



Exploring relations between search queries and consumer decision making intents -

Using an innovative approach to resemble a search engine and study search query anatomy.

Student: S.A.J. (Sara) Oltwater Student number: s2033119

Faculty of Behavioural, Management and Social sciences (BMS) Communication Studies (COM)

EXAMINATION COMMITTEE: Dr. S.A. (Sjoerd) de Vries MSc. R. (Robert) Marinescu-Muster

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Abstract

Search engines have become a primary source of information for consumers and the popularity of search engines keeps increasing. In this exploratory study we focused on finding relations between search queries and consumer decision making intents (CDM-intent). We determined Purchase intent and Information Search intent to indicate CDM-intent and determined to analyse search queries based on the user intent of separate terms. Based on the consulted literature we propose a model to study search query anatomy in relation to decision making intent with the Search Query Anatomy Model (SQA-model).

In our experiment we developed an innovative approach to study the assumptions of the SQAmodel. First, we provided context to our model and determined the product segment to focus on in the online questionnaire. Secondly, we developed the setup of our experiment. We choose to develop an online questionnaire with a build in search engine that resembled Google. We developed the Experimental Search Engine to simulate a search process. Before entering the Experimental Search Engine, participants were assigned a scenario for either Purchase intent or Information Search intent.

We found that CDM-intent can be predicted through the analyses of search query anatomy. We were able to support the assumptions of the SQA-model. We found that the chance of writing a search query according to the assumptions of our model increases with 61% for the corresponding consumer decision making intent. For example, when participants were assigned the Purchase intent scenario the chance of them writing a search query with the assumed search query anatomy for Purchase intent, increased by 61%. Additionally, we found that topic familiarity and media expertise influence the formulation of queries. A low level of topic familiarity and media expertise can cause more difficulty for people to formulate search queries.

As this study was mainly exploratory, further research is needed to further improve our model, test the model in different contexts and explore more approaches to study CDM-intent though search query analysis.

Keywords: Consumer decision making, Search engine, Information search intent, Purchase intent, Search Queries, Search Query Anatomy, Topic familiarity, Media expertise.

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Chapter 1 Introduction

This chapter introduces the study. We first elaborate on the topic and the aim of the study. Paragraph 1.2 describes the relevance of the study from a scientific and practical perspective. In paragraph 1.3 we state our research question along with the sub questions and the approach to answer those questions.

<u>1.1 Topic introduction</u>

"What is a nice place to eat within twenty kilometres of distance?", "What time is it in Los Angeles?", "How to write a proper letter of application?". Whenever people want a question answered or a need fulfilled, 87% of those people grab their smartphone and turn to a search engine to find their answer (Gevelber, 2016). People not only use search engines for personal purposes, the dependency on search engines are also increasing for professional and academic tasks (Bajpai & Arora, 2017).

By using search queries, people translate their information needs into a few terms. Search queries represent a form of interaction between humans and search engines. Some studies argue that search queries are an evolving linguistic system as people often only state 2-3 terms to describe their need instead of full sentences (Roy et al., 2016; Saha roy et al., 2012; Spink et al., 2001). The analysis of search engine data raises a lot of different questions about the interpretation of the data, not only from marketers working in the field (Bakker, 2019), but also from academics. The field of study is appealing for researchers because of the abundance of data and the amount of search engine users around the globe.

Many studies showed that search engine data is able to explain consumer behaviour and enables businesses to predict sales and create advertising strategies (Dotson, Fan, McDonnell-Feit, Oldham & Yeh, 2017; Guo & Agichtein, 2010). For example, in their study Dotson et al. (2017) explored the relations between branded search queries and the consumer purchase funnel and found that people actively shopping for products are more likely to use brand names in their search. Jun & Park (2016) studied the number of searches for categories of products and found search traffic to be a predictor of sales.

Broder (2002) was one of the first to study search queries and developed a taxonomy by classifying queries based on their main user goal. His taxonomy classified the goal of queries as navigational (going to a specific website), informational (to acquire information) or transactional (perform a web-mediated activity, such as download a file or purchase a product). Building on his work, several researchers studied the topic and created modifications of his taxonomy (Rose and Levinson, 2004; Baeza-Yates et al., 2006; Jansen, 2007). Another approach applied was categorizing search queries based on the intent roles of the terms in the search queries. For example, the study of Li (2010), where all separate terms in search queries were categorized based on their intent (e.g. head components and modifying components). This type of categorization is also often applied by practitioners of marketing to describe user intent.

Overall, the research area of intent discovery through search queries is a popular topic. In this study we want to investigate the relations between the anatomy of a search query and consumer decision making intent. When people were looking to buy a pair of shoes, how would they formulate their search query so a search engine would know their intent? If you search for "white sneakers" were you just searching without a commercial intention, or would you want to purchase a pair of white sneakers? If you were searching on "Nike AIR Force 1 white" would that make you more likely to be in a buying mode? We propose that through the analysis of the search query anatomy, we are able to describe consumer decision making intentions.

This study is conducted in collaboration with Trendata, a company that retrieves search queries and visualizes the developments of a certain market based on those queries. They provide companies with strategical advice based on the analyses of search queries. They provided us with a dataset to construct a case study to test our proposed model. The dataset contains, following the definition of Broder (2002) transactional queries.

While previous studies mainly focused on studying behaviour through implicit measures such as query logs, click-through behaviour and query reformulations (Liu et al., 2012; Tanaka, 2013; Arias et al., 2008), this study uses a different approach. We conduct our experiments through an online questionnaire. We constructed an Experimental Search Engine to simulate the process of using a commercial search engine, such as Google. Participants are assigned a consumer decision making scenario and formulate a query based on that scenario. This approach enables us to explore relations between consumer decision making and the anatomy of search queries.

With this study we want to contribute to the field by providing more insights into the consumer decision making intents behind search queries. The aim of the study is to explore how the anatomy of search queries can help to understand consumer decision making intentions.

1.2 Relevance of the study

This paragraph discusses the theoretical and practical relevance of this study. We will first discuss the relevance of the study from a scientific perspective. In paragraph 1.2.2 we will continue with the practical relevance of this study.

1.2.1 Theoretical relevance

For the past few years there has been a rise in scientific articles on the analysis of search queries to clarify consumer intent with studies such as Yu and Ren (2012), Dotson et al. (2017) and Im et al. (2018). Most studies focus on the classification of queries or focus on other characteristics of queries to indicate intent such as query length and search frequency. There is a lack of studies that focus on using search queries to clarify consumer decision making intent. Roy et al. (2016) stress the importance of more research into the analysis of search queries to explain consumers. According to them, search queries represent a unique way of communication between humans and artificial systems. Studies that focused on explaining user intent, often only focus on one specific area such as branded search and sponsored search. With this study we want to contribute to the field by analysing the anatomy of search queries produced by users. We argue search queries can indicate consumer intent and thus want to investigate what relations we can discover between search queries and consumer decision making intent. The findings of the study will provide understanding of the search queries consumers produce and hopefully enable us to clarify consumer search behaviour.

Next to the theoretical relevance of the topic of our study, we also consider our approach to be relevant for other researchers and their future studies. Other than using a laboratorial setting we developed a novel manner to study search behaviour and collected search queries with custom designed search engine. To simulate the process of searching, we recreate a commercial search engine similar to others such as Google. Typically, such experiments are conducted in laboratorial settings, which can cause a lot of time. In this study, we construct a search engine in a way that participants are able to use it from their own laptop and incorporated it into our questionnaire. Implementation of the tool can provide other researchers to study more natural behaviour, collect more participants and save time.

1.2.2 Practical relevance

Besides theoretical relevance this study also has practical relevance. Online marketers are almost obligated to analyse all data available to find explanations and opportunities. The results of the study can provide marketers with new insights to explain consumer behaviour through the examination of search query anatomy. Marketers are able to see with what search queries consumers land on their page. By applying our research, marketers will be able to indicate the intent of the consumer based on search query anatomy. The outcome of the study can support them in making decisions (McKinsey, 2016) on how to profile their visitors, how to approach them and to communicate more relevant content and advertising.

Another perspective is the use of search engines as a tool for market research. In his interview, Coleman (Bakker, 2019) stresses the potential of search engine data as a tool to study markets and the behaviour of consumers in it. With the study, marketers are able to analyse a dataset of search queries and determine the intent. Marketers are able to describe a market and could assess the attractiveness to launch a new product.

1.3 Research questions

Taking the aforementioned into consideration, we formulated the following research question.

Research question: "What are relations between search queries and consumer decision making intents?"

In order to answer this question, we propose a model that describes the anatomy of search queries in relation to consumer decision making intent. We developed an experimental approach to see if the assumptions of the model hold. In order to answer the research question and build towards our model, we formulated the following sub questions.

1. How can we model consumer decision making intents?

With sub question 1 we are studying literature to find building blocks for our model. This sub question contributes to the development of our proposed model and establishes the intents we are going to study.

2. What are search queries and what affects the process of formulating search queries?

With sub question 2 we are describing what search queries are and how they originate. We investigate relations to literature of consumer decision making and investigate what factors influence the process of formulating search queries. The answer to this sub question does not necessarily build towards our model. We merely investigate to gain more general knowledge on the topic and take the factors that could influence our participants during the experiment, into account.

3. What are approaches to study search queries and how can we study search queries to find relations with consumer decision making intents?

With sub question 3 we investigate previous approaches to analyse search queries. In order to further develop our model, we consult literature and compare approaches from other researchers.

With this question we establish our approach to study search queries to find relations with consumer decision making intent.

Chapter 2 Theoretical framework

In this chapter we investigate literature to define the main concepts of our study and to develop our model. The first paragraph describes the concept of consumer decision making and how it applies to our proposed model. The second paragraph elaborates on the concept of search query formulation and what can affect the process. The third paragraph continues with approaches to analyse search queries and establishes the approach for this study. The fourth paragraph depicts our proposed model along with the belonging assumptions.

2.1 Consumer decision making

In this paragraph we discuss the concept of consumer decision making and investigate how we can model it in our study. We consulted literature to find the building blocks to describe consumer decision making intent in our proposed model and therefore aimed to answer sub question 1 *"How can we model consumer decision making intent?"*. In this paragraph we introduce the concept of CDM-intent and establish 'Information search Intent' and 'Purchase Intent' to model consumer decision making intents in this study.

Consumer decision making is a construct defined by Du Plessis in his book as "behavioural patterns of consumers that precede, determine and follow the decision process for the acquisition of need satisfying products, ideas or services" (as cited in Karimi, 2013, p. 39). Over the years, consumer decision making models have been studied and adapted according to the developments of consumer behaviour and technology. The changes in technology changed consumers in their behaviour, making them more unpredictable and increasing the complexity of mapping their behaviour (Wolny & Charoensuksai, 2014). However, their digital footprint also enabled researchers and marketers to study the decision making intents and allowed them to monitor, describe and predict consumer habits and preferences.

Consumer decision making has been studied for a long time and many seminal models have been developed. All first models on consumer decision making mainly described the process as sequential and linear. Lewis was the first to model consumer decision making with his AIDA model. In his work, he described the effects of external stimuli on consumer behaviour and claimed consumers moved towards purchase with the steps 'Attention' 'Interest' 'Desire' and 'Action'. The model is often depicted as a funnel to indicate that the focus of consumers narrows as the decision to purchase of products approaches (Hadiyati, 2016).

Most models agree on the assumption that the decision process is like a funnel and consumers follow a linear pattern towards the purchase of a product. The first to suggest consumer decision making as a continuing process were Court et al. (2009) and modelled it as a dynamic process. According to them, consumer decision making starts with a stimulus triggering an initial consideration set in the mind of the consumer. The consumer continues by searching for information and by evaluating the retrieved information, alternatives are either added or subtracted. Eventually the consumer makes a decision and continues to a post purchase evaluation where the decision is assessed. The McKinsey model is described as an ongoing loop since the post purchase evaluation can cause a reaction where the consumer starts a new purchase process because the previous decision was unsatisfactory.

While studies depict consumer decision making as either linear or dynamic, all models use certain phases to describe behaviour. The phases of Kotler (p.98, 2000) (problem recognition; information search; evaluation of alternatives; purchase decision; post-purchase decision) are most commonly used in other studies. However, practitioners criticize the approach to depict the process

as a completely linear process as it does not justify the unpredictable behaviour of consumers (Campaingmonitor, 2019; McCory, 2018). According to them, the funnel focuses on squeezing consumers into stages and disregard their freedom of choice. The path to purchase has changed tremendously because of digitalization and is more complex than ever (Herhausen et al., 2019). Consumer decision making can therefore not be depicted as merely a funnel as it fails to capture the abundance of touchpoints (Court et al., 2009).

2.1.1 CDM-intents in relation to search queries

In our study we want to model consumer decision making intents (hereinafter: CDM-intent) to analyse search queries. According to multiple practitioners (Gabbert, 2018; Wordtracker, 2019) and studies (Hu, Du, Damangir, 2014; Jansen and Schuster, 2011 and Ortiz-Cordova and Jansen, 2011) search queries are able to show aspects of consumer intent. For example, Barysevich (2017) writes about how the specificity of a query can indicate a consumers' intent. Dotson et al. (2017) write about how the inclusion of brands can indicate a consumer that wants to purchase. Studies describe that peoples search behaviour differs and gets more precise as they move towards their information goal (Moshfeghi & Jose, 2013; Kuhlthau, 1991). Therefore, we are studying consumer search behaviour based on their CDM-intent and explore the relations with search queries.

Rather than using all phases of Kotler (2000) to study consumer decision making intent, we choose to use the approach of studies such as Guo and Agichtein (2010) and Herhausen et al. (2019), and apply the intents of 'Information Search' and 'Purchase' to model CDM-intent. This approach to model consumer decision making intent is already applied in multiple studies (Colicev, Kumar & O'Connor, 2019; Herhausen et al., 2019; Guo & Agichtein, 2010) and is often used because of the close links to product sales. In this study, we are looking at the two intents and explore the differences in search queries as studies claim that search queries are formulated more general at the start of people's information search and becomes more specific as people come towards their goal (Aula, 2003; Ramlall et al., 2011).

In this study we define 'Information Search intent' as a consumer which uses a search engine with the intention to gain some knowledge about a product or service without having a commercial intent. The definition of a consumer with a 'Purchase intent' is a consumer which uses a search engine with the intention to purchase a product or service, they have a high level of commercial intent. These two intents represent the consumer decision making intents in our proposed model.

2.2 Search query formulation

The aim of our study is to explore relations between search queries and consumer decision making. In this paragraph we elaborate on the concept of search queries and explain how they originate. Next to that, we explain the contextual factors media expertise and topic familiarity and how these can influence the process of search query formulation. This paragraph aims to answer sub question 2 *"What are search queries and what affects the process of formulating search queries?"*.

2.2.1 The process of search query formulation

For a long time now, a vital element for understanding consumer buying behaviour has been information search behaviour (Newman & Staelin, 1972). Consumers are described as problem solvers who search for information before making a purchase (Wedel & Pieters, 2007) but also when they are already determined to buy (Su et al., 2018). A search query is the behavioural response of a consumer for a need for information and exists out of one or more terms, which are a series of characteristics separated by white spaces (Jansen & Schuster, 2011). In order to formulate a query, Cole (2011) claimed that users must collect their thoughts for the type of information they require, identify these

thoughts by connecting concepts and apprehend which keywords will obtain the results for this information need.

The process of information search is related to consumer decision making (Choi & Varian, 2009; Goel et al., 2010; Mohassed, Bader-El-Den, Cocea, 2019) as it also starts with an initial need (similar to initial consideration) and ends in the adoption of information (similar to a purchase). The influence of consumer decision making literature can also be detected in studies on information search behaviour (Krikelas, 1983; Kuhlthau, 1991; Marchionini, 1997).



