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# Importance of the perceived quality of touchpoints for customer journey analysis – evidence from the B2B sector

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## Abstract

We investigate how the perceived quality influences touchpoint performance to provide a more nuanced understanding for analysing customer journeys. To answer the research questions, a survey in a real life online setting was carried out. The setting contained complex service solutions that were offered in a business-to-business context. The quantitative study shows that the perceived quality of a website has an influence on consumers' buying intention. This correlation increases as the customer journey progresses. The perceived quality influences the website's impact on visitors' buying intention with a medium to strong effect size and the influence of a website's quality on the impact on visitors' buying intention varies significantly at different customer journey phases. While extant research focusses either on customer experience at touchpoints or touchpoints' effects on buying behavior, we combine insights from both streams of research to highlight the role of website quality in determining touchpoint performance along the customer journey. Practitioners can use these insights to allocate resources in marketing and sales more efficiently.

**Keywords** Customer journey analysis · Website quality · Online buying intention · Customer journey

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## 1 Introduction

Technological advances are radically changing how consumers search for information, evaluate products and services, make buying decisions, and share their experiences [55]. Therefore, it is becoming increasingly important to know consumers' preferred channels, how channels link to each other, and how channels are related to consumers' buying intentions to allocate resources efficiently [6]. In this vein, customer journeys describe the various phases of a buying decision and paths consumers take before making a buying decision. Along these paths, communication and interaction between companies and consumers takes place at various points of contact, so-called touchpoints. [18, 29, 40]. The customer journey analysis then provides insights on the buying behavior of consumers when interacting with companies at manifold touchpoints in various buying phases [24]. It provides a starting point to optimize the journey a customer takes from becoming aware of a brand until the usage of products and services offered by a brand to create and improve customer loyalty.

Studies on customer journey analysis can essentially be divided into two different research strands [40]. First, several papers address the experience customers make at a certain touchpoint, i.e., how they perceive and react to touchpoint elements [30, 31]. These studies provide insights on how a touchpoint shapes beliefs about the attractiveness and performance of a brand [61] thus, on its ability to influence buying behavior and buying decisions. Second, studies focus on the effects touchpoints have on buying behavior along the journey the customer takes to illuminate differences in the significance different touchpoints have on buying behavior. These studies identify critical touchpoints, i.e., "moments of truth" [40], that have a high impact on a buying decision [6, 13], using so-called attribution models. Attribution models explain the performance of single touchpoints as well as effects of their combined usage in multi-touchpoint environments [4]. Performance measurement is based on data indicating whether a touchpoint was used, at what position in the customer journey it was used, and whether its usage led to a purchase [i.e., 32, 5, 14]. By doing this, attribution models measure the influence of touchpoints on buying behaviour but do not count for the perceived quality of the elements determining the touchpoints' ability in shaping beliefs about the attractiveness and performance of a brand.

Given that the customer experience at a certain touchpoint influences whether and how the journey continues, it is likely that touchpoint performance, i.e. the result an attribution model produces, is moderated by its perceived quality. Consequently, research on the antecedents of attribution results seems warranted in order to better explain differences in touchpoint performance and to identify possibilities for improving the performance of a customer journey.

To address this research gap, we integrate insights from both streams of research to account for the influence of the perceived quality of touchpoints regarding the touchpoints' significance for buying behaviour along the journey a customer takes. The corresponding research questions of our study are as follows:

**Research question 1** When (in which phases of the customer journey) does the company website have the greatest impact on the buying intention of its visitors?

