find the easiest about performing the Q-method?

• What did you find the most difficult about performing the Q-method?

• Do you think designers should use this method to design a product? Why (not)?

Topic 3: Use of the Method to Design websites and in HCD

• What do you think of using the Q-method to involve end users in the design process?

• What do you think of using the Q-method to design a website?

• What do you think of designers using this method to decide what elements to prioritize when designing a website?

• Do you think designers should use this method to design websites? Why (not)?

• Can you tell me what you think of the feasibility of using this method on a larger scale?

Topic N: Additional topics

Informatieblad voor het onderzoek als onderdeel van de master Communication Science: "A valuable customer experience: Utilizing the Q-methodology as a Human-Centered Design method"

Doel van het onderzoek
Dit onderzoek wordt geleid door Sanne Dubbelink. Het doel van dit onderzoek is het onderzoeken wat de meerwaarde van de Q-methode is binnen het veld van Human-Centered Design. Human-Centered Design is een designmethode waarin eindgebruikers betrokken worden in het designproces om zo de meest optimale producten te ontwerpen. De Q-methode is een sorteermethode waarbij de participant een aantal statements sorteert in een piramidevormig figuur op basis van de mate waarin hij het eens is met de statements. Het einddoel van dit onderzoek is om de data van diverse participanten te vergelijken en te achterhalen of de Q-methode een waardevolle methode is om de eisen van gebruikers van zakelijke websites goed in kaart te brengen.

Hoe gaan we te werk?
U neemt deel aan een onderzoek waarbij we informatie zullen vergaren om te achterhalen op basis van een focusgroep. Dit onderzoek bestaat uit het bekijken, lezen en bespreken van een aantal onderzoeksresultaten uit een voorgaand onderzoek. De resultaten van deze focusgroep worden gedocumenteerd voor verdere analyse.

Deze focusgroep zal opgenomen worden, waarna na afloop een transcript uitgewerkt zal worden. Deze data worden uitsluitend gebruikt voor de voltooiing van deze master thesis.

Uw deelname is geheel vrijwillig en u kunt zich op ieder moment terugtrekken uit het onderzoek. Echter, na afronding gaat u ermee akkoord dat de data die u verstrekt heeft wordt gebruikt voor het onderzoek.

Uitsluitend ten behoeve van het onderzoek zullen de conclusies die getrokken worden uit de vergelijkingen van de verzamelde onderzoeksgegevens worden gedeeld met Chatkracht, gevestigd in Hengelo (OV), Nederland en de Universiteit Twente. Dit zal zijn in de vorm van een master thesis met adviesrapport op basis van de belangrijkste bevindingen uit data verstrekt door participanten.

Potentiële risico's en ongemakken
Er zijn geen fysieke, juridische of economische risico's verbonden aan uw deelname aan deze studie. U hoeft geen vragen te beantwoorden die u niet wilt beantwoorden. Uw deelname is vrijwillig en u kunt uw deelname op elk gewenst moment stoppen.

Vertrouwelijkheid van gegevens
Wij doen er alles aan uw privacy zo goed mogelijk te beschermen. Er wordt op geen enkele wijze vertrouwelijke informatie of persoonsgegevens van of over u naar buiten gebracht, waardoor iemand u zal kunnen herkennen. In een publicatie zullen anonieme gegevens of pseudoniemen worden gebruikt. De audio-opnamen, formulieren en andere documenten die in het kader van deze studie worden gemaakt

of verzameld, worden opgeslagen op een beveiligde locatie bij de Universiteit Twente en op de beveiligde (versleutelde) gegevensdragers van de onderzoekers.

De onderzoeksgegevens worden bewaard tot na afronding van de master thesis. Uiterlijk na het verstrijken van deze termijn zullen de gegevens worden verwijderd of worden geanonimiseerd zodat ze niet meer te herleiden zijn tot een persoon.

De onderzoeksgegevens worden indien nodig (bijvoorbeeld voor een controle op wetenschappelijke integriteit) en alleen in anonieme vorm ter beschikking gesteld aan personen buiten de onderzoeksgroep.

Tot slot is dit onderzoek beoordeeld en goedgekeurd door de ethische commissie van de faculteit BMS van Universiteit Twente.

Vrijwilligheid

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Appendix 7: An overview of the placement of all statements in the Q-sort for each factor

Category based on WebQual	Brief description of the statements	Factor arrays				Statement number
		1	**2**	**3**	**4**	
Informational fit-to-task	Information should fit the task	–1	5	–1	–1	1
	Information demands are met	1	O	1	1	2
	The information is useful	4	2	–2	2	3
Ease of Understanding	The pages are understandable	1	4	–3	O	4
	The text is easy to read	2	1	1	O	5
	Structure is understandable	1	5	1	O	6
Online Completeness	Complete a transaction	3	–1	–1	O	7
	Helps understanding tasks	–2	3	2	4	8
	Allows making a transaction	4	–2	O	–2	9
Consistent Image	Website has professional image	O	1	–1	1	10
	Image compatible with business	O	1	–5	O	11
	Image consistent with own views	–1	1	3	–1	12
Decision Support Function	Website tools are empathetic	–4	–2	2	1	13
	Support functions for problems	–2	2	O	2	14
Trust	Protecting security and privacy	2	O	–4	3	15
	Safely making a transaction	5	–1	O	5	16
	Prevent misuse of information	3	–3	3	5	17
Intuitive Operations	Easy operation of website	1	3	–2	–1	18
	Becoming skillful is easy	–1	2	1	1	19
	Easy to learn using	3	4	–3	O	20
Innovativeness	Website is innovative	–4	–3	2	–3	21
	Design is innovative	–5	–1	1	–4	22
	Design is creative	–5	–2	O	–3	23
Visual Appeal	Design is visually pleasing	2	1	5	–1	24
	Products look visually pleasing	O	O	3	–3	25
	Design is visually pleasing	1	O	–3	–2	26
Navigation Support Function	Website is convenient in use	1	3	4	–1	27
	Information search is easy	–2	O	–1	2	28

Category based on WebQual	Brief description of the statements	Factor arrays				Statement number
		1	2	3	4	
Tailored Communications	Structure helps in navigation	–3	0	–5	–2	29
	Navigation support function	–1	–4	–2	–2	30
	Receiving tailored information	5	1	0	0	31
Response Time	Little waiting time on website	0	0	1	2	32
	Website loads quickly	–1	2	5	5	33
Relative Advantage	Finishing tasks is easiest online	–2	–1	–4	–4	34
	Alternative to customer service	0	–5	0	0	35
	Easier than calling support	2	–1	4	4	36
Emotional Appeal	The website feels welcoming	–3	–5	–1	–1	37
	The website makes me happy	–1	–2	2	2	38
	The website makes me happy	–3	–4	0	0	39
Service Representative	Offers qualitative service options	0	–3	–2	–2	40
	Representatives are present	0	–1	–1	–1	41

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