Figure 1 The process of information search. Adopted from: Marchionini (1997)

The study of Marchionini (1997) was the first to describe information search behaviour in the context of the online environment. In his study he defined eight components to describe the process of information seeking and acknowledges the unpredictability of consumer behaviour. In his model (Figure 1) we can see the process of query formulation and see the eight components and how they interact.

2.2.2 Contextual factors to influence search query formulation

In our experiment we are going to study search queries of participants. According to literature there are contextual factors that can influence people in the process of search query formulation. Based on the review of literature we found arguments to consider the factors 'media expertise' and 'search topic familiarity' as factors to possibly influence the formulation of search queries in our experiment.

Contextual factor: Media expertise

Media expertise refers to the extent to which the user is known with the type of media it consults for their information search. For this study, this is the extent to which a participant is known with a commercial search engine and how well they can operate it. Aula (2003) writes how media expertise can affect the process of query formulation. The study states that users with media expertise perform better and more effective searches as they are able to use the features of the search engine. In another study by Yilma et al. (2019) they stated that users with better skills are more likely to specify queries and are more likely to get satisfactory results.

Contextual factor: Search topic familiarity

According to Aula (2003), a users' topic familiarity can influence the process of query formulation. Aula (2003) describes that users with a familiarity in a topic, are able to produce more detailed and precise queries while users with less topic familiarity tend to formulate queries with more general terms.

Vakkari (as cited in Aula, 2003) also argue that queries get more detailed as people get more familiar with a topic.

Other studies describe the construct domain expertise and its ability to affect query formulation. While the construct differs from topic familiarity on a certain level, they also correspond to some degree. Allen (as cited in Zhang, Liu and Cole, 2013) clarified the difference stating that domain knowledge is more general and can refer to big areas e.g. medicine or law. Topic knowledge on the other hand is narrower and refers to a specified area. Therefore, we regard studies that write about domain expertise to be comparable to topic familiarity literature. For example, Hölscher and Strube (2000) detected a significant effect for people with little domain knowledge. According to their study, people with little domain knowledge formulate longer queries than people with more domain knowledge. They assumed that participant with domain knowledge know and use more appropriate terms and thus need less terms. Another study that described the effects of domain expertise was by Hembrooke, Granka, Gay & Liddy (2005). Their study describes that people with domain knowledge are more effective because of using specified words and applying more elaboration.

Summarized, in our experiment we are measuring the contextual factors 'media expertise' and 'topic familiarity' to ensure our participants are able to formulate search queries that can be considered as normal. We describe topic familiarity as the participants' current state of knowledge about a topic (Choi, 2010). Media expertise is described as the extent to which users are known with a search engine and whether they perceive they are able to use it.

2.3 Approaches to analyse search queries to describe CDM-intent

In this study we want to explore relations between search queries and consumer decision making intent. In this paragraph we aim to answer sub question 3 *"What are approaches to study search queries and how can we study search queries to find relations with consumer decision making intents?"*. In this paragraph we considered three streams of research on search query analysis to apply in our model. Subparagraph 2.3.1 describes the stream of research regarding query classification based on user search goal (e.g. Broder, 2002; Baeza-Yates et al., 2006). Subparagraph 2.3.2 describes the stream of research regarding the categorization of separate terms in queries, based on the intent role of the terms (Yu & Ren, 2012; Li, 2010). The third and final subparagraph describes the stream of research that focuses on finding distinctive characteristics of consumer behaviour in search queries such as query length, specificity and difficulty (Ramabao & Fish, 2018; Ramlall et al., 2011; Phan, Bailey & Wilkinson, 2007).

2.3.1 Taxonomies based on general user search goals

An approach to study user intent through query analysis is query classification based on general user search goal. The main objective of this approach is to identify users general intent by studying the search queries through classification. The classification of queries differs from traditional text classification, as web queries are a very short description of information need. Another challenge of classifying search queries is that they are often ambiguous and can belong to more categories of user need (Hernàndez et al., 2012).

One of the first to publish about query classification based on general user search goal was Broder (2002). He developed a taxonomy with three different categories to describe user goal behind the query; navigational-, informational- and transactional queries. Navigational queries refer to a user that wants to reach a certain website. Informational queries refer to a query where the user is looking for an answer to a question or when the user is looking to learn something. Transactional queries refer to a goal where a user wants to perform a certain action such as downloading a file, filling in a contact form or accessing a database. All though this explanation for transactional queries still applies, it also has been interpreted otherwise. Transactional queries are nowadays more often referred to as a user having an interest in a certain product or service. The user has a certain level of commercial intent and is looking to make a purchase, sometime near or in the future (Gabbert, 2018).

Many researchers elaborated on the seminal study of Broder. Rose and Levinson (2004) developed a three-level hierarchy describing user intent as either informational, navigational or resource. Baeza-Yates, Calderán-Benevides and González-Caro (2006) established three categories for describing user intent namely informational, noninformational and ambiguous. The first to put it into

commercial perspective was Jansen (2007), where he used an evaluation technique to only classify transactional queries. In his study he created four categories referring to the queries indicating either; intent to buy, product specific, location specific, company specific and general. More recently, a whitepaper by STAT search analytics (2017) was one of the first to combine query classification with the process of consumer decision making. They depicted a funnel to demonstrate search query intent moves from informational intent an towards а transactional (and sometimes local) intent (Figure 2).



Figure 2 Search intent funnel. Adopted from: STAT search analytics (2017).

2.3.2 Categorizations based on search query anatomy

Another approach for search query analysis to interpret CDM-intent, is to categorize separate terms in a query based on their intent role. For example, in the study of Yu and Ren (2012) they categorized individual terms as kernel-objects and modifiers. They refer to kernel-objects as words that indicate the main topic of the query. According to them, kernel-objects represent the central topic of the search. They refer to the words surrounding the kernel-object as modifiers. Modifiers specify the attributes or concrete aspects that the user is interested in. A comparable approach was applied by Roy et al. (2015). In their study, they refer to words that indicate the central topic as content words. The words that specify a query are referred to as intent words. Similarly, Li (2010) categorized search queries and grouped words as intent heads or intent modifiers.

The studies mentioned, all assigned separate terms to one of the two categories describing intent role of terms. Other studies categorize terms into three different groups. The study of Wang et al. (2010) categorized query terms as head components, constraint modifiers or non-constraint (also described as pure) modifiers. They give the example query 'popular iPhone 5 smart cover' which exists of three components, namely 'popular' 'iPhone 5' and 'smart cover'. As the user goal is to find a smart cover, this is the head component. According to them all modifiers are not equal, as 'popular' is more subjective they defined it as a non-constraint modifier. The term 'iPhone 5' limits the intent and determines a direction of search, it is therefore named constraint modifier.

Professionals in the field of marketing share this orientation. Writeraccess (2018) write about dividing query terms into head terms, body keywords and long tail keywords based on the intent role. Wordtracker (2019) reports a similar technique and divided query terms into head terms, modifiers and tail terms. Despite the difference in definition of terms, the descriptions are all very similar. The central topic of queries is described with head terms, other terms in the query relate in some way to the head term.

2.3.3 Distinctive characteristics of consumer behaviour in search queries

Next to classification of queries or the categorization of query terms, many studies focused on only finding distinctive characteristics of consumer behaviour in search queries. Ramlall et al. (2011) claimed that specificity of search queries could give an indication of a consumers position in the purchase funnel. The study stated that consumers with search queries without specifications and broadly formulated are at the start of the funnel. Consumers with a search query with specifications hints a consumer to be at the end of the funnel according to the study. Im et al. (2019) investigated search queries and pointed out that while specificity matters, not all types of specificity mattered equally. For example, the product model and brand name mattered to a greater extent than terms which described more ambiguous characteristics of products.

The studies of Phan et al. (2007) and Ramaboa and Fish (2018) used query length as an indicator of consumer behaviour. They claimed that the length of a search query could imply the concreteness of a user's goal. Phan et al. (2007) stated that as the length of search queries extended to three terms or more, the level of specificity increased.

Other studies on distinctive characteristics focused on the contents of search queries. The studies of Dotson et al. (2017) and Jun et al. (2014) stated that the containment of brand names in queries can be seen as indicators of consumer interest. In their study, Dotson et al. (2017) demonstrated that consumers who were close to purchasing a product were likely to include the brand name in their search query. The study of Jun et al. (2016) claimed that terms indicating product specifications and price indicators in queries can illustrate consumers who are interested in the product.

2.3.4 The approach to study search queries in our model

We explored three approaches to studying search queries. The approach to analyse search queries based on the general user search goals is too broad for this study. It merely focuses on finding the general intent by analysing the entire search query. To develop our model, we require an approach that analyses search queries more thoroughly. However, the approach to study search queries based on finding distinctive characteristics is to specific as these studies mostly only focus on one specific characteristic. Therefore, we adopt the approach of categorizing search queries based on the intent role of the separate terms. In this study we refer to the different intent roles as the anatomy of search queries.

In this study we are parsing search queries into head terms (Yu & Ren, 2012; Li, 2010), tail terms (Writeraccess, 2018; Wang et al., 2010) and modifier terms (Yu & Ren, 2012; Li, 2010; Wang et al., 2010; Wordtracker, 2019). Head terms refer to the main topic of the search query. Tail terms add detail to the search query but do not specify the direction of search and cannot exist without a head term. Modifier terms add detail to the search query and specify the direction of search, like tail terms these cannot exist without a head term.

In our experiment we are studying whether search query anatomy can indicate CDM-intent. We do this by studying search query anatomy and categorizing terms based on the user intent. In paragraph 2.4 we present our proposed model along with the assumptions regarding the relation between search query anatomy and CDM-intent.

2.4 Proposed model: Search Query Anatomy Model

This paragraph presents the proposed model of our study; the Search Query Anatomy Model (or SQAmodel). Based on the review of literature we constructed the SQA-model which is depicted in Figure 3. Here we see a relation between search query specificity and CDM-intent and detect that query anatomy becomes more specific when a person changes from Information search intent to Purchase intent. This is based on studies that claim that the search query specificity increases as consumers move towards a purchase (Im et al., 2019; Ramlall et al., 2011). Based on the studies we consulted in paragraph 2.3.2, we made a categorization of the type of search query anatomies that we assume belong to the CDM-intents; Information search and Purchase. The four types of search query anatomies are elaborated in Figure 3 with each an example search query.



Figure 3 Descriptive model of search queries to infer Consumer Decision Making intent: The Search Query Anatomy Model.

Assumptions of the model:

We assume we can find relations between search queries and CDM-intent by testing this model. In our experiment we provide our participants with a scenario for CDM-intent (Information search intent; Purchase intent) and analyse the search queries they submit. Based on the review of literature we state the following assumptions:

- People with an information search intent tend to formulate their search queries using mainly head terms or head terms + tail terms.
- People with a purchase intent tend to formulate their search queries using mainly head terms + modifier terms or head terms + modifier + tail terms.

Context of shopping goods:

This study uses the context of shopping goods to explore relations between CDM-intent and search queries. Previous studies (Jun & Park, 2016; Dotson et al. (2017) already showed the appropriateness of applying this context when studying consumer search behaviour. According to the product classification of Kotler and Keller (2012) shopping goods are products where consumers actively search, compare and eventually purchase a product. According to the study of Wacholder (2011) consumers cognitively process the characteristics of product before they formulate a search query. Therefore, we justify the application of shopping goods as a context and expect for the experiment to reflect a behavioural tendency.

Chapter 3 Method for experimental validation SQA-model

This chapter describes the method we apply to investigate our assumptions. In the first paragraph, we take the proposed SQA-model and use a dataset from Trendata to provide context to the model. The second paragraph describes the development of our online questionnaire and the experimental search engine. The third and final paragraph discusses the results from the pre-test and the alterations for the study.

3.1 Providing context to the SQA-model

As mentioned before, we use the context of shopping goods for our study. We used a dataset from Trendata to focus on a product segment: furniture and home accessories. Based on the structure of the SQA model, we categorized common query refinements of the dataset as head-, modifier-, or tail terms.

3.1.1 Categorization of query refinements: based on dataset Trendata

The dataset we received from Trendata is a Tableau Packaged Workbook file, containing search queries from a four-year time period that are retrieved from Google via API. The dataset is presented as a dashboard to depict search developments of, in this case, the furniture and home accessories market. The dataset included 27,668 unique search queries with a total volume of 3,082,145 search queries that originate from the period of September 2013 to August 2017. Trendata created categories of query refinements based on matching query attributes (e.g. 'red' 'black' were categorized as colour). We categorized the query refinements of the dataset as head-, modifier-, and tail terms and exemplified how the refinements would be categorized in our SQA-model.



Figure 4 SQA-model with contextualization of product segment: Furniture and Home accessories

The search queries in the dataset that only contained product names were categorized as head terms, as those contain the central topic of the query. The refinements that were categorized as tail terms describe a detail of the head term, but do not necessarily determine the direction of search. The refinements categorized as modifiers provided more detail to the head term and determine a direction of the search query. The categorization of the query refinements can be found in Figure 4.

3.1.2 Selection of search queries for survey

Based on the categorization of query refinements we formulated a survey question to study the selfperceived CDM-intent of participants. For this question participants had to assess search queries and categorize them as an information search intent or purchase intent. The search queries that participant had to categorize can be found in Table 1.

Search query:	Query Anatomy:	Type of refinement:
Vloerkleed	Head term	/
Opbergmand		/
Groot tv meubel	Head term + tail terms	Subjective product size indication
Goedkope salontafel		Price indication
Industriële salontafel		Personal style description
Dienblad 50x50		Product measurement
Vloerlamp Muuto	Head term + modifier	Brand
Spiegel met koperen lijst		Material
Bijzettafeltje rond		Product shape
Bijzettafeltje wit		Colour
Loods 5 staande lamp	Head term + modifier + tail term	Store brand + application of product
Riverdale vintage dressoir		Brand + personal style description
Servies Villeroy en Boch		Brand + price indication
aanbieding		-

Table 1 Overview of the search queries used in su	irvey question regarding self-perceived CDM-intent
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All search queries in Table 1 originate from the dataset from Trendata and are all Dutch. We selected the queries based on different types of refinements and provided a variability of products. Table 1 shows the search queries, describes the anatomy of those queries and clarifies the type of refinements in each query.

3.2 Method: online questionnaire

To investigate the assumptions of the SQA-model we constructed an online questionnaire. This paragraph describes the construction of the questionnaire, the development of the CDM-scenarios and the process of creating an experimental search engine to simulate a search process.

3.2.1 Procedure

We constructed an online questionnaire using the program Qualtrics. The questionnaire consisted of three parts. The first part contained questions regarding demographics, search engine use and search behaviour characteristics. For the second part, participants were randomly assigned to a scenario and conducted a search, using the experimental search engine. Participants were automatically referred to the experimental search engine and exited the Qualtrics environment. During their search they produced at least one search query and answered two additional multiple-choice questions. Participants were automatically referred to a second Qualtrics environment after their search. The third and final part contained questions regarding query formulation, perceived CDM-intent and the extent to search for products.

The questionnaire contained questions that were adapted from previous studies and questions designed for this study. Questions regarding search task familiarity were adapted from Jian and Ni (2016). Questions regarding search query formulation were inspired by Spink (2002). Next to that we constructed questions to explore: search engine use, query formulation, extent to search for products and perceived CDM-intent. An overview of the measures and corresponding sources are stated in Appendix A Overview measures Pre-test.

3.2.2 Task scenario

In order to study the effect of CDM-intent of search query anatomy, two scenarios were developed. We created a scenario for purchase intent (P-intent) and a scenario for information search intent (IS-intent). The goal was to create a common setting for participants, in order to generate a natural response. We created an identical setting for both scenarios, that differed in the described CDM-intent. Scenario A (IS-intent) emphasized participants to envision a situation where they would merely search for information regarding a product of choice to fit into their interior. It was highlighted that there was no commercial intention yet. Scenario B (B-intent) emphasized participants to envision a situation where they would search for a product they would want to buy for their interior. The scenarios were displayed in the experimental search engine.