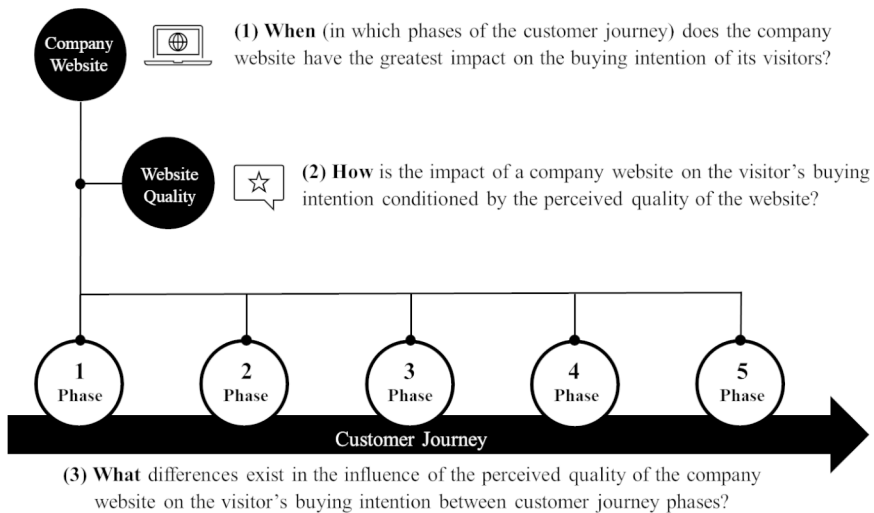


Fig. 1 Summary of research questions

**Research question 2** How is the impact of a company website on the visitor's buying intention conditioned by the perceived quality of the website?

**Research question 3** What differences exist in the influence of the perceived quality of the company website on the visitor's buying intention between customer journey phases?

The three research questions are summarized in Fig. 1.

To answer the research questions, we carried out a survey in an online real life setting of business-to-business (B2B) buying processes for complex logistic services at the touchpoint company website. The informed, complex, and intentional character of B2B buying processes [11] as well as the use of 'high-involvement products' [66] allow to distinguish more specifically between buying intentions and decisions at different phases of a customer journey. Furthermore, B2B websites typically do not offer the possibility of e-shopping as it is often the case in business-to-consumer (B2C) websites. This setting contributes to a more realistic scenery of the research since it does not require participants to imagine doing a sale as it would be the case in a B2C setting. The touchpoint company website was selected for investigation since it allows the combined collection of data on experience and buying intention. It is one of the most frequently used touchpoints in a customer journey and has a great importance for marketing and sales purposes [20, 42]. Company websites represent companies in the World Wide Web containing relevant content for visitors, such as information on an organization's profile, portfolio of offerings, references, press releases, videos, podcasts, and live chats [21, 45, 64]. With its ability to attract visitors, convey information, engage in dialogues with customers, increase brand awareness, and gain competitive advantage, the corporate website was well suited to study the importance of touchpoint quality and buying intention [8, 19, 53, 64]. We

took the perceived quality of a touchpoint as a measure for the customer experience provided at a touchpoint.

The results of our study show a multifarious relationship between the perceived quality of the touchpoint website and consumers' buying intention along the customer journey. By combining insights from customer journey design, user experience design and attributional modeling, this research contributes to the debate on measuring touchpoint performance in customer journey analysis by providing a more nuanced understanding of how a touchpoint's quality impacts buying intention in different customer journey phases. Practitioners can use these insights to improve customer experience management and to allocate resources in marketing and sales more efficiently. Marketing managers should incorporate the quality of a touchpoint when evaluating a touchpoint's relevance in the customer journey and they can analyze in which phases of the customer journey their touchpoints, such as the company website, deliver the greatest value. These insights can help tailoring the design of touchpoints to the specific needs of consumers and thus address them more effectively.

The paper is organized as follows. First, we show the relevance of customer journey analyses and the importance of a corporate website as a central touchpoint. Next, factors influencing a corporate websites quality are examined to lay out how a valuable customer experience at the touchpoint website can be created. Grounded in literature of customer journey analysis and buying behavior, we develop and test our hypotheses. After presenting the results, a discussion section follows including theoretical and practical implications. The final part of the paper is devoted to the limitations of our work and derives possibilities for further research on customer journey analyses.

## 2 Theoretical background

### 2.1 Customer journey analysis

The noun customer journey describes various phases and touchpoints consumers pass through before making buying-decisions or consuming products [18, 40]. Here, phases organize the process a customer completes to form a buying decision and executing it. The formation of a buying decision is based on the experience a customer makes throughout the different phases. Typically, models describing different phases start with the recognition of a certain need and end with a sales or after-sales phase [40]. Divergent number of phases and phase classifications of the customer journey can be found in the literature, although they are close in terms of content [25]. Recent contributions describe the customer journey as a nonlinear process [15, 40]. This description is particularly useful for illustrating consumers' ongoing relationships with brands and retailers that lead to repeat buying thus, capturing customer loyalty [40]. It also points to the fact that customers may reach out for a certain point of contact, e.g., a website, at different phases during the customer journey so that the point of contact may have different effects on the buying behavior depending on the phase in which it is contacted.