The data we retrieved from the experimental search engine provided us with:

- Anatomy of search queries
- Type of query refinements in search queries
- Number of words used in search queries
- The level of satisfaction with the retrieved results
- The likeliness to refine the search query based on the retrieved results
- Total number of searches of participants

3.2.3 The Experimental Search Engine (ESE)

We designed the Experimental Search Engine, hereafter shortened as the ESE, to resemble the look and feel of the commercial search engine Google. We choose to resemble Google as it has the biggest market share worldwide (82%) (Chris, 2019). By resembling the Google search engine, we provided participants with a similar experience in the ESE. We developed this approach as it does not require a lab setting, it is less time intensive and less invasive for participants. The experimental search engine operated similar to Google.com and all the retrieved results were real time retrieved via API connection with Google.

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٩	Type hier je zoekopdracht	٩		Ŷ
	Zoek		Google zoeken Ik doe een gok Google aangeboden in: Frysk	

Figure 5 Comparison of homepage: ESE (left) and Google (right)

In Figure 5 the homepages of both the ESE and Google are shown. We designed the interface to be similar to Google so users would experience less cognitive effort as it the interface is familiar to them. The main difference between the two is that the ESE only had one button to start searching. At the top of the homepage we created a textbox that provided participants with their scenario (Appendix C). Based on the scenario, participants entered a search query and continued to a results page.

Figure 6 and 7 show an example of a results page for the same search query in the ESE and Google. The figures demonstrate the main differences between the search engines marked with the red lines. In the design of the ESE we removed the bar for results in 'images' 'news' 'videos', next to that we removed the Google shopping area. We also disabled the function that offers query suggestions and the suggestion service 'near me'.



Figure 6 Comparison of the top of the results page: ESE (left) and Google (right)

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Figure 7 Comparison of the bottom of the results page: ESE (left) and Google (right)

To prevent participants from exiting the experimental environment, we created a sheer layer on top of the results. This made the results not clickable. At the footer of the results page we created a textbox with additional questions regarding participants' level of satisfaction and likeliness to adapt. Finally, participants received the option to continue searching and adapt their query or return to the Qualtrics

environment for the final survey questions. Screenshots of the homepage, results page and footer with additional questions can be found in Appendix C.

3.2.3.1 Technical details Experimental of the Search Engine (ESE)

In order to provide full transparency of our research method, we here describe the entire process to creating the ESE. Constructing the ESE required developing multiple elements in order to result in a working search engine that accommodated all requirements. The first element concerned the development of the front-end of the search engine in order for it to be similar to Google.com. First, the requirements were mapped and the layouts of the screens were designed. Based on the sketches we developed the webpages with HTML coding and tested the lay-out, buttons and other functionalities of the webpages.

As stated before, the footer of the results page provided the participant with two options 'adapt' or 'return to questionnaire'. When participants chose 'adapt' they repeated the process and adapted their search query. This process could be repeated as often as participants desired. Once satisfied with their results, participants could only exit through the 'return to questionnaire' button.

The second element of ESE was to create a database that stored user actions. In order to save the data collected in the search engine environment we created a relational database in mySQL and stored it via the Research Monitorboard from the University of Twente. The database saved the search queries, the answers to the additional questions and it recorded the adapted search queries corresponding with the additional questions.

The third element of ESE was to write a script in Rstudio using the package Shiny. The script provided us to host our html pages and to connect an API with Google.com and the ESE. This enabled ESE to retrieve real time search results for the submitted queries. As we can see in Figure 7 & 8, the results of Google and the ESE are not completely identical but very similar.

The fourth element of ESE was to ensure an effortless connection from and to Qualtrics. By including JavaScript, we ensured that the appointed scenario in Qualtrics was passed on to the ESE and participants were shown the scenario. After completing the scenario, participants returned to Qualtrics. We tested the exit from the ESE to the Qualtrics environment extensively to ensure an effortless flow. One of the difficulties of this method is that the output of the entire experiment are three separate files, one file with results to the first part of the questionnaire, one file with results to the final part of the questionnaire. In order to identify the results of a participant, we embedded a respondent ID and the assigned scenario in all parts of the survey.

3.2.3.2 Uncontrollable factors

Although the set-up of the ESE allowed us to control a great part there still were some uncontrollable aspects. While we were able to fully design the ESE and its functionalities, we were not able to control elements outside of the frame. For example, we could not block participants to use the arrows at the top left of the webpage that would refer them to the previous or next page. When participants would use these functionalities, it would increase the risk to harm our dataset. To prevent this from happening, we instructed the participants before they were referred to the ESE. Next to that, we could not block the exit button at the right corner of the webpage. In the case that participants would use that button, it would stop their participation and be noted as an incomplete response. Participants were only able to exit the ESE through the button we designed for it.

3.3 Pre-test of questionnaire

We conducted a pre-test to check the comprehensibility, readability and accessibility of the questionnaire and the ESE. In this paragraph we describe our sample set, the results and the alterations based on the feedback of participants and Trendata.

3.3.1 Sample set

The pre-test of the questionnaire was spread through convenience sampling. We collected data from 23rd of October to the 28th October and collected 23 responses in total. The samples were collected through an anonymous link of Qualtrics. Participants conducted the experiment and were encouraged to make notes on any difficulties or uncertainties they experienced. At the end, participants received a section where they could provide their notes. No personal data was stored and response was completely anonymously. The demographics of the sample set can be found in Table 2.

Table 2 Sample set Pre-test			
Gender	Ν	Education	N
Male	11	High school diploma	2
Female	9	Community college	3
		University of Applied Science	7
Age	Ν	Technical University	8
18 - 23	7		
24 - 30	9	Scenario	N
31 - 36	3	A – Information search intent	9
37 - 43	-	B – Purchase intent	11
44 - 50	1		
50*	-		

All participants were all adults (age \geq 18 years) and were frequent users of search engines. We monitored Qualtrics to ensure a somewhat equal distribution of scenarios. The pre-test originally contained 23 responses but three responses were removed because they did not complete the experiment. As the main data collection will be gathered through convenience sampling, we expect the most participants between the ages of 18-30. For that reason, the majority of our sample group also existed out of participants in that age category.

3.3.2 Results

Here we describe the results from the pre-tested questionnaire. As stated before the questionnaire existed out of three parts. Therefore, we split the results based on the belonging part.

Before the Experimental Search Engine

The questions regarding search engine use showed all participants are likely to use search engines for multiple types of information needs. Following, the majority of the participants described their search behaviour with:

- Tending to use lengthier queries when participants searched for specific products (90%)
- Tending to search longer for more expensive products (85%)
- Tending to search longer for products they were unfamiliar with (90%)

From the participants with IS-intent (N=9), eight participants stated that they use search engines as information source when they were to be in the situation of the scenario. From the participants with P-intent (N=11), ten participants stated that they use search engines as information source when they were to be in the situation of the scenario. This supports our assumption that people are very likely to

use a search engine in both scenarios and confirms the ESE to be an appropriate source to collect data on participant behaviour.

The Experimental Search Engine

The search queries submitted by the system did not show specific patterns, this is expected because of the small amount of participants and the small amount of search queries.

Search queries submitted by participants with IS-intent (N=9) were broadly in line with the assumptions of the proposed SQA model. The model assumes participants with IS-intent to formulate search queries with head terms, or head+tail terms. In the pre-test eight respondents corresponded with this assumption. Remarkably, one participant answered according the assumed query anatomy of P-intent.

Search queries submitted by participants with P-intent (N=11) were more diverse and less in line with the assumptions of the proposed SQA model. The model assumes participants with P-intent to formulate search queries with head+modifier terms, or head+modifier+tail terms. In the pre-test only two participants corresponded with the assumption. The other search queries were more scattered.

Furthermore, we observed that the additional questions regarding level of satisfaction and likeliness to adapt, were misunderstood or misread by some participants. Six out of twenty participants indicated that it would be very likely they would adapt their search query, but did not actually adapt. Only two participants actually refined their search, others chose the option to return to the questionnaire after their initial query.

After the Experimental Search Engine

Question 17 and 19 questioned which modifier- and tail refinements would be most likely used by participants (self-report). The most likely term refinements were style and size indication and the most likely modifiers to be used were brand specification and objective specification of product characteristics. The results of question 18 and 20 were poorly and did not provide additional value to question 17 and 19. Question 21 regarding product search intent showed that participants were most likely to search for 'laptops' (mean= 9.37), 'mortgage' (mean= 7.89), 'electric bike' (mean= 7.79) and 'sneakers' (mean= 7.05). The products least likely to search for were 'toothpaste' (mean= 1.69), 'matrass' (mean= 5.47) and 'winter coat' (mean= 6.58).

Question 22 regarded the self-perceived CDM-intent categorization of search queries. The results show that seven out of thirteen queries were categorized corresponding with the assumptions of the SQA model. One search query was categorized as the other CDM-intent, this query contained the refinements 'shape of product'. For 5 of the search queries no conclusive statements could be made.

3.3.3 Alterations based on pre-test

The pre-test of the questionnaire resulted in some points of notice to take into account for our study. Based on the feedback of our participants and Trendata we formulated some alterations for the final study.

Feedback of participants

The feedback of participants resulted in some minor alterations in the questionnaire. The points of remark mainly concerned the length of the questionnaire and formulation of the questions and statements. Next to that, there were no substantive remarks from the participants. The remarks regarding the length of the questionnaire were to be expected as commonly questionnaires take up a

maximum of 5-7 minutes. The questionnaire of the study takes fifteen to twenty minutes as it an experiment which could also be performed in a lab setting.

Feedback of the company

Since this study is conducted in cooperation with Trendata, therefore the questionnaire included some questions of their interests. The pre-test resulted in the alteration of two questions regarding user goals of online search, questions 5 and 9. Question 5 focused on the users' likelihood of searching with informational, navigational and transactional information needs (Broder, 2002). Question 9 focused on the four situations of searchers according to Google, searching to think, do, go and buy (Gevelber, 2016). Because of the length of the questionnaire and possible participant fatigue, we decided to change the statements of both questions, these were more or less random. We now chose to provide the participants with statements with one setting per question.

Alterations

In the pre-test the constructs of media expertise and search topic familiarity (paragraph 2.2.1) were not tested enough to be able to show effects on query formulation. Therefore we revised question 4 and stated it more precisely. Participants now have to report their frequency of using search engine. Next to that we added three statements and a question regarding search topic familiarity and perceived easy of use of the ESE. We adapted questions 13 and 15 and to provide participants with more context that was in line with the scenario in question 14 or 16.

Additionally, since we added questions regarding search topic familiarity and media expertise, we removed questions to maintain the same length of filling out the survey. Therefore, we removed question 18 and 20 because of their lack of value to the study. Next to that, question 21 was shortened in a way that all categories were still present. The final list of measures and the final questionnaire can be found in Appendix C and D.

3.4 Data preparation for analysis

Before we could start analysing the results we first had to prepare the data. The sample frame of the study is delimited to Dutch adults within the age of 18 to 65. As the actual sample frame consists out of 11.2 milion people (Statline, 2019), we required 150 participants per scenario to maintain a confidence level of 95% (Creative Research Systems, 2019). In total we collected 410 participants, of which four were not qualified. Two participants were below the age of 18 and two did not use search engines on a frequent basis. 45 participants did not complete the questionnaire (completion rate=89%) and invalid responses were removed ($N_{excluded}$ =25). This resulted in 336 valid responses which we gathered for analysis.

Merging the files

As mentioned, the questionnaire existed out of three parts. The first and third part were located in Qualtrics and the second part was the ESE. All three parts provided us with a datafile as output. To analyse the results of the study, we first had to merge the three files together in order to have all participant responses in one file. Using the program Knime, we merged the datafile using the Participant ID to connect responses.

Cleaning the data

The ESE provided us with the search queries participants submitted to the system. Before we start analysing those queries, we first cleaned the search queries removing punctuations, stop words and making all queries singular.

Chapter 4 Results

The goal of our study is to explore relations between search queries and CDM-intents. In this chapter we tested the assumptions of the proposed SQA-model. We collected data from November 9th to December 16th. Participants were gathered through convenience sampling and an anonymous link was shared through social media of the researcher, throughout the networks of friends, family and colleagues and posted on the SONA platform of University of Twente.

4.1 Participants

Demographics

Most participants were between the age of 18 and 30 years old (M=26, SD=9.4) and more than half of the participants in our sample were females (N = 217, 65%). 75 percent of the participants graduated on from university of applied science or technical university. Overall, participants were frequent users of online search engines, as 98% stated they used a search engine as least once or multiple times a day.

Demographics			Search Engine Use		
Age	Ν	%	Search frequency ^{a)}	Ν	%
18 to 23	184	55	More than once a day	316	94
24 to 30	97	29	Once a day	12	4
31 to 36	13	4	Weekly	8	3
37 to 43	13	4	Extent to search for products ^{b)}	М	SD
44 to 50	9	3	Shopping good: electronics	9.0	1.6
50 ⁺	20	6	Unsought good: mortgage	8.7	2.2
Gender Education	Ν	%	Shopping good: home essentials	6.5	2.8
Males	119	36	Shopping good: fashion	5.5	2.8
Females	217	65	Convenience good: hygiene	1.1	1.6
Education	Ν	%	Preferred Information search source	Ν	%
No high school diploma	1	1	before scenario ^{c)}		
High school	59	18	Website for second-hand products	66	20
Community college	27	8	Websites of stores	246	74
University of Applied Science	119	36	Search engines	239	72
Technical University	130	39	Social Media	87	26
			Other	15	5

Table 3 Demographics and Search Engine Use of the sample set.

Notes:

a) Self-reported

b) Self-reported on a scale from 0 to 10

c) Self-reported multiple-choice question. Results do not add up to a 100% as the answer options were multiple response

Search engine use

We questioned participants on their extent to search for different product categories in order to justify our preposition that people search online for shopping goods. The results in Table 3 show that participants tend to search for shopping goods to a great extent ($M_{electronics}=9$; $M_{home-essentials}=6.5$; $M_{fashion}=5.5$). The results show participants barely tend to search for convenience goods ($M_{hygiene}=1.1$). This agrees with Holbrook and Howard's theory (1977) which describes that people do not put much effort in products they purchase on a regular basis.

Task suitability

In order to investigate whether the results of the ESE could reflect some kind of behavioural tendency, we evaluated the preferred information search source of participants in a situation similar to the scenario. Data shows 72% of the participants prefers to use search engines among other things. Participants also preferred to use the website of stores (74%) as their information source. This shows participants normally would use a search engine as information source in a similar situation and thus can the results of the ESE reflect some kind of behavioural tendency.

4.2 Query formulation process: contextual factors

To see if the query formulation in the ESE was possibly influenced by contextual factors, we investigated search topic familiarity and perceived ease of use of the ESE. The correlation analysis shows significant relations for all variables with the difficulty to formulate search queries. Below we elaborate on our findings.

4.2.1 Search topic familiarity

Following literature from Aula (2003) we suspected a relation between topic familiarity and query formulation. In our study we questioned participants regarding their task ability, task familiarity and topic familiarity. All questions were 5-point Likert scale statements. Overall, participants were able to place themselves into the scenario and perceived themselves to be able to perform the task (M=4.15, SD=.681). On average, participants were also familiar with a situation similar to the scenario (M=3.85, SD=.931). Next to that, most participants showed they have searched before for products in the segment of furniture or accessories (M=4.06, SD=.972). To see if these variables correlated with participants' experienced difficulty to formulate queries in ESE we ran the analysis (Table 4).

Results show that the difficulty to formulate queries has a significant negative correlation with all variables to some extent. As participants' task ability (r=-.173, p<.001), task familiarity (r=-.171, p<.001) and search topic familiarity (r=-.109, p<.05) increases, the difficulty to formulate queries decreases. The outcome has a logical explanation. People experience less difficulty to perform a task as they are familiar with the process and the task. From the results we can conclude that topic familiarity, task ability and task familiarity affect the difficulty to formulate queries and that it simplifies the process of query formulation. These results are in line with literature from Aula (2003) and Hu, Lu and Joo (2014). We checked for significant differences between groups (IS-intent, P-intent) but none were found.

4.2.2 Perceived ease of use of the Experimental Search Engine (ESE)

In paragraph 2.2.1 we discussed the effects of media expertise and the influence on query formulation. In our questionnaire we investigated the construct by measuring frequency of search engine use and participants' perceived ease of use (self-report 5-point Likert scale). According to studies (Aula, 2003; Yilma, 2019), users that regularly use a search engine are able to formulate search queries more effortless. In our study, 98% of the participants used a search engine on a daily basis.

We measured the perceived ease of use after the ESE (5-point Likert scale) and results show that most participants experienced the ESE as easy to use (M=4.26, SD=.583). To see if the perceived ease of use correlated with the difficulty to formulate search queries we ran the analysis.

The results show that the difficulty to formulate search queries negatively correlated with the perceived usability of ESE. This indicates that when the ESE is perceived as an easy to use, people did not experience difficulty formulating search queries. This also indicates that participants who struggled to operate ESE, also perceived greater difficulty to formulate their search queries. These results are in

line with previous studies (Aula, 2003; Yilma, 2019). We also checked for significant differences between groups of scenario, but none were found.

Constructs:	Task ability	Task familiarity	Search topic	Perceived ease
			familiarity	of use
Task ability	-			
Task familiarity	.601**	-		
Search topic familiarity	.433**	.580**	-	
Perceived ease of use	.240**	.103	.136*	-
Difficulty to formulate search queries	173**	171**	109*	356**

Table 4 Correlations: Results of the test

Notes:

* Correlation is significant at α =0.05 level, p<.05

** Correlation is significant at α =0.01 level, p<.001

Both constructs show significant correlations with the difficulty to formulate queries, however we must be cautious with these results. Correlation merely argues a relation between variables, not causation. It does not necessarily prove that the difficulty to formulate queries is caused by the perceived of use of the ESE or search topic familiarity.

4.3 Participant behaviour: the effects of scenario

In this paragraph we discuss the participants behaviour in the ESE by looking at the data other than search queries. In the ESE, participants formulated an initial query and answered two additional questions regarding their satisfaction with the retrieved results and their likeliness to adapt their query. Next to that we discuss the classification of 13 search queries as either IS-intent or P-intent. In this paragraph we are studying the level of satisfaction, the likeliness to adapt the initial query and the classification of queries and we look at the effects of the assigned scenario (IS-intent: N=166; 49,4%; P-intent: N=170; 50,6%).

4.3.1 Level of satisfaction with the retrieved results

In this paragraph we investigate participants' level of satisfaction (5-point Likert scale) with the retrieved results of the ESE. We investigate for effects of CDM-intent (expressed by the scenario) and query adaptation. We ran a two-way ANOVA analysis to check for effects of CDM-intent (IS-intent; P-intent) and query adaptation (#query adaptation=0; #query adaptation≥1) on the level of satisfaction.

Factors	F-value	P-value
CDM-intent	1.873	.172
Query adaptation	154.703	<.001*
CDM-intent* Query adaptation	4.181	.042**

 Table 5 Level of satisfaction: Two-way ANOVA analysis - interaction and main effects.

Notes: Dependent variable: level of satisfaction * Significant at α =.05, p<.05

** Significant at α=.001, p<.001

The results in Table 5 show a significant interaction between the effects of CDM-intent and query adaption on level of satisfaction (F=4.181, p=.042). In Figure 8 we depicted the interaction, it also shows a strong difference in mean level of satisfaction for participants that searched once and participant that adapted their initial search query.

Table 5 also shows main effects for CDM-intent and query adaption. The data shows no significant differences in mean level of satisfaction between CDM-intents (F=1.873, p=.172). We found a significant main effect for query adaptation and the mean level of satisfaction (F=154.703, p<.001).

Participants that adapted their initial query (22%) were significantly less satisfied with the retrieved results (M=2.26, SD=.964) than participants that decided not to adapt (M=3.84, SD=.958).



Figure 8 Interaction effect of CDM-intent and query adaptation on mean level of satisfaction

We further explored the participants that adapted their initial query and found that their mean level of satisfaction increased (M=3.76, SD=1.204). A t-test showed a significant difference in the mean level of satisfaction for initial queries and adapted queries (t=10.134, p<.001).

4.3.2 Likeliness to adapt

In this paragraph we investigated participants' likeliness to adapt (5-point Likert scale) their initial query. We investigate for effects of CDM-intent (expressed by the scenario) and query adaptation. We ran a two-way ANOVA analysis to check for effects of CDM-intent (IS-intent; P-intent) and query adaptation (#query adaptation=0; #query adaptation≥1) on the likeliness to adapt.

Factors	F-value	P-value	
CDM-intent	.185	.667	
Query adaption	198.269	<.001*	
CDM-intent* Query adaptation	.001	.976	

Table 6 Likeliness to adapt: Two-way ANOVA analysis - interaction and main effects.

Notes: Dependent variable: likeliness to adapt * Significant at α=.001, p<.001

The results in Table 6 show no significant interaction between the effects of CDM-intent and query adaptation on the mean likeliness to adapt (F=.001, p=.976, ns). In Figure 9 we can also see that there is no interaction, however it shows a difference in mean likeliness to adapt between participants that did not adapt and participants that did adapt their initial search query.

Table 6 shows the main for CDM-intent and query adaptation. The data shows no significant differences in mean likeliness to adapt between CDM-intents (F=.185, p=.667, ns). However, the data showed a significant main effect for query adaptation (F=198.269, p<.001). Participants that adapted their initial query (22%) (M=4.37, SD=.779) were significantly more likely to adapt than participants that decided not to adapt their initial query (M=2.33, SD=1.142). This shows that participants' self-reported tendencies matched their behaviour.



Figure 9 Interaction effects of CDM-intent and query adaptation on mean likeliness to adapt

We further explored the participants that adapted their initial query to see if their likeliness to adapt decreased after the second search. We found that the likeliness to adapt decreased after query adaption (M=2.36, SD=1.373). A t-test showed a significant difference in the mean likeliness to adapt for initial queries and adapted queries (t=-10.137, p<.001).

We can associate the decrease in likeliness to adapt with the increase in mean level of satisfaction from paragraph 4.3.1. The results show that participants were more likely to continue their search to increase their mean level of satisfaction with the retrieved results from the ESE.

4.3.3 Self-Reported Query Classification (from survey)

In addition to the experiment in the ESE where participants formulated search queries based on CDMintent, we also created a survey question for participants to categorize search queries based on their perceived CDM-intent. Participants received 13 queries and categorized them as either IS-intent or Pintent. The results of the categorization can be found in Table 7.

The results show that the search queries most often categorized as IS-intent (\geq 60%) were 'groot tv meubel', 'vloerkleed', 'industriele salontafel'. All queries matched the assumptions of the proposed SQA-model as the anatomy of the queries are head terms ('vloerkleed') or head+tail terms ('groot tv meubel', 'industriele salontafel').

For P-intent, the search queries most categorized as P-intent (\geq 60%) were 'vloerlamp muuto', 'dienblad 50x50', 'servies Villeroy & Boch aanbieding'. One query did not match our assumptions of the proposed SQA-model. Remarkably, participants categorized the search query 'dienblad 50x50' as a query with P-intent, the SQA model describes the anatomy of the query as IS-intent (head+tail).

The queries that matched our assumptions had the anatomy head+modifier ('vloerlamp Muuto') or head+modifier+tail ('servies Villeroy & Boch aanbieding'). These results show that our participants perceived the modifier 'brand' as a strong indicator of P-intent.

Table 7 Self perceived query categorization based on participant categorization	ategorization based on participant categorization
---	---

Query	Expected	Categorized	Categorized	Assumptions about CDM-
	CDM-	as IS intent	as P intent	intent hold/ do not hold
	intent	(%)	(%)	
Vloerkleed ^a	IS	64.3	35.7	\checkmark
Opbergmand ^a	IS	53.3	46.7	\checkmark
Groot tv meubel ^b	IS	67.3	32.7	\checkmark
Goedkope salontafel ^b	IS	52.7	47.3	\checkmark
Industriele salontafel ^b	IS	62.2	37.8	\checkmark
Dienblad 50x50 ^b	IS	29.2	70.8	×
Vloerlamp Muuto ^c	Р	35.7	64.3	\checkmark
Bijzettafeltje rond ^c	Р	58.3	41.7	×
Loods 5 staande lamp ^c	Р	40.8	59.2	\checkmark
Bijzettafel wit ^c	Ρ	55.7	44.3	×
Spiegel met koperen lijst ^c	Р	48.5	51.5	\checkmark
Servies Villeroy & Boch aanbieding ^d	Р	34.8	65.2	\checkmark
Riverdale vintage dressoir ^d	Р	42.6	57.4	\checkmark

Notes:

a) indicates query anatomy: head

b) indicates query anatomy: head+tail

c) indicates query anatomy: head+modifier

d) indicates query anatomy: head+modifier+tail

×/√ indicates whether the assumptions does not/ or does hold

To see if the assigned scenario influenced participants in their categorization we ran a Chi-square test on all queries. The results showed no significance, thus we can say participants did not show bias towards their assigned scenario.

4.4 Search Query Anatomy: Results from ESE

In this paragraph we discuss the results of the ESE and investigate the search queries that participants submitted. The scenarios only stated the main theme and did not impose particular queries. Participants were free to choose their own topic to search for, this resulted in the topics: Furniture, Deco, Lighting, Plants, Electronics and Other. In this paragraph we discuss the average number of words in a search query, the number of searches, search query anatomy and search query refinements. We investigate the results and explore the data for differences between groups.

4.4.1 Average number of words

We explored the submitted search queries and investigated the average number of words used per query. Participants averagely used 2.19 words per query, this is slightly below the average of 2.4 words, stated in literature (Spink et al., 2001). Between groups there was a slight difference between participants with IS-intent (M=2.14 words, SD=.98) and participants with P-intent (M=2.24, SD=.956). However, this difference was not significant (t=-.859, p=.391, ns).

The results showed that the average number of words used per query increased as participants continued searching and adapted their query ($M_{second query}=2.94$, $SD_{second query}=-1.060$; $M_{third query}=3.12$, $SD_{third query}=1.111$). The length of the second queries were significantly longer than the initial queries (t=5.259, p<.001). To test for differences between groups we used a t-test and found no significant differences for the second and third queries (2^{nd} query: t=.652, p=.516, ns; 3^{rd} query: t=-.509, p=.618, ns). The data showed no significant differences between groups in the average number of words of their adapted queries.

4.4.2 Average number of searches

To study the extent to search we investigated the average number of searches of participants. Participants searched on average 1.29 times (SD=.69), this again shows most participants only searched once. Participants with IS-intent (M=1.29, SD=.643) searched as much as participants with P-intent (M=1.29; SD=.735). Hence why we did not find a significant difference between groups (t=-.66, p=.948).

4.4.3 Search Query Anatomy – testing the SQA model

The SQA model proposed a relation between search query anatomy and CDM-intent and suggests that we can explain search query anatomy through CDM-intent. According to the assumptions of the model, participants with an IS-intent are more likely to formulate search queries using head terms, or head + tail terms. We refer to these query anatomies as IS-anatomy. The other assumption is that participants with a P-intent are more likely to formulate search queries using head + modifier terms, or head + modifier + tail terms. We refer to these query anatomies as P-anatomy. In Table 8 we summarized the search query anatomy for all initial queries of our participants.

Query Anatomy:	y IS-Anatomy					P-Anatomy				
· · · · · · · · · · · · · · · · · · ·	Hea	ad	Head	+tail		Head+mo	odifier	Head+mo +tail	difier	
CDM-intent	Ν	%	Ν	%	Total	Ν	%	Ν	%	Total
					%					%
IS-intent	54	16.1	60	17.9	34	47	14	5	1.5	15.5
P-intent	48	14.3	50	14.9	29.2	50	14.9	22	6.6	21.5

Table 8 Summary of the search query anatomy of all initial search queries from the experiment

The main objective of the experiment was to investigate the effects of CDM-intent on search query anatomy. We investigated the effects of CDM-intent (expressed by scenario) on search query anatomy with a binary logistic regression model. The binary dependent variable was search query anatomy (0/1, 0=IS-anatomy, 1= P-anatomy) and the predictor was CDM-intent (expressed by scenario).

We found that CDM-intent is a significant predictor of search query anatomy (Wald χ^2 =4.361, p=.037). This confirms the assumptions we made for the SQA-model and confirms there is a direct effect of CDM-intent on search query anatomy. In our model we treated P-anatomy as reference point. The results in Table 9 show that the chance of writing a search query with P-anatomy increases with 61% (1-Exp(β)=.611) when participants were in a scenario for Purchase intent, opposed to participants with a scenario for Information search intent (β =.477, p=.037).

Dependent Anatomy (0/1	variable: !)	Query	Wald X ²	β	Εχρ(β)	p-value
Predictor CDN	1-intent (by sc	enario) ^{a)}				
Intercept			22.003	785	.456	<.001**
P-intent			4.361	.477	1.611	.037*

Table 9 Results summary for the effect of CDM-intent (P-intent) on Query Anatomy (P-anatomy)

Notes:

a) The binary logistic regression uses P-anatomy as reference point.

* Coefficient is significant at α =.05, p<.05

** Coefficient is significant at α =.001, p<.001

Table 10 shows the results for participants with the IS-intent scenario. It shows that the chance of writing a search query with P-anatomy decreases with 38% (1-Exp(β)=.379), when participants were in a scenario for Information search intent, opposed to participants with a scenario for Purchase intent (β =-.477, p=.037).

Table 10 Results summary for the effect of CDM-intent (P-intent) on Query Anatomy (P-anatomy)

Dependent Anatomy (0/1)	variable:	Query	Wald X ²	β	Εχρ(β)	p-value
Predictor CDM	-intent ^{a)}					
Intercept			22.003	.785	2.192	<.001**
IS-intent			4.361	477	.621	.037*

Notes:

a) The binary logistic regression uses the lowest value of the dependent variable Search Query Anatomy (IS-anatomy) as reference point.

* Coefficient is significant at α =.05, p<.05

** Coefficient is significant at α =.001, p<.001

Table 9 and 10 show the effects of both scenarios on the chance to formulate search queries with a Panatomy. The chance to write search queries with an IS-anatomy work the same. The chance of writing a search query with IS-anatomy increases with 61% (1-Exp(β)=.611) when participants were in a scenario for Information search intent. The chance of writing a search query with IS-anatomy decreases with 38% (1-Exp(β)=.379), when participants were in a scenario for Purchase intent. In conclusion, we found significant support for the assumptions of the proposed SQA model and found a direct effect of CDM-intent on search query anatomy. In Figure 10 we depicted the SQA model we proposed in chapter 2 and included the results of the binary logistic model.



Figure 10 SQA model – the chance of prediction of Search query anatomy for scenario of Purchase intent.

In Figure 10 we depicted the chance of prediction of search query anatomy for participants that were in a scenario for Purchase intent. We inserted two example queries from the participants in that scenario. One participant submitted a search query with the predicted anatomy for purchase intent (Tafellamp zwart koper). The other participant submitted a search query that based on the assumptions of the model we would not expect to see and had a search query with IS-anatomy (Lange Spiegel woonkamer).