The points of contact are called touchpoints and describe the communication and interaction between an organization and an individual consumer [29]. The interaction at touchpoints can be manifold including different levels of involvement such as rational, emotional, or physical involvement [23]. The experience at a touchpoint denotes a touchpoint's ability to shape consumer preferences and buying behavior. On the one hand, customer experience is influenced by the perceived quality of a respective touchpoint. In this vein, user experience design is concerned with designing individual touchpoints using design elements to promote an intuitive and natural experience [28, 46]. On the other hand, customer experience is influenced by the relationship and connection of different touchpoints along the buying process. In this context, Kuehn, Jozic, and Homburg present, among others, the thematic coherence, consistency, and context sensitivity of the touchpoints as important elements of an effective customer journey design [36].

When interacting with an organization, numerous touchpoints exist along the customer journey allowing companies to connect with their customer so that a brand experience can be built [36, 65]. The touchpoints affect each other and have a direct or indirect impact on buying decisions. The preference for certain kinds of touchpoints, e.g., touchpoints in the online world, vary by consumer and phase of the customer journey [40]. By examining whether touchpoints provide the best possible customer experience, customer journey analysis helps companies to capture, understand and improve their consumers' buying processes [59, 60]. Consequently, a better understanding of consumers' activities and cognitive as well as emotional perceptions in the different phases of the customer journey and at the different touchpoints helps targeting resources, e.g., advertising budgets, to improve conversion predictions of touchpoints [67].

Consequently, technological advances in tracking touchpoints are increasing the interest in so called attribution models. Attribution captures and evaluates the contribution of one or more touchpoints to a buying event [12]. These models can be divided in heuristic and analytical models [5, 47]. Heuristic models use predefined rule sets to determine channel impacts. Analytical models use multivariate analyses to determine the probability of an event based on the movement patterns of consumers at different touchpoints [54].

While these models provide insights on the importance of a touchpoint within a network of possible touchpoints customers can choose from and interact with, their analytical procedure does not explicitly account for the customer experience at a touchpoint. Given that the customer experience shapes the evaluation of a brand and services offered, it can be supposed an important factor in determining a touchpoints importance. Thus, the perceived quality that determines how a touchpoint shapes customer experience may have a significant influence on the importance a touchpoint has in the customer journey.

Given that a coherent and targeted management of touchpoints can influence brand perception and help to build and secure profitable relationships with customers [44], research on the importance of the perceived quality of a touchpoint regarding a touchpoints position along the customer journey seems warranted.

## 2.2 Company website as a digital touchpoint of the customer journey

One of the most common touchpoints that is under the direct control of the company, a so-called owned touchpoint, is the company website [42, 64]. Companies use websites to attract visitors, convey information, establish a dialog with customers, increase brand awareness, and to gain competitive advantage [8, 19, 53, 64]. Given that the company website serves different functions, it may be of different importance at different phases along the customer journey. This is because customers pursue different goals when reaching out for the touchpoint company website at different phases of the customer journey.

The company website consists of various elements. The entry point to the website is the home page, which acts as a table of content for the website and directs visitors to further pages and specific information [26]. These pages usually include information on an organization's profile, portfolio of offerings, references, press releases, videos, podcasts, and live chats [21, 45, 64]. In addition, the website serves to communicate news, attitudes, and a company's expertise, which are often presented in combination with a web blog [48]. Visitors expect dynamic contact options, such as a form to fill out or chat functionalities, which enable efficient communication with the company and quick answers to simple questions [38]. Therefore, marketers should carefully design digital content with relevant information, keywords, and meta tags (information about the structure of the website) so that buyers' search queries lead to the company's website [64]. In contrast to informational websites that contain only information about a topic, a company, or a product or service respectively, transactional websites also offer buying functionalities [49].