4.4.4 Search Query Refinements

We tested the assumptions of the SQA-model and found a direct effect of CDM-intent on search query anatomy. In this subparagraph we concentrate on query refinements participants used in their search queries. In chapter 3 (Figure 4) we contextualized the SQA-model and categorized the type of

refinements in queries based on the queries in the dataset of Trendata. Based on the intent role of the refinement we categorized it as 'tail' or 'modifier'. Therefore, refinements such as brands (e.g. Ikea or BOL.com) and materials (e.g. wood or metal) are categorized as modifiers as they determine a certain specification and direction of search. Refinements such as personal style (e.g. modern or industrial) and product application (e.g. living room) are categorized as tail terms as they are broader and do not directly indicate a certain direction of search. We summarized all refinements that were used by our participants in Table 11.

Refinement	IS-scenario (N)	IS-scenario (%)	P-scenario (N)	P-scenario (%)
Brand ^M	8	2.38	13	3.87
Material ^M	18	5.36	20	5.95
Product properties/types/models ^M	12	3.57	19	5.65
Shape ^M	8	2.38	3	0.9
Colour ^M	20	5.95	26	7.74
Price ^T	6	1.79	12	3.57
Broad size indicator ^T	5	1.49	11	3.27
Personal style ^T	27	8.04	31	9.23
Measurements [⊤]	2	0.6	2	0.6
Application of product T	35	10.42	3	0.9
Location ^T	2	0.6	2	0.6

Table 11 Summary of used Query Refinements in the experiment

Notes:

^M) indicates refinement was classified as modifying term

^T) indicates refinement was classified as tail term

Table 11 does not show big differences between the groups and the refinements they used. The only refinement which showed to be significantly more used by participants with IS-intent was 'application of products' (t=2.156, p=.032). We fitted a binary logistic model and found no significant support for CDM-intent to predict the chance that participants used certain refinements.

Since we were not able to find distinctive refinements in search queries for the scenarios, we further investigated the anatomy of the search queries of our participants. In Figure 11 we conducted a network analysis of the search query anatomies of all initial search queries from our participants.



Figure 11 Network Analysis of the Search Query Anatomy

The chart illustrates the nature of search queries and the relationship between the head, modifier and tail parts. The size of the nodes represent the relative percentage of searches with that structure. The color of the nodes and links represent the scenarios in which the queries were made. In the chart we can clearly see that participants in the Information search scenario often produced queries using only head terms, or combining head and tail terms. The charts shows more scattered results for participants in the scenario of purchase intent.

In Figure 12, we exemplified a network analysis of the intial search queries. We used the head term 'stoel' (translation: chair) and explored how participants searched for this product.



Figure 12 Network Analysis of query refinements

The chart clearly illustrates that participants in the scenario of purchase intent have more depth in their search query formulation. Here again we see the differences in query anatomy and see that participants in the scenario of information search intent formulate more general search queries. We can relate the results in Table 11 to what is shown in Figure 12. Here we can for example see that participants in the scenario of purchase intent more often used colours, opposed to participants in the scenario of information.

4.5 Additional results

Next to the results on search query formulation and the search query anatomy, we found some results on query reformulation and (self-perceived) characteristics of participants search behaviour. We discuss these results in the following sub paragraphs.

4.5.1 Search Query Reformulation

The results of our study focused on the initial query of participants. Only 22% of the participants refined their initial query. In this paragraph we focus on the second queries of our participants and investigate how participants reformulated their initial query and look for differences between groups.

Query reformulation refers to an event where a user performed a search and decides to adapt their query. Many taxonomies regarding query reformulation have been established. In this study we apply the taxonomy of Jansen, Booth & Spink (2009). The article defines six types of reformulation: new; assistance; content change; generalization; reformulation; and specialization. According to them the types 'assistance' and 'content change' refer to a situation where participants reformulate their search queries based on search engine functionalities. For example 'assistance' refers to users reformulating their query through the search engine feature 'Are you looking for...?'. 'Content change' refers to users changing their source of information e.g. situations where they would change from web to image search. In the ESE, these two functionalities were not available for participants therefore we do not consider these types of reformulation.

'New query' refers to a reformulation where the previous query is completely replaced with new terms. 'Generalization' refers to a reformulation where the query is made more general by adding new terms that generalize the direction of search. 'Reformulation' refers to a reformulation where the topic of the query stays the same, but terms are changed. 'Specialization' refers to a reformulation where the query is further specialized, adding new terms which narrows the direction of search.

Type of reformulation	IS-intent	P-intent
New query	3	-
Generalization of initial query	2	2
Reformulation of initial query	3	8
Specialization of initial query	26	26
No change in query	1	1

Table 12 Summary of Query Reformulations in the experiment

In Table 12 we summarized the reformulation types of the participants in the experiment. By far, most participants reformulated their queries by specializing it and added more information to their initial query using either tail or modifying terms. We found no significant differences between groups (t=-1.144, p=.256, ns).

4.5.2 Characteristics of search behaviour (self-perceived)

In our questionnaire we questioned participants about their self-perceived behaviour during their information search (5-point Likert scale). We developed some statements regarding multiple aspects search behaviour (Appedix E; Question 11). We questioned participants about the influence of product preference, product price, product familiarity. The statements in the questionnaire resulted in the following findings:

- Participants tend to use more search terms to describe a product, when they already have a specific product in mind (88%).
- Participants tend to search more extensive for a product that is expensive (77%).
- Participants tend to search more extensive when they are unfamiliar with a product (86%).

From this we can derive that participants tend to search more extensive in order to decrease uncertainties they might have regarding products. By gathering more information, they tend educate themselves more before making the decision to purchase. Statement 1 is somewhat in line with our SQA-model, where we state that people produce more specific queries when they have a purchase intent. Statement 2 and 3 add further detail to the information search as participants claim they search more extensive for pricier and unfamiliar products.

Chapter 5 Discussion

The goal of the study was to investigate search queries from a perspective of consumer decision making and we proposed a model to describe search query anatomy in relation to consumer decision making intent. Using an innovative approach, we tried to resemble a fully working environment of a search engine and investigated whether our assumptions hold.

The main findings support our assumptions and show that consumer decision making intent is a significant predictor for search query anatomy. According to our data, participants produced more specific search queries when they were in the purchase scenario. Participants that were in the information search scenario produced more general search queries. This finding is in line with the study of Su et al. (2018) were they found users to perform similar behaviour. Our data shows that participants with a scenario for IS-intent are more likely to write search queries with the anatomy 'head' or 'head+tail'. Participants with a scenario for P-intent are more likely to write search queries with the anatomy 'head+modifier' or 'head+modifier+tail'.

To be more precise, the results of our binary logistic regression show that the chance of writing a search query with Information Search-anatomy increases with 61% for participants that were in scenario Information Search-intent (IS-intent), opposed to participants that were in scenario Purchaseintent (P-intent). The chance of writing a search query with Purchase-Anatomy decreases with 38% for participants that were in scenario Information Search-intent. The results for participants with the scenario for P-intent are the same. The chance of them writing a search query with P-anatomy increases by 61%, while the chance of writing a search query with IS-anatomy decreases with 38%.

We also studied the type of refinements in the categories of query anatomy: modifiers and tail terms. Our data only found the refinement 'application of product' to be significantly more used by participants with the scenario for IS-intent. This refinement was categorized as tail term, thus we also expected it to be more used by participants with IS-intent as it refers to general terms. Contrary to studies of Dotson et al. (2017) and Jun et al. (2014) we did not find that brand as a refinement, specifically indicates purchase intent.

The results of this study show there is a relation between consumer decision making intent and search query anatomy. While our findings were really interesting, we are also cautious with the interpretation. While our novel approach strived to resemble an environment of a search engine such as Google, the search of participants still might deviate from their natural behaviour. Participants formulated a search query based on the assigned scenario, not based on their own specific needs at that moment. Nevertheless, the findings still suggest an interesting approach for professionals to analyse search queries of their website visitors. They would be able to track the search queries that visitors land on their website with. By tracking these queries, professionals can determine cdm-intent and anticipate on that, for example by providing targeted advertisements.

Next to the main results of our study, we discovered an interesting finding on search query formulation. Our data showed that consumers were able to formulate their search queries better when they perceived themselves familiar with the topic and the tool they used. This result ties in well with previous studies wherein was showed that people are more able to translate their needs into search queries when they have a certain familiarity with the topic and used media (Yilma, 2019; Aula, 2003). This finding could be interesting for professionals to gain insights in their visitors, for example retailers. By simplifying their website and webshop environment, making it effortless to use for people, consumers would also experience less problems formulating their needs and produce effective search queries. In such situations, retailers would be better able to assess consumer needs by studying their search queries.

5.1 Theoretical implications

An important contribution of the current study is the SQA-model and its ability to predict the chance of search query anatomy based on CDM-intent. We identified CDM-intent as a significant predictor for search query anatomy. Based on our data we can state that people tend to produce queries with a certain anatomy based on their CDM-intent. In line with the ideas from multiple researchers (Yu & Ren, 2012; Roy et al., 2015; Li, 2010; Wang et al., 2010) we can concluded that search queries are able to clarify consumer intent. We found that consumers with a purchase scenario are more likely to issue specific queries than consumers with an information search scenario. These results are in line with the study from Ramlall et al. (2011) where they claim the specificity of a search query can imply a consumer position in the purchase funnel.

Opposed to the study of Ramaboa and Fish (2018) we did not find search query length to be a significant indicator for user intent. Our data did not find any significant differences between the groups and their average number of terms in a search query. Also the mean average number of words were also lower in our study compared to others, for example Spink et al. (2001). The difference could stem as an effect of the online environment participants had to use and the artificiality of the process.

Next to implications of the results of our study we would also like to emphasize the contribution of the applied approach. By creating the Experimental Search Engine we were able to control our online environment to a great extent without the need of a lab setting. We believe our method improved the quality of our collected data since using a search engine is an action people perform rather intuitively. With our design we were able to collect data from participants and interrupted their natural behaviour as minimal as possible. The design provided us control and enabled us to collect participants at a larger scale. This method enabled better time management for both the researchers and the participants as the experiment could be done from a distance, at any given time. This form of data collection can help many studies to collect data from their participants more unobtrusively. The data to be collected is not limited to only search queries, for example one can also track click behaviour, time spent and other measures of behavioural tendency.

5.2 Practical implications

We believe that our findings will help online marketeers and data analysts to gain new insights into the search behaviour of customers and potential leads. More specifically, the results of the study show that consumers tend to formulate search queries in a specific way. The study provides professionals with an approach to determine consumer intent by analysing the search queries consumers land with on their site. When consumers land on webpages using a search engine, their search queries are stored in databases for example in Google Ads and available for online marketers to analyse. By analysing the query based on the search query anatomy, marketers can determine the consumer intent and use the information to support them in choices regarding advertisement, content strategy or even website navigation.

Another objective of using the SQA model is that it can be applied to improve conversion. Based on the search query anatomy, marketers can determine which consumers are more likely to be a lead and interested in a purchase. It would be highly interesting to combine internal sales data with the results of the study and see if we are able to find patterns between the search query anatomy and the internal sales data.

5.3 Limitations

The present study presents several limitations. Most limitations were generated by the design of our study by using the experimental search engine. Although we were able to control the majority of the

experimental search engine, we were still somewhat limited. The website of the experimental search engine was well controlled through the experimental setup and design, the environment outside of the frame however could not be controlled. For example, we were not able to control buttons outside the frame such as the navigation and exit button. Any actions performed outside of the frame, could harm the data collection. Besides that, the online environment also required participants to search in one session without expiring. This could not be controlled, hence why we specifically instructed participants prior to entering the ESE. In the case that the experiment was conducted in a laboratorial setting this limitation would have been more manageable. Nevertheless, that would cost more time to collect participants and would be more invasive on participant search behaviour.

Another limitation to be considered was the artificiality of the online environment and the differences with other search engines. For example, search engines normally provide users with many information options. For example, search engines such as Google provide the 'query suggestion' option, providing searchers with new queries for their initial query. In the experimental search engine we deleted the option for 'query suggestion' and deleted other information sources (e.g. image and video). We prevented users to click on the results by adding a sheer screen, we did this so participants did not leave the artificial environment. This limitation might have influenced participant behaviour to some extent, however by trying to resemble Google as much as possible, we believe this was only little.

We also consider the use of scenario as a limitation to the study. Although the scenarios were pre-tested, we are aware that we cannot ensure full ecological validity because of the obtrusive characteristics of assigning scenario. By providing participants with a thorough and precise description in the scenario we tried to minimize unclarities as much as possible. Next to that, we did not impose specific queries on participants and allowed them to produce search queries on any topic they wanted.

Another set of limitations comes from our sample group as the sample composition and sampling method do not guarantee representativeness. Through randomization, we ensured the groups for both scenarios to be comparable to each other as the groups had similar characteristics. Next to that we strived for a questionnaire based on reliable measures from previous studies. However, we also created questions without literary support and pretested these to ensure applicability.

To wrap up, we believe that all results and main conclusions can be considered valid starting points for future studies in the field of search query analysis and consumer decision making. We do not claim that this study is complete by itself. We merely present the first steps towards a promising field of research.

5.4 Future recommendations

The results of this study are very encouraging, but more research is needed further explore search query anatomy in relation to consumer decision making intent and to improve the SQA model. In order to improve the prediction rate of 61% of our SQA model, more quantitative research among consumers is needed to explore relations between search queries and consumer decision making intent. Future studies should focus on products and services other than furniture and home accessories. Next to that, researchers should consider collecting a larger and more diverse sample of consumers. We also think it could be very valuable if future studies take into account effects of variables such as 'level of involvement in product' and 'frequency of buying' and explore if those have an effect on the anatomy search queries.

One approach for future studies to presumably improve the model and making it more precise, could be through the use of Artificial Intelligence. We think it could be very valuable to study the

relations between search queries and consumer decision making intent with AI as it is more capable to make detections in the dataset. For example, future research could focus on developing an algorithm based on the assumptions of the SQA-model to classify actual datasets, such as the dataset we used from Trendata, to classify the queries based on user intent.

Another interesting approach could be to study search query anatomy in combination with internal sales data. This approach enables to map the search queries that result in a purchase. By mapping the movements of consumers from their landing page to the finalization of purchase, one can explore the behaviour of consumers and see if there are relations between search queries and actual purchases.

Another interesting perspective for future research are search queries submitted through voice command. It is shown that the popularity of voice search increases and it is even called one of the fastest rising trends in ecommerce (Lin, 2019). In this study, participants were only able to submit their search query by typing. For future research it would be interesting to see the extent to which the search query anatomy of voice queries differs from traditional search queries.

Overall, we think our findings are valid starting points for future studies on the relations between search queries and consumer decision making intents. We encourage others to study the topic in order to extend knowledge in the domain of consumer search behaviour.