Notably, users form a first impression of a website within a few seconds [41]. The result determines whether the website succeeds in generating attention and in promoting the establishment of a relationship between consumers and the company [21]. Whether a company website fulfills the purpose for which it was developed can be measured by its perceived quality [31]. Given that customer journey analysis is designed to identify critical touchpoints for the customer experience and buying behavior [34, 52], we propose to include a website's perceived quality when investigating its importance along the customer journey.

## 2.3 Quality factors of a website

The perception of the quality of a website is always subjective as the fulfillment of purpose is assessed differently depending on the user [27]. However, various studies have identified consistent factors of a website influencing quality perception. Based on a meta-analysis of these studies, website quality is operationalized using five individual factors. These can be grouped into the main factors of content, design, and overall impression.

Content is the most original and widely used quality criterion for websites. A website's content should provide information and answers to visitors' questions to generate value [3, 31, 64]. The second main factor, design, is made up of three individual factors. The first factor is layout and represents the appearance of the website which stimulates the visitor's emotions with visual impressions [1, 41]. Navigation

**Table 1** Differences of B2C and B2B websites

Quality factor	B2C	B2B
Content	<ul style="list-style-type: none"> <li>- High resolution, expressive images</li> <li>- Discounts and special offers</li> <li>- Social proof in the form of customer reviews and rating videos</li> <li>- Product features and highlights</li> </ul>	<ul style="list-style-type: none"> <li>- Comprehensive buying guides</li> <li>- In-depth product videos, articles, and blog posts</li> <li>- Easy access to sales reps</li> <li>- Case studies with customer success stories</li> </ul>
Layout	<ul style="list-style-type: none"> <li>- A lively, eye-catching homepage</li> <li>- Catchy and creative headlines</li> <li>- Creative call-to-actions</li> <li>- Highlighted sales, discounts, and special offers</li> </ul>	<ul style="list-style-type: none"> <li>- Highlighted images of the main products</li> <li>- Simple, straightforward design</li> <li>- To-the-point call-to-actions</li> <li>- Fast ordering systems (e.g., via product name, SKU)</li> </ul>
Overall impression	<ul style="list-style-type: none"> <li>- Cohesive website elements creating an attention-grabbing website that focuses on sales through discounts and special offers to encourage customers to buy</li> </ul>	<ul style="list-style-type: none"> <li>- Coherence of website elements that promote the perception of a highly informative website and allow buyers to independently learn about the company's offer</li> </ul>

is the second factor of the design. It includes the structuring of the website and influences the intuitive use of the website as well as the findability of information [1, 58]. Interactivity of the website is the third criterion and stands for the possibility to act flexibly on the platform and to enable website visitors contacting the company in a convenient way. This can be accomplished for example by implementing live chats [39, 45]. Finally, the overall impression of a website stands for the coherence of the individual elements in the overall picture [31]. It denotes how well the various factors interact and therefore represents more than the sum of the single quality factors. E.g., if the content and the layout of a website are each rated well, but the design has no thematic reference to the content of the website, the rating of the overall impression is likely deviate from the rating of the other quality factors. Therefore, the overall impression is treated as an individual variable.

The presented quality factors are applicable in both B2C and B2B contexts. However, when creating a website, it must be considered that there are differences in how a high perceived quality can be reached at each factor. This is because B2C customers have different requirements when visiting a website than B2B customers. The differences are summarized in Table 1 [57]:

The differences in Table 1 indicate that B2B customers have different needs when visiting a website, particularly in terms of content, layout, and overall impression. This is due to the higher complexity of products and services they typically search for and the complexity of the buying process they are involved in. Consequently, the design of the touchpoint website must be adjusted to the field of application (B2C or B2B).

The findings of the literature review are summarized in Table 2. They present a basis for deriving the research hypotheses.



**Table 2** Summary key findings of literature review

Topic	Finding
Customer journey analysis	<ul style="list-style-type: none"> <li>- Customer journeys describe the various phases that consumers go through before making buying decisions or consuming products.</li> <li>- Within these phases, communication, and interaction between a company and an individual consumer takes place at various touchpoints.</li> <li>- Attribution models measure the impact of touchpoints but neglect how the perceived touchpoint quality influences the touchpoints' performance and thus the attribution results.</li> </ul>
Company website as a digital touchpoint	<ul style="list-style-type: none"> <li>- Company websites are one of the most common touchpoints and typically include elements such as a home page, information pages, web blogs, and chats.</li> <li>- Company websites are used to attract visitors, convey information, establish a dialog with customers, increase brand awareness, and gain competitive advantage.</li> <li>- Whether a company website fulfills the purpose for which it was developed can be measured by its perceived quality.</li> </ul>
Website quality factors	<ul style="list-style-type: none"> <li>- Perceived website quality can be operationalized using five quality factors:               <ol style="list-style-type: none"> <li>(1) content=website information that provide answers to visitors' questions</li> <li>(2) layout=website appearance that stimulates visitor's emotions with visual impressions</li> <li>(3) navigation=website structure that enables an intuitive use and information findability</li> <li>(4) interactivity=possibility to act flexible on the website to create efficient interaction</li> <li>(5) overall impression=coherence of the individual website elements in the overall picture</li> </ol> </li> </ul>

### 3 Hypotheses development

#### 3.1 Research question 1

The first research question is about identifying the phases of the customer journey in which the company website fulfills the greatest benefit as a touchpoint. In each phase of the customer journey, there are different requirements for the interaction between the customer and the company. In the phase "awareness" consciousness of an offer is created. In the "favorability" phase, a concrete interest in an offer is strengthened. The "consideration" phase is characterized by considering buying an offer and selecting a possible product or service alternative. In the "intent to buy" phase, the buying intention is concretized, heading to a final "conversion" phase where a customer either buys a product or service, or at least engages in a specific action directed at buying an offer subsequently [7]. The different interactions in customer journey phases show that consumers' need for information is still comparatively low at the beginning of the customer journey, while more intensive exchanges and more specific information are required as the customer journey progresses [66]. For example, hearing about a product or service for the first time is usually enough to attract attention, whereas the actual purchase requires prior intensive information research, e.g., on prices, product features or scope of services. This is especially true for complex solutions that drive cognitive and emotional involvement of customers as well as the intensity of processing information before a buying [35]. Due to their specific characteristics, customer touchpoints fulfill different benefits for each individual phase and are therefore differently suited to fulfill the requirements within the different buying phases [40, 62]. In this vein, company websites are particularly suitable for

increasing brand awareness, providing company information, and beginning an initial dialog [8, 19, 53, 64]. On the other hand, the sale of complex solutions, combined with extensive buying decision-making processes, requires the personal contact and expertise of specialized salesperson [56]. The B2B services examined in the study are characterized by a high degree of individual customer requirements. These requirements are usually exchanged in personal discussions between the buying and selling organizations (e.g., buyer and salesperson) and result in the creation of individual offers [22]. The individuality of information is difficult to map via a website, even when using modern approaches such as dynamic website content. Therefore, we conclude that the corporate website offers the greatest benefit at the beginning of the customer journey due to its functionalities, while in later phases other touchpoints are needed that allow a stronger individualization of communication and representation of offered solutions. The first hypothesis is therefore as follows:

**H1** The more progressed the customer journey, the lower the company website's impact on the buying intention.

### 3.2 Research question 2

The second research question aims to find out to what extent the perceived quality of the company website influences its impact on the buying intention of visitors. The stimulus-organism-response model provides a simplified explanation of human behavior. It explains that environmental stimuli to which individuals are exposed trigger cognitive and affective organismic states, which in turn elicit behavioral responses [50]. In the following, we illustrate the stimulus-organism-response model based on a buying decision-making process. The human organism processes marketing stimuli, such as product advertising based on activating variables (e.g., emotions) as well as on cognitive variables (e.g., perception). The variables trigger an evaluation of the characteristics and the expected product benefits. This intrapersonal processing leads to a visible reaction, which is expressed in the form of a buying intention, such as buying an advertised product [9, 43].

By presenting information about a company, the website serves as an external stimulus and provides marketing incentives. The processing of the stimuli in the human organism is based on emotional criteria and on the cognitive perception of the website. The cognitive perception is primarily influenced by the viewer based on its quality characteristics of the observed website. Finally, the processing of website impressions and the perceived quality of website elements influence the response behavior of the viewer. Therefore, we conclude that the impact of a website on visitors' buying intention will increase when the perceived quality of a company's website is high. This is summarized in the hypothesis below:

**H2** The higher the perceived website quality, the higher the company website's impact on the buying intention.

### 3.3 Research question 3

The investigation of the third research question aims to show whether there are differences between the customer journey phases regarding the influence of the quality of a website on its impact on buying intention. In particular, this hypothesis intends to show whether the influence of website quality on buying intention is limited and for which customer journey phases an investment in website quality is particularly useful.