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Appendix A Overview measures Pretest

Q1 AgeDemographicsOpen answerQ2 GenderDemographicsClosed answer: men/woman-Q3 Educational levelDemographicsClosed answer: five levels of education-Q4 Use of search engineUserClosed answer: Yes, very often; Yes, sometimes; No, neverQ5 Likelihood of using a search engineSearch behaviourSepoint Likert scale Very unlikely – very likelyQuestion topic based on Gevelber (2016) Inspired by Broder (2002)Q6 Information source when buying a product.User characteristicsMultiple choice-Q7 Brand of search engine.VariousClosed answer: rif 'or else' ID Q8 If 'Google' ID Q9 If 'Yahoo' or 'Bing' ID Q11-Q8 Brand of search engine, if unknown.VariousOpen answer very unlikely – very likely-Q9 Likelihood of using Google as main sourceVariousS-point Likert scale Very unlikely – very likelyBased on research Gevelber (2016) likelyQ10 Use of Google 1: Google helps to search for suitable information before purchaseVariousS-point Likert scale Disagree - agreeStatement 1: Inspired by Cenfetelli, Benbasat, Al-natour (2008) Statement 3: Turel et al (2011)Q11 Statements regarding interest reflectionSearch behaviourS-point Likert scale Disagree - agreeSpink (2002) biagree - agreeQ11 Statements regarding search behaviourSearch behaviourSearch behaviourSpink Likert scale Disagree - agree-Q11 Statements regarding search behaviour </th <th>Topic of the question</th> <th>Measure</th> <th>Measurement</th> <th>Source</th>	Topic of the question	Measure	Measurement	Source
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4: price relates to extent to search 5: unfamiliarity influences length of search Q11 Statements regarding search Various 5: behaviour 5-point Likert scale	hehaviour	hehaviour	Disagree - agree	
5: unfamiliarity influences length of search Q11 Statements regarding search Various 5-point Likert scale - Disagree - agree	4. price relates to extent to search	Schaviou	Disagice - agree	
search Image: Search Q11 Statements regarding search Various 5-point Likert scale - Disagree - agree	5. unfamiliarity influences length of			
Q11 Statements regarding search Various 5-point Likert scale - behaviour Disagree - agree	search			
behaviour	011 Statements regarding search	Various	5-noint Likert scale	-
	behaviour	Various	Disagree - agree	

3: search results influence purchase			
6: online search often refers			
trend/new products			
Q12 Likelihood to search when	Various	5-point Likert scale	-
shopping offline		very unlikely – very	
		likely	
Randomizer: to assign scenario A or	В	·	
If 'scenario A' 🛛 Q13 & Q14			
If 'scenario B' 🛛 Q15 & Q16			
Q13 Scenario A: Information source	Торіс	Multiple choice	Jian & Ni (2016)
	familiarity		
Q14 Scenario A:	Query	Open answer	Spink (2002)
Initial guery	Formulation		
Q14 Q1: Likelihood of satisfaction		5-point Likert scale	-
with retrieved results		Very unlikely – very	
Q14 Q2: Likelihood to adapt		likelv	
search guery		,	
when participants choose to			
refine, they again had to submit: a			
guery, answer Q1, answer Q2.			
Process is repeated until return to			
questionnaire.			
O15 Scenario B:	Topic	Multiple choice	lian & Ni (2016)
Information source	familiarity		
O16 Scenario B:	Query	Open answer	Spink (2002)
Initial query	formulation		op (2002)
016 01: Likelihood of satisfaction		5-point Likert scale	-
with retrieved results		Verv unlikely – verv	
O16 O2: Likelihood to adapt		likely	
search guery			
I when participants choose to			
refine, they again had to give:			
guery, answer Q1, answer Q2.			
Process is repeated until return to			
questionnaire			
017 Most probable tail term	Query	Multiple choice	-
refinements	formulation		
018 Ranking of most probable tail	Query	Multiple choice	-
term refinements	formulation		
019 Most probable modifier	Query	Multiple choice	-
refinements	formulation		
020 Banking of most probable	Query	Multiple choice	-
modifier refinements	formulation		
021 Extent of information search	Product	Slider 1-10	-
8 products	category		
022 Ouery categorization based on	CDM- intent	Closed question with	
search intent		two nossible answers	
023 Comment section regarding			-
the survey			
End of survey	1	1	

Appendix B Questionnaire Pre-test Part I of the Questionnaire Welkom bij mijn eindproject!

Beste deelnemer,

Allereerst wil ik je ontzettend bedanken dat je wat tijd uit je dag wilt besteden aan mijn afstudeeronderzoek. Op dit moment schrijf ik mijn scriptie voor de masterspecialisatie Marketing Communication aan de Universiteit van Twente. Het onderzoek zal bestaan uit drie delen. Het eerste gedeelte betreft een aantal vragen, het tweede gedeelte is een scenario die je zult gaan uitvoeren in een experimentele zoekmachine die ontworpen is voor deze studie. Het derde gedeelte betreft wederom een aantal vragen. Het onderzoek heeft betrekking tot online zoekgedrag en ik zou je willen vragen de stellingen geheel naar eigen mening in te vullen. Jouw antwoorden zullen geheel anoniem en vertrouwelijk worden verwerkt.

<u>Ik wil je verzoeken deze enquête indien mogelijk op een desktop in te vullen</u>, tijdens de enquête zul je worden doorverwezen naar een web-omgeving om een scenario te volgen, dit functioneert niet goed op een mobiele telefoon.

De resultaten van deze enquête zullen uitsluitend voor academische doeleinden worden gebruikt. Het onderzoek zal zo'n 20 minuten duren en je kunt op ieder moment van je deelname besluiten te stoppen door het venster te sluiten. Als je meedoet aan het onderzoek is wel van uiterst belang dat je de instructies volgt, de enquête in één sessie uitvoert (en dus niet op een later moment terug keert, de resultaten gaan dan verloren) en het is van belang dat je de volgorde van de vragen volgt en niet zelf terug navigeert naar het vorige venster.

Voor de geïnteresseerden is er een winactie waar je kans maakt op een giftcard van Bol.com t.w.v. €20 euro. Indien je niet wilt deelnemen mag je het venster sluiten. Indien je mee wilt doen aan mijn onderzoek mag je je deelname met de knop 'volgende' bevestigen en zal de enquête starten.

Mocht je vragen, opmerkingen of aanmerkingen hebben kun je contact met mij opnemen via s.a.j.oltwater@student.utwente.nl

1 Wat is je leeftijd?

Skip to: End of survey If 'Wat is je leeftijd?'< 18

2 Wat is je geslacht?

- O Man (1)
- O Vrouw (2)

3 Wat is je hoogst genoten opleidingsniveau?

- Geen middelbare school diploma (1)
- Middelbare school (2)
- Middelbaar Beroeps Onderwijs (3)
- O Hoger Beroeps Onderwijs (4)
- O Universitair onderwijs (5)

4 Ik zoek wel eens informatie op via het internet door een zoekmachine te gebruiken (bijv. Google, Bing, Yahoo etc.).

- Ja, heel vaak. (1)
- O Ja, vaak. (2)
- Ja, soms. (3)
- O Nee nooit. (4)

Skip to: End of survey If 'Ik zoek wel eens informatie via het internet door een zoekmachine te gebruiken (bijv. Google)' = Nee nooit

Page Break

5 Probeer je in de volgende situaties te verplaatsen. Hoe waarschijnlijk is het dat je met zo'n type informatiebehoefte een zoekmachine gaat gebruiken (Bijv. Google, Yahoo, Bing etc.).

Erg onwaar- schijnlijk (1)	Onwaar- schijnlijk (2)	Noch waar- schijnlijk, noch onwaar- schijnlijk (3)	Waar schijnlijk (4)	Erg waar- schijnlijk (5)
0	0	0	0	0
0	\bigcirc	\bigcirc	\bigcirc	\bigcirc
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
	Erg onwaar- schijnlijk (1)	Erg onwaar- schijnlijk (1)Onwaar- schijnlijk (2)OOOOOOOOOOOOOOOOOOOOOOOO	Erg onwaar-schijnlijk (1) Onwaar-schijnlijk (2) Noch waar-schijnlijk, noch onwaar-schijnlijk (3) Image:	Erg onwaar- schijnlijk (1)Onwaar- schijnlijk (2)Noch waar- schijnlijk, noch onwaar- schijnlijk (3)Waar schijnlijk (4)Image: Constraint of the second secon

Page Break

6 Selecteer de optie(s) die voor jou van toepassing zijn. Wanneer ik een product wil kopen zoek ik voornamelijk informatie ...

└ Via de directe website of app van een retailer of merk. (1)

└ Via een zoekmachine (bijv. Google, Bing of Yahoo). (2)

Door de winkel in het dorp/de stad te bezoeken. (3)

Door vrienden/familie naar hun ervaringen/meningen te vragen. (4)

Door een online video over het product te bekijken. (5)

Op social media van het merk. (6)

Door reviews te bekijken van klanten die het product al hebben gekocht. (7)

Page Break

7 In het geval dat je een zoekmachine gebruikt (ongeacht de situatie), van welke zoekmachine maak je dan voornamelijk gebruik?

- O Yahoo (1)
- O Bing (2)
- O Google (3)
- O Anders. (4)

```
Skip to: Q11 If 'In het geval dat je een zoekmachine...' = Yahoo
Skip to: Q11 If 'In het geval dat je een zoekmachine...' = Bing
Skip to Q8 If 'In het geval dat je een zoekmachine...' = Anders
Skip to Q9 If 'In het geval dat je een zoekmachine...' = Google
```

Page Break

8 Je gaf aan dat je een andere zoekmachine gebruikt, van welke zoekmachine maak je gebruik?

Skip to Q12 If 'Je gaf aan dat je een andere zoekmachine...' = not empty

Page Break

9 Lees de volgende stellingen. Hoe waarschijnlijk is het dat Google jouw voornaamste bron van informatie is om meer te weten te komen. (Andere media als websites/social media e.d. gebruik je dus in mindere mate.)

	Erg onwaar- schijnlijk (1)	Onwaar- schijnlijk (2)	Noch waar- schijnlijk, noch onwaar- schijnlijk (3)	Waar- schijnlijk (4)	Erg waar- schijnlijk (5)
Updates over een zojuist plaatsgevonden ongeluk. (1)	0	0	0	0	\bigcirc
(2) (2) (2) (2) (2) (2) (2) (2) (2) (2)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Openingstijden van de AH in het centrum. (3)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Hippe lunchplekken voor een tripje naar Antwerpen. (4)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Je hebt een wijnvlek in je shirt en wilt het weer schoonkrijgen. (5) Je wilt weten hoe je je kamerplanten het beste kan verzorgen. (6)	0	0	0	\bigcirc	\bigcirc
	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
kopen en wilt aanbieders vergelijken. (7)	0	0	0	\bigcirc	\bigcirc
Verkooppunten van zalt tegen de jeuk van de haren van processie rupsen. (8)	\bigcirc	\bigcirc	\bigcirc	0	\bigcirc
Page Break					

10 Beoordeel de volgende stellingen in hoeverre je het eens dan wel oneens bent.

	Helemaal oneens (1)	Oneens (2)	Noch eens, noch oneens (3)	Eens (4)	Helemaal eens (5)
Google helpt mij met het zoeken naar de benodigde informatie voordat ik producten koop. (1) Google helpt mij met het zoeken	0	0	0	\bigcirc	0
naar alternatieve merken die eenzelfde soort product aanbieden. (2)	0	\bigcirc	\bigcirc	0	\bigcirc
van verkoopadressen voor producten als OLED tv's. (3)	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc

Page break —

11 Beoordeel de volgende stellingen in hoeverre je het eens dan wel oneens bent.

	Helemaal oneens (1)	Oneens (2)	Noch eens, noch oneens. (3)	Eens (4)	Helemaal eens (5)
De termen die ik in een zoekmachine intyp, zeggen iets over mijn interesse. (1)	0	0	0	0	0
meer woorden wanneer ik een exact product voor ogen heb. (2) De zoekresultaten van een	0	\bigcirc	0	0	\bigcirc
zoekmachine, hebben invloed op wat ik uiteindelijk koop. (3) Wanneer een product duur is, neig	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc
ik meer informatie te zoeken dan bij een goedkoper product. (4) Wanneer ik onbekend ben met	0	\bigcirc	0	0	\bigcirc
het product, ben ik geneigd om langer naar informatie te zoeken dan bij een bekend product. (5)	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc
betreft het trendy en nieuwe producten. (6) Ik kijk vaak enkel naar de merken	0	\bigcirc	0	0	\bigcirc
en producten eerste resultatenpagina van een zoekmachine. (7)	0	\bigcirc	0	0	\bigcirc

Page Break —

12 Hoe waarschijnlijk is het dat je hetzelfde of een vergelijkbaar product online gaat opzoeken **tijdens een bezoek** aan de fysieke winkel waar het product wordt verkocht?

\bigcirc	Era	onwaarschi	inli	ik. (′ 1`	۱
\smile	Lig	onwaarsonn	յսու	ויין		1

Onwaarschijnlijk. (2)

• Noch waarschijnlijk, noch onwaarschijnlijk. (3)

O Waarschijnlijk. (4)

Erg waarschijnlijk. (5)

Page Breal

Questions SCENARIO A Pool

13 Stel je voor. Jij bent op zoek naar informatie over een meubelstuk of woonaccessoire. Waar zou jij waarschijnlijk online informatie gaan zoeken? (Meerdere antwoorden mogelijk)

Marktplaats (1)	
Website van winkels (bijv. Ikea, Xenos, Kringloop) (2)	
Zoekmachines als Google, Bing etc. (3)	
Social media (4)	
Anders (5)	
age Break	

14 [] referral to experimental search engine.

A Javascript code connected to the question transfers the assigned scenario to the URL causing the 'information search' scenario to appear in the experimental search engine and redirects the respondent ID into our database of the search engine.

Questions SCENARIO B Pool

15 Stel je voor. Jij wil een meubelstuk of woonaccessoire kopen voor in jouw huis. Waar zou jij normaal gesproken online informatie gaan zoeken? (Meerdere antwoorden mogelijk).

Marktplaats (1)
Website van winkels (bijv. Ikea, Xenos, Kringloop) (2)
Zoekmachines als Google, Bing etc. (5)
Social media (3)
Anders (4)
raye Dreak

16 [] referral to experimental search engine.

The Javascript code connected to the question transfers the assigned scenario to the URL causing the 'information search' scenario to appear in the experimental search engine and redirects the respondent ID into our database of the search engine.

Part II of the Questionnaire

Scenario A Information search

Stel je de volgende situatie voor: Het is een vrije zondag en jij ligt lekker te relaxen op de bank. Je hebt je laptop voor je neus en kijkt om je heen. Je krijgt het idee om je woonkamer iets op te leuken. Je weet nog niet precies met welk product en bent ook niet van plan om iets te gaan kopen. Neem één product voor ogen dat in dit scenario past en waar je informatie over wil opzoeken. Hoe zou jij informatie over dit product in een zoekmachine opzoeken?

Gebruik de onderstaande zoekbalk om online te gaan zoeken. (Indien je geen product kunt bedenken, denk dan bijvoorbeeld aan één product in de categorie van meubels of woonaccessoires zoals een lamp, stoel of spiegel). Dit scenario wordt ook vermeld in het volgende venster

Scenario B Purchase intent

Stel je de volgende situatie voor: Het is een vrije zondag en jij ligt lekker te relaxen op de bank. Je hebt je laptop voor je neus en kijkt om je heen. Je krijgt het idee om je woonkamer iets op te leuken en onderneemt direct actie. Je wilt hiervoor één specifiek product kopen. Neem één product voor ogen. Hoe zou jij dit in een zoekmachine opzoeken? Gebruik de onderstaande zoekbalk om online te gaan zoeken. (Indien je geen producten kunt bedenken, denk dan bijvoorbeeld aan één product in de categorie van meubels of woonaccessoires zoals een lamp, stoel of spiegel). Dit scenario wordt ook vermeld in het volgende venster.

Additional questions in footer of results page:

Questions	Erg onwaar- schijnlijk (1)	Onwaar- schijnlijk (2)	Noch waar- schijnlijk, noch onwaar- schijnlijk (3)	Waar- schijnlijk (4)	Erg waar- schijnlijk (5)
Hoe waarschijnlijk is het dat je met de onderstaande resultaten hebt gevonden wat je zocht?	ο	0	0	0	0
Hoe waarschijnlijk is het dat je op basis van de onderstaande resultaten je zoekopdracht wilt aanpassen?	ο	0	0	0	0

Part III of the Questionnaire

17 Wanneer je een product online wilt opzoeken, welke verfijningen zou jij gebruiken tijdens het online zoeken? Kies **de 3 meest waarschijnlijke**. Bijvoorbeeld: "Ik zou waarschijnlijk zoeken op product + verfijning 1"

+ Indicatie van persoonlijke stijl (bijv. modern servies, industriële spiegel, vintage spijkerjasje) (1)

+ Indicatie van prijs (bijv. kortingscode mediamarkt, laptop onder 800 euro) (2)

+ Maat indicaties: maat/afmeting/inhoud (bijv. schoenen maat 41, 2-persoonsbed 180 x200) (3)

+ Omschrijving uiterlijk product (bijv. grote tafel, kleine tas, lange spiegel) (4)

+ Winkel of verkooplocatie (bijv. opbergboxen HEMA, verkooppunt glutenvrije pizza's) (5)

Carry forward selected choices from 'Wanneer je een product online wilt opzoeken...'

18 Beoordeel de door jouw gekozen verfijningen en sleep ze op volgorde van waarschijnlijkheid dat jij ze zou gebruiken (1= meest waarschijnlijk, 3= minst waarschijnlijk) ______ + Indicatie van persoonlijke stijl (bijv. modern servies, industriële spiegel, vintage spijkerjasje) (1)

______ + Indicatie van prijs (bijv. kortingscode mediamarkt, laptop onder 800 euro) (2) ______ + Maat indicaties: maat/afmeting/inhoud (bijv. schoenen maat 41, 2-persoonsbed 180 x 200) (3)

+ Omschrijving uiterlijk product (bijv. groot, laag, klein, langwerpig) (4)

+ winkel of verkooplocatie (bijv. opbergboxen HEMA, verkooppunt glutenvrije pizza's (5)

19 Wanneer je een product wilt gaan kopen, welke verfijningen zou jij gebruiken tijdens het online zoeken? Kies **de 3 meest waarschijnlijke**. Bijvoorbeeld: "Ik zou waarschijnlijk zoeken op product + verfijning 1"

\rightarrow + merk (Samsung, mike) (1)		+ Merk	(Samsung,	Nike)	(1)
--	--	--------	-----------	-------	-----

- \downarrow + Materiaal (bijv. suede kruk, metalen bedframe, marmeren tafelblad) (2)
- + Type / model / serie van product (bijv. HP laptop Pavilon, FILA disruptors, Nikon

D5600) (3)

+ Kleur (bijv. witte sneakers, zwarte bloempot) (4)

+ Specifieke uiterlijke kenmerken (bijv. ronde tafel, laars stiletto hak, spiegel ovaal)

(5)

Carry forward selected choices from 'Wanneer je een product online wilt gaan kopen...'

20 Beoordeel de door jouw gekozen verfijningen en sleep ze op volgorde van waarschijnlijkheid dat jij ze zou gebruiken (1= meest waarschijnlijk, 3= minst waarschijnlijk).

- + Merk (Samsung, Nike) (1)
- + Materiaal (bijv. suede kruk, metalen bedframe, marmeren tafelblad) (2)
- _____ + Type / model / serie van product (bijv. HP laptop Pavilon, FILA disruptors) (3)
- _____ + Kleur (bijv. witte sneakers, zwarte bloempot) (4)
- _____+ Specificatie uiterlijke kenmerken (bijv. ronde tafel, laars stiletto hak, spiegel ovaal) (5)

21 Geef de mate aan waarin je voor de volgende producten online informatie zou zoeken indien je van plan was deze producten te kopen. (1= ik zou hier nauwelijks online informatie voor zoeken, 10 = ik zou hier veel online informatie voor zoeken)

Matras (1)	
Winterjas (2)	
Elektrische fiets (3)	
Sneakers (4)	
Laptop (5)	
Tandpasta (6)	
Loungeset voor buiten terras (7)	
Hypotheek (8)	

	Informatie zoeken (1)	Aankoop van product (2)
Groot tv meubel (2)	\bigcirc	0
Vloerlamp Muuto (3)	\bigcirc	0
Riverdale vintage dressior (4)	0	0
Goedkope salontafel (26)	\bigcirc	\bigcirc
Vloerkleed (5)	0	0
Industriële salontafel (6)	0	0
Spiegel met koperen lijst (7)	0	0
Dienblad 50x50 (22)	0	0
Servies Villeroy & Boch aanbieding (8)	0	0
Bijzettafeltje rond (11)	0	0
Opbergmand (12)	\bigcirc	\bigcirc
Loods 5 staande lamp (23)	\bigcirc	\bigcirc
Bijzettafel wit (24)	\bigcirc	\bigcirc

22 Bekijk de onderstaande zoektermen. Beoordeel in welke situatie jij eerder geneigd bent om de zoekterm te gebruiken. In een situatie waar je enkel zoekt voor informatie, of in een situatie waar je zoekt om een product te kopen.

Page Break

23 Je hebt zojuist deelgenomen aan een pre-test om deze enquête te testen op onduidelijkheden, fouten etc. Hieronder zou ik je willen verzoeken feedback te plaatsen om zo mij te helpen mijn enquête te verbeteren. Je resultaten zijn anoniem en ik zou je willen verzoeken eerlijk en kritisch te zijn.



Example of homepage with scenario (Purchase)

Appendix C Screenshots ESE

met de enquête, sluit dan het venster.

Example of resultspage with query 'bed stalen frame'



Example of resultspage with query 'bed stalen frame' (bottom of the page)

h	Bedirame, Romantisch, stoer of natuurlijk? Ons assortiment bestaat uit bedframes voor diverse soorten looks. Met een stevi	g fran	ne vorr	m je de	e juiste	basis	voor
E	<mark>Bedden - IKEA</mark> https://www.ikea.com/nl/nl/cat/bedden-bm003/ IKEA - Bedden Bedframe, hoog, met 2 bedlades. €289. €279. Meer opties - Nieuwe verlaagde prijs. SLÄKT. Bedframe m	et ond	lerbed	en op	berger	.€224.	€ 209.
b h	Stalen bedframe - bedden outlet? BESLIST.nl Ruime keus, lage prijs https://www.beslist.nl/products/meubilair/meubilair/r/stalen_bedframe/ BESLIST.nl I Goedkoop bed online kopen? I Outlet en sale aanbiedingen I Luxe en mooie bedden I Bestel nu jouw	nieu	we bec	d om h	eerlijk	weg te	dromen!
V h	vidaXL Huisdieren bed met stalen frame 130 x 80 cm kopen? shop https://www.fonq.nl/product/vidaxdbed-met-stalen-frame-130/421763/ Geef je huis wat fonQ met een vidaXL Huisdieren bed met stalen frame 130 x 80 cm √ Eenvoudig Besteld en Gratis Verzond	den √	Thuis	winkel	Waarb	oorg » S	Shop
Z	Zwart metalen bed 140 x 200 cm - bedden outlet? BESLIST.nl https://www.beslist.nl/products//r/Zwart_metalen_bed_140_x_200_cm/ Slaapkamerbed metalen bed ,Art" met lattenbodem - zwart, 200 x 140 cm. €94,90 . TecTake.nl van het bed vidaXL Bed	frame	staal	zwart '	140×20	00 cm r	iieuw.
E	Bedframes Koop jouw bedframe of bedombouw op JYSK.nl https://jysk.nl/slaapkamer/bedframes Daarnaast is je bed ook vaak het grootste en meest aanwezige meubelstuk in je slaapkamer. Bij de keuze voor een bedfram	e of b	edomi	bouw k	cijk je o	laarom	
cy h	Stalen bed goedkoop kopen? BESLIST.nl Scherp geprijsd https://www.beslist.nl//materiaal~389472~~metaalsoort_materiaal~394508 vidaXL Bed met traagschuim matras metaal 140x200 cm. €274,99. vidaXL.nl. (2k +) vidaXL Bedframe staal zwart 180x200	D/90x3	200 cn	n nieuv	v. vida	XL Bed	lframe
	1 2 3 4 5 8 7 8 9 10	r	nogelijk	(gemaa	kt door	Goog	l e Aangepast zoei
5	Stel je voor dat deze situatie daadwerkelijk zou plaatsvinden en beoordeel de onderstaande stellingen (1 = helemaal oneens,	5 = ľ	nelema	aal ee	ns).		
1.1	Kijkend naar de bovenstaande resultaten, ben ik zeker dat ik heb gevonden wat ik zocht	1	2	3	4	5	0.1
		1	2	2	4	F	Opsiaan
2.1	Kijkend naar de bovenstaande resultaten, wil ik mijn zoekopdracht aanpassen	0	0	0	0	0	Opslaan
	Heb je gevonden wat je zocht? Nee? Kiik dan om je zoekopdracht aan te passen . Ja? Kiik dan om terug te gaan naar	de e	enquê	ite			
	Di is an avanimentale setting. Data zakmachina is an avanimentale testomousin dia is nainenizent on an workelike zakmachine. Date zakmachi	ne is o	ntworm	on in he	t kader	van de	there your de only

Dit is een experimentele setting. Deze zoekmachine is een experimentele testomgeving die is geïnspireert op een werkelijke zoekmachine. Deze zoekmachine is ontworpen in het kader van de thesis voor de opleiding Communication Studies aan de Universiteit van Twente en is niet bruikbaar als normale zoekmachine. In deze omgeving wordt enkel data opgeslagen die voor academische doeleinden worden gebruikt. Je kunt op ieder moment besluiten te stoppen met je deelname aan dit onderzoek. Volg de bovengenoemde instructies om verder te gaan met je deelname. Indien je je deelname helemaal wit beëindigen en ook niet verder witt gaan met de enquête sluit dan het venster.

Appendix D	Overview	final mea	sures study
------------	----------	-----------	-------------

Topic of the question	Measure	Measurement indicator	Source
Q1 Age	Demographics	Open answer	-
Q2 Gender	Demographics	Closed answer:	-
		men/woman	
Q3 Educational level	Demographics	Closed answer:	-
		five levels of	
		education	
Q4 Frequency use of search engine	User	Closed answer:	-
	characteristics	multiple times a	
		day, max. one time	
		a day, weekly,	
		never.	
Q5 Likelihood of using a search	Search	5-point Likert scale	Question topic based
engine	behaviour	Very unlikely –	on Gevelber (2016)
Statement 1: informational search		very likely	Inspired by Broder
Statement 2: inspirational search			(2002)
Statement 3: navigational search			
Statement 4: transactional search			
Q6 Information source when buying	User	Multiple answers	-
a product.	Various	Closed answer:	
	various	If 'or else' $\Pi \cap R$	-
		If 'Yahoo' or 'Bing'	
		- ~	
Q8 Brand of search engine, if	Various	Open answer	-
unknown.			
Q9 Likelihood of using Google as	Various	5-point Likert scale	
main source		Very unlikely –	
Statement 1: problem		very likely	
Statement 2: solution			
Statement 3: product			
Statement 4: brand			
010 Use of Georgie	Various	E point Likert code	Statement 1:
1. Google helps to search for	various	Disagree - agree	Inspired by
suitable information before		Disagree - agree	Cenfetelli Benhasat
nurchase			Al-natour (2008)
2 : Google helps to search for			Statement 2: Kohli
alternative brands			Devarai, Mahmood
3: Google helps to find points of			(2002)
purchase			Statement 3: Turel et
			al (2011)
Q11 Statements regarding search	Search	5-point Likert scale	-
behaviour	behaviour	Disagree - agree	
1: determination about a product			
relates to length search query			

2: price of product influences extent			
to search			
3: familiarity with product influences			
length to search			
Q11 Statements regarding	Various	5-point Likert scale	Spink (2002)
search terms reflect interest		Disagree - agree	
5: search results influence purchase			
6: first results page			
7: often, when user searches, he			
searches for trendy/new products.			
Q12 Likelihood to search when	Various	5-point Likert scale	-
shopping offline		very unlikely – very	
		likely	
Randomizer: to assign scenario A or B			
If 'scenario A' 🛛 Q13 & Q14			
If 'scenario B' 🛛 Q15 & Q16	I		
Q13 Scenario A: Information source	Search topic	Multiple choice	Jian & Ni (2016)
	familiarity		
Q14 Scenario A:	Query	Open answer	Spink (2002)
Initial query	formulation		
Q14 Scenario A:		5-point Likert scale	-
Statement 1: I am certain I have		completely	
found the information I require.		disagree -	
Statement 2: Based on the results, I		completely agree	
want to adapt my search query			
U when participants choose to			
refine, they again had to give: query,			
answer S1, answer S2. Process is			
repeated until return to			
questionnaire.			
Q15 Scenario B:	Search topic	Multiple choice	Jian & Ni (2016)
Information source	familiarity		
Q16 Scenario B:	Query	Open answer	Spink (2002)
Initial query	formulation		
Q16 Scenario B:		5-point Likert scale	-
Statement 1: I am certain I have		completely	
found the information I require.		disagree -	
Statement 2: Based on the results, I		completely agree	
want to adapt my search query			
U when participants choose to			
refine, they again had to submit: a			
query, answer S1, answer S2.			
Process is repeated until return to			
questionnaire		-	
Q17 Statements regarding scenario	1: Task ability	5-point Likert scale	
1: I could easily project myself in	2: Task	completely	
that situation.	Tamiliarity	aisagree –	
2: scenario was a familiar situation.	3: IOPIC	completely agree	
5 : I have searched for furniture /	iamiliarity		
living accessories before.			

Q18 Effort to use the search engine	Search engine	1-10	
	expertise	1 = little effort, 10	
		= much effort	
Q19 Statements regarding search	Search engine	5-point Likert scale	
engine use	expertise	completely	
1: I inspect the extent to which my		disagree –	
search terms return in the search		completely agree	
results.			
2: Using the search engine was easy.			
Q20 Most probable tail term	Query	Multiple choice	-
refinements	formulation		
Q21 Most probable modifier	Query	Multiple choice	-
refinements	formulation		
Q22 Query categorization based on	Consumer	Closed question	-
search intent	decision making	with two possible	
	intent	answers	
Q23 Extent of information search	Search		-
Product 1: matras, product 2:	behaviour		
sneakers, product 3: laptop, product			
4: tandpasta, product 5: hypotheek			
Q24 Chance in the raffle for 1 of 3		Closed question:	
giftcards.		No 🛛 forward to	
		end of survey	
		Yes 🛛 Q24	
Q25 Enter e-mailadres to enter the			-
raffle			
End of survey			

Appendix E Final questionnaire study Part I of the Questionnaire

Welkom bij mijn eindproject!

Beste deelnemer,

Allereerst wil ik je ontzettend bedanken dat je wat tijd uit je dag wilt besteden om mij te helpen met mijn afstudeeronderzoek. Op dit moment schrijf ik mijn scriptie voor de masterspecialisatie Marketing Communication aan de Universiteit van Twente. De vragenlijst bestaat uit drie delen. Het eerste gedeelte betreft een aantal vragen, het tweede gedeelte is een scenario die je zult gaan uitvoeren in een experimentele zoekmachine die ontworpen is voor deze studie. Het derde gedeelte betreft wederom een aantal vragen. Het onderzoek heeft betrekking tot online zoekgedrag en ik zou je willen vragen de stellingen geheel naar eigen mening in te vullen. Jouw antwoorden zullen geheel anoniem en vertrouwelijk worden verwerkt.

<u>Ik wil je verzoeken deze enquête indien mogelijk op een desktop in te vullen</u>, tijdens de enquête zul je worden doorverwezen naar een web-omgeving om een scenario te volgen, dit functioneert niet goed op een mobiele telefoon.