To derive the third hypothesis, the contents of hypotheses 1 and 2 are combined. Hypothesis 2 argued, based on the stimulus-organism-response model, that the cognitive perception of a website, which is influenced by its perceived quality, has an impact on consumer response behavior. Hypothesis 1 states that corporate websites have the greatest influence on consumers' buying intentions due to their functionalities at the beginning of the customer journey.

In the initial phases of the customer journey, consumers usually become aware of an offer and evaluate whether it is of interest to them. Corporate websites increase brand awareness, provide corporate information, and initiate initial conversations. Given the availability of websites for getting a first impression of a brand, it is assumed that websites have an influence on buying intention in the first phases of the customer journey anyway and that the perceived quality of the website is not as important here as in other phases of the customer journey to increase the touchpoints' ability to influence the buying intention. In the later phases, consumers confirm their interest in buying and form a buying decision and they can do so by using different touchpoints. In order to influence these events, it is assumed that a particularly high website quality rating is required. Given the increasing requirements on a touchpoint as the customer journey progresses and the influence of website quality on buying intention, it is assumed that an increased website quality has a greater influence on the later stages of the customer journey. This results in the following hypothesis:

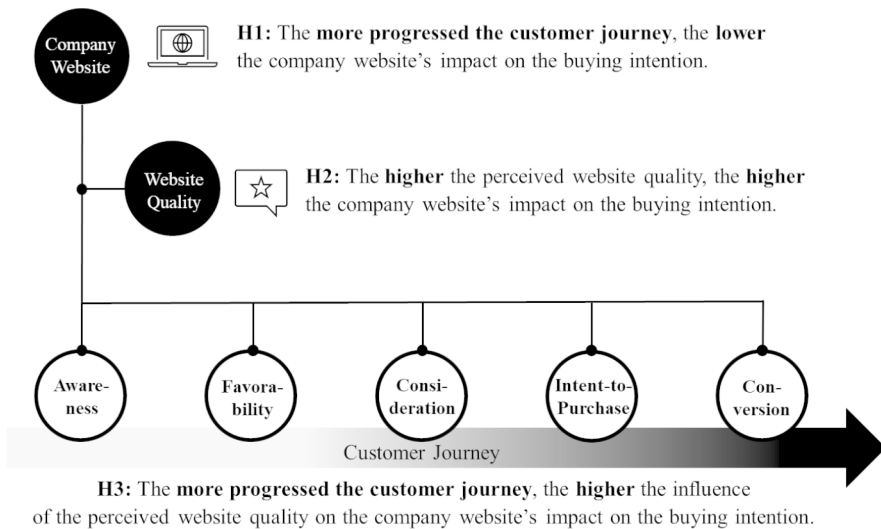
**H3** The more progressed the customer journey, the higher the influence of the perceived website quality on the company website's impact on the buying intention.

The developed hypotheses are summarized in Fig. 2.

## 4 Research design and statistical analysis

### 4.1 Research design

To test the three hypotheses, a survey in a real life online setting [16] was conducted. Data collection took place online between March 08 and March 23, 2019. Participants accessed the setting via a web URL that was promoted through various business networks such as LinkedIn and Xing. We advertised the survey at groups of people showing an interest in supply chain management topics to reach suitable candidates. The collection of survey data took place on the platform SurveyMonkey. The dataset has been used in the study of Koch and Hartmann [33]. The current analysis provides



**Fig. 2** Summary of hypotheses

an extension regarding the investigation of differences in the influence of the quality of a website on its impact on buying intention along the customer journey.

The survey in a real life online setting was performed on the website of a company offering complex solutions in logistics. As part of content marketing, the website includes content on solutions to supply chain management (SCM) challenges in addition to information about the company's services and characteristics. The website aims at demonstrating the competences of the investigated company and animating visitors to find out more about the range of the company's services. Due to the complexity of services offered, the website contains no e-shopping option, but encourages visitors to consult sales managers for inquiring individual service contracts.