De resultaten van deze enquête zullen uitsluitend voor academische doeleinden worden gebruikt. Het onderzoek zal zo'n 15-20 minuten duren en je kunt op ieder moment van je deelname besluiten te stoppen door het venster te sluiten. Als je meedoet aan het onderzoek is van uiterst belang dat je de instructies volgt en de enquête in één sessie uitvoert (en dus niet op een later moment terug keert, de resultaten gaan dan verloren). Daarnaast is het van belang dat je de volgorde van de vragen volgt en niet zelf terug navigeert naar het vorige venster. Voor de geïnteresseerden is er een winactie waar er drie giftcards van Bol.com t.w.v. €20 euro worden verloot.

Door op 'volgende' te klikken bevestig je je deelname en zal de enquête starten.

Mocht je vragen, opmerkingen of aanmerkingen hebben kun je contact met mij opnemen via s.a.j.oltwater@student.utwente.nl

1 Wat is je leeftijd?

Skip to: End of survey If 'Wat is je leeftijd?'< 18

2 Wat is je geslacht?

- O Man (1)
- \bigcirc Vrouw (2)

3 Wat is je hoogst genoten opleidingsniveau?

- Geen middelbare school diploma (1)
- Middelbare school (2)
- Middelbaar Beroeps Onderwijs (3)
- O Hoger Beroeps Onderwijs (4)
- O Universitair onderwijs (5)

4 Ik zoek wel eens informatie op via het internet door een zoekmachine te gebruiken (bijv. Google, Bing, Yahoo etc.).

- Ja, meerdere keren per dag. (1)
- Ja, maximaal 1x per dag. (2)
- O Ja, wekelijks. (3)
- \bigcirc Nee nooit. (4)

Skip to End of Survey If 'ik zoek wel eens informatie op via het internet door een zoekmachine te gebruiken' = Nee nooit.

Page Break

5 Probeer je in de situatie te verplaatsen:

Afgelopen zomer heb je nog wegwerpbarbecues gebruikt maar voor de zomer van 2020 ben je toch echt van plan om een goede bbq aan te schaffen. Je bent een beginnende bbq'er en je hebt er niet zo veel verstand van. Ondanks dat, ben je wel van plan een goed apparaat aan te schaffen en je wilt er dus best wat geld aan uitgeven. Lees de volgende situaties en bedenk hoe waarschijnlijk het is dat je een zoekmachine zou gaan gebruiken:

	Erg onwaar- schijnlijk (1)	Onwaar- schijnlijk (2)	Noch waar- schijnlijk, noch onwaar- schijnlijk (3)	Waar- schijnlijk (4)	Erg waar- schijnlijk (5)
Om te zoeken naar de grote verschillen tussen gas bbq's en kolen bbq's. (1)	0	0	0	0	0
Om te kijken wat qua kleur, vormgeving en materiaal het beste in jouw tuin past. (2) Om te kijken paar de	0	0	0	0	\bigcirc
verkooppunten met de beste service. (3)	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Je hebt besloten om voor een kolen bbq van Weber te gaan. Deze ga je nu aanschaffen. (4)	0	0	0	0	0

Page Break

6 Selecteer de optie(s) die voor jou van toepassing zijn. Wanneer ik een product wil kopen zoek ik voornamelijk informatie ...

└ Via de directe website of app van een retailer of merk. (1)

U Via een zoekmachine (bijv. Google, Bing of Yahoo). (2)

Door de winkel in het dorp/de stad te bezoeken. (3)

Door vrienden/familie naar hun ervaringen/meningen te vragen. (4)

 \square Door een online video over het product te bekijken. (5)

- Op social media van het merk. (6)
- \Box Door reviews te bekijken van klanten die het product al hebben gekocht. (7)

Page Break

7 In het geval dat je een zoekmachine gebruikt (ongeacht de situatie), van welke zoekmachine maak je dan voornamelijk gebruik?

- O Yahoo (1)
- O Bing (2)
- O Google (3)
- O Anders. (4)

```
Skip to: Q11 If 'In het geval dat je een zoekmachine...' = Yahoo
Skip to: Q11 If 'In het geval dat je een zoekmachine...' = Bing
Skip to Q8 If 'In het geval dat je een zoekmachine...' = Anders
Skip to Q9 If 'In het geval dat je een zoekmachine...' = Google
```

Page Break

8 Je gaf aan dat je een andere zoekmachine gebruikt, van welke zoekmachine maak je gebruik?

Skip to Q12 If 'Je gaf aan dat je een andere zoekmachine gebruikt ...' = not empty

Page Break

9 Probeer je in de situatie te verplaatsen: Na de hittegolven van afgelopen zomer ben je vastberaden om je huis meer hittebestendig te maken. Je overweegt een aantal dingen. Verplaats je in de volgende scenario's en geef aan hoe waarschijnlijk het is dat jij in de onderstaande situaties Google zou gebruiken.

	Erg onwaar- schijnlijk (1)	Onwaar- schijnlijk (2)	Noch waar- schijnlijk, noch onwaar- schijnlijk (3)	Waar- schijnlijk (4)	Erg waar- schijnlijk (5)
Je wil je huis zomers koel houden (met een budget van max 1000 euro). Maar hoe? (1)	0	0	0	0	0
Jouw oplossing is zonwering, maar welk type zonwering werkt nou het beste? (4)	0	\bigcirc	0	0	0
Maar welke vind jij mooi en welke past nu het best bij jouw huis? (5)	0	0	0	0	\bigcirc
Je besluit om een buitenzonwering van Velux aan te schaffen. (6)	0	\bigcirc	0	\bigcirc	\bigcirc

Page Break

10 Beoordeel de volgende stellingen in hoeverre je het eens dan wel oneens bent.

	Helemaal oneens (1)	Oneens (2)	Nocn eens, noch oneens (3)	Eens (4)	Helemaal eens (5)
Google helpt mij met het zoeken naar de benodigde informatie voordat ik producten koop. (1)	0	0	0	0	0
Google helpt mij zoeken haar alternatieve merken die een zelfde soort product aanbieden. (2)	0	\bigcirc	0	\bigcirc	\bigcirc
Verkoopadressen voor producten zoals OLED tv's. (3)	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc
David					

Page Break

11 Beoordeel de volgende stellingen in hoeverre je het eens dan wel oneens bent.

	Helemaal oneens (1)	Oneens (2)	Noch eens, noch oneens (3)	Eens (4)	Helemaal eens (5)
Ik omschrijf mijn zoekopdracht met meer woorden wanneer ik een specifiek product voor ogen heb. (2) Ik zoek meer informatie voor een	0	0	0	0	0
duurder (bijv. €50-€150) product dan voor een goedkoper (bijv. €0-€10) product. (4)	0	\bigcirc	0	\bigcirc	\bigcirc
Ik zoek langer naar informatie bij een onbekend product dan bij een bekend product. (5)	0	\bigcirc	0	0	0
De termen die ik in een zoekmachine intyp, zeggen iets over mijn interesse en voorkeur in producten. (1)	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc
De zoekresultaten van een zoekmachine, hebben invloed op wat ik uiteindelijk koop. (3)	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc
IK KIJK vaak enkel naar eerste resultatenpagina van een zoekmachine. (7)	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Vaak wanneer ik online zoek, betreft het trendy en nieuwe producten. (6)	0	\bigcirc	0	\bigcirc	\bigcirc
David David					

Page Break -

12 Hoe waarschijnlijk is het dat je hetzelfde of een vergelijkbaar product online gaat opzoeken **tijdens een bezoek** aan de fysieke winkel waar het product wordt verkocht?

\bigcirc	Erg	onwaarschi	inli	jk. ((1))
\sim		onnaaroonn	J	J V	١ .	J

Onwaarschijnlijk. (2)

• Noch waarschijnlijk, noch onwaarschijnlijk. (3)

- O Waarschijnlijk. (4)
- Erg waarschijnlijk. (5)

Page Brea

Questions SCENARIO A Pool

13 Stel je voor. Je bent op zoek naar informatie over nieuw een meubelstuk of woonaccessoire voor in jouw huis. Waar zou jij normaal gesproken online informatie gaan zoeken? (Meerdere antwoorden mogelijk)

Marktplaats (1)	
Website van winkels (bijv. Ikea, Xenos, Kringloop) (2)	
Zoekmachines als Google, Bing etc. (3)	
Social media (4)	
Anders (5)	
Page Break	

14 I referral to experimental search engine.

The Javascript code connected to the question transfers the assigned scenario to the URL causing the 'information search' scenario to appear in the experimental search engine and redirects the respondent ID into our database of the search engine.

Questions SCENARIO B Pool

15 Stel je voor. Je wilt een meubelstuk of woonaccessoire kopen voor in jouw huis. Waar zou jij normaal gesproken online informatie gaan zoeken? (Meerdere antwoorden mogelijk).

Marktplaats	(1))
-------------	-----	---

Website van winkels (bijv. Ikea, Xenos, Kringloop) (2)

Zoekmachines als Google, Bing etc. (5)

Social media (3)

□ Anders (4)

Page Break

16 [] referral to experimental search engine.

The Javascript code connected to the question transfers the assigned scenario to the URL causing the 'information search' scenario to appear in the experimental search engine and redirects the respondent ID into our database of the search engine.

Part II of the Questionnaire

Scenario A Information search

Stel je de volgende situatie voor: Het is een vrije zondag en jij ligt lekker te relaxen op de bank. Je hebt je laptop voor je neus en kijkt om je heen. Je krijgt het idee om je woonkamer iets op te leuken. Je weet nog niet precies met welk product en bent ook niet van plan om iets te gaan kopen. **Neem één product voor ogen** dat in dit scenario past en waar je informatie over wil opzoeken. Hoe zou jij informatie over dit product in een zoekmachine opzoeken?

Gebruik de onderstaande zoekbalk om online te gaan zoeken. (Indien je geen product kunt bedenken, denk dan bijvoorbeeld aan **één product** in de categorie van meubels of woonaccessoires zoals een lampen, stoelen of spiegels). Dit scenario wordt ook vermeld in het volgende venster

Scenario B Purchase intent

Stel je de volgende situatie voor: Het is een vrije zondag en jij ligt lekker te relaxen op de bank. Je hebt je laptop voor je neus en kijkt om je heen. Je krijgt het idee om je woonkamer iets op te leuken en onderneemt direct actie. **Neem één product voor ogen**. Hoe zou jij dit product in een zoekmachine opzoeken als je het zou gaan kopen? Gebruik de onderstaande zoekbalk om online te gaan zoeken. (Indien je geen product kunt bedenken, denk dan bijvoorbeeld aan **één product** in de categorie van meubels of woonaccessoires zoals een lampen, stoelen of spiegels). Dit scenario wordt ook vermeld in het volgende venster.

Questions	Helemaal oneens (1)	Oneens (2)	Noch eens, noch oneens (3)	Eens (4)	Helemaal eens (5)
Kijkend naar de bovenstaande resultaten, ben ik zeker dat ik heb gevonden wat ik zocht.	ο	0	0	0	0
Kijkend naar de bovenstaande resultaten, wil ik mijn zoekopdracht aanpassen	О	Ο	0	ο	Ο

Additional questions in footer of results page:

Part III of the Questionnaire

17 Beoordeel de volgende stellingen in hoeverre je het eens dan wel oneens bent.

	Helemaal oneens (1)	Oneens (2)	Nocn eens, noch oneens (3)	Eens (4)	Helemaal eens (5)
Ik kon mij goed in het scenario verplaatsen. (1)	0	0	0	\bigcirc	\bigcirc
Het scenario was een bekende situatie voor mij. (2)	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Ik heb eerder online gezocht naar meubilair en woonaccessoires. (6)	0	\bigcirc	0	\bigcirc	\bigcirc

18 Hoeveel moeite kostte het om jouw informatiebehoefte te verwoorden in de zoekmachine?

Het	kostte w	einig moe	eite				ł	Het kostte	veel mo	eite
0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0

Page Break

19 Beoordeel de volgende stellingen in hoeverre je het eens dan wel oneens bent.

	Helemaal oneens (1)	Oneens (2)	Noch eens, noch oneens (3)	Eens (4)	Helemaal eens (5)
Ik kijk in hoeverre de woorden uit mijn zoekterm terug komen in de zoekresultaten. (4)	0	0	0	\bigcirc	0
Het gebruiken van de zoekmachine was makkelijk. (5)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Paga Brook					

Page Break

20 Wanneer je een product online wilt opzoeken, welke verfijningen zou jij gebruiken tijdens het online zoeken? Kies **de 3 meest waarschijnlijke**. Bijvoorbeeld: "Ik zou waarschijnlijk zoeken op product + verfijning 1"

+ Indicatie van persoonlijke stijl (bijv. modern servies, industriële spiegel, vintage spijkerjasje) (1)

└ + Indicatie van prijs (bijv. kortingscode mediamarkt, laptop onder 800 euro) (2)

+ Maat indicaties: maat/afmeting/inhoud (bijv. schoenen maat 41, 2-persoonsbed 180 x 200) (3)

+ Omschrijving uiterlijk product (bijv. grote tafel, kleine tas, lange spiegel) (4)

 \square + Winkel of verkooplocatie (bijv. opbergboxen HEMA, verkooppunt glutenvrije pizza's) (5)

Page Break -

21 Wanneer je een product wilt gaan kopen, welke verfijningen zou jij gebruiken tijdens het online zoeken? Kies **de 3 meest waarschijnlijke**. Bijvoorbeeld: "Ik zou waarschijnlijk zoeken op product + verfijning 1"

	+ Merk	Samsung.	Nike)	(1)
_		(Carrioarig,		· · ·

□ + Materiaal (bijv. suede kruk, metalen bedframe, marmeren tafelblad) (2)

+ Type / model / serie van product (bijv. HP laptop Pavilon, FILA disruptors, Nikon D5600) (3)

+ Kleur (bijv. witte sneakers, zwarte bloempot) (4)

 \downarrow + Specifieke uiterlijke kenmerken (bijv. ronde tafel, laars stiletto hak, spiegel ovaal) (5)

Page Break

22 Bekijk de onderstaande zoektermen. Beoordeel in welke situatie jij eerder geneigd bent om de zoekterm te gebruiken. In een situatie waar je enkel zoekt voor informatie, of in een situatie waar je zoekt om een product te kopen.

	Informatie zoeken (1)	Aankoop van product (2)
Groot tv meubel (2)	\bigcirc	0
Vloerlamp Muuto (3)	\bigcirc	0
Riverdale vintage dressior (4)	\bigcirc	0
Goedkope salontafel (26)	\bigcirc	0
Vloerkleed (5)	\bigcirc	0
Industriële salontafel (6)	\bigcirc	\bigcirc
Spiegel met koperen lijst (7)	\bigcirc	\bigcirc
Dienblad 50x50 (22)	\bigcirc	\bigcirc
Servies Villeroy & Boch aanbieding (8)	\bigcirc	\bigcirc
Bijzettafeltje rond (11)	\bigcirc	\bigcirc
Opbergmand (12)	\bigcirc	\bigcirc
Loods 5 staande lamp (23)	\bigcirc	0
Bijzettafel wit (24)	\bigcirc	\bigcirc

23 Geef de mate waarin je voor de volgende producten online informatie zou zoeken wanneer je van plan was deze te kopen. (1= ik zou hier nauwelijks online informatie voor zoeken, 10 = ik zou hier veel online informatie voor zoeken)



Page Break

Page Break

24 Wil je kans maken op één van de drie Bol.com giftcards t.w.v. €20 euro? Vul dan in de volgende vraag jouw e-mailadres in. (Jouw ingevulde antwoorden zullen niet te herleiden zijn aan het opgegeven e-mailadres en winnaars worden willekeurig gekozen door het systeem van Qualtrics.)

 \bigcirc Ja, ik wil kans maken. (1)

• Nee, ik wil geen kans maken. (2)

Page Break

25 Vul hier je e-mailadres in om kans te maken op een van de drie giftcards van Bol.com. Er wordt contact opgenomen met de winnaars zodra de enquête is gesloten.