The participants were selected by purposive sampling with criteria of respondent's experience with SCM services and unfamiliarity with the investigated company (no previous contact). In addition, participants had to have previous experience with organizational buying processes and be eligible as potential buyers of the services. For this, the participant's employer had to meet relevant criteria, such as a certain size of logistics department. These criteria were collected at the end of the survey. Survey from participants who did not meet these requirements were not included in further data analysis.

The study attracted in total 74 participants. To meet the strict purposive sampling requirements for our study, a relatively high proportion of participants had to be excluded from the study. 14 participants were excluded from the evaluation due to incompleteness of their questionnaires. In this context, missing information occurred particularly in the collection of socio-demographic data and the professional characteristics of the participants, so that it could not be ensured that the participants met the above-mentioned requirements. Furthermore, 20 participants had to be excluded because they did not meet the requirements for participation in the survey mentioned above. Thus, data from 40 participants were processed for our research.

While the lower number of participants has a negative impact on the internal validity of the results, the exclusive inclusion of participants with a high level of experience in B2B decision-making processes fosters external validity. The non-artificial setting further enhances external validity. In order to generate findings with a high practical relevance and applicability for the B2B context, a high external validity seems warranted. Thus, the sample presents a balancing act between reaching a satisfying level of internal and external validity.

At the beginning of the survey, participants received a description of the procedure and were integrated into the underlying vignette. Participants were asked to imagine they were looking for a service provider to solve a SCM challenge in their company. In this context, the website should be used as a source of information for evaluating the company as a potential provider. At the end of the description, a hyperlink was provided that directed the participants to the company's website. To create a realistic buying scenario, no further restrictions or interventions were made when visiting the website.

After the visit, the impact of the website on buying intention was collected as the dependent variable and perceived website quality as the independent variable. To evaluate the impact of the website on the buying intention within the customer journey, a representative buying behavior characteristic was presented for each phase. Based on these characteristics, the participants were asked to evaluate the extent to which the website visit influences their behavior regarding the customer journey phase. For reasons of feasibility, we choose a customer journey model for the study that consists of five phases, which were already explained in the context of deriving the first hypothesis. The phases are listed again below for the sake of clarity and then related to the corporate website touchpoint. In the phase "awareness" consciousness of an offer is created. In the "favorability" phase, a concrete interest in an offer is strengthened. The "consideration" phase is characterized by considering buying an offer and selecting possible alternatives. In the "intent to buy" phase, the buying intention is concretized and concludes in a final "conversion" phase where a customer either buys a product or service or at least engages in a specific action directed at buying an offer subsequently [7]. In this study, conversion describes the intention of a customer to start negotiating a contract. The following Table 3 summarizes the statements to be evaluated on the website's impact on the buying intention in the various phases of the customer journey:

**Table 3** Description of buying intention statements

Phase	Statement
Awareness	The website made me aware of the company's services.
Favorability	The website has increased my interest in the company's services.
Consideration	The website has led to consider services of the company for solving my challenge.
Intent to buy	The website has concretized my intention to buy services from the company.
Conversion	The website made me want to buy the company's services to solve my problem.

This investigation was followed by the assessment of website quality. Here, participants rated their perception of each website quality factor derived in Chap. 2. Table 4 summarizes the evaluation statements for the quality factors:

**Table 4** Description of website quality statements

Quality factor	Statement
Content	The content of the website was useful for my solution search.
Layout	The layout of the website was attractively designed.
Navigation	The navigation of the website was intuitive.
Interactivity	The website was interactive in terms of contact options.
Overall impression	The website made a coherent impression overall.

For reasons of comparability, both variables were measured on a five-point Likert-type scale from “not at all likely” to “very likely”. By assuming equally sized scale segments, this ordinal-scaled data will be interpreted as interval-scaled for further analysis.

The fourth part builds on the perceived quality assessed previously. Since the importance of the quality factors in the overall comparison is always subjective, the individual participant evaluations need to become comparable to be interpreted more precisely. For this purpose, two quality factors were always compared with each other within the pair comparison, resulting in ten comparisons from five quality factors. Participants chose which of the two compared quality factors was more important to them. The sum of the ratings per quality factor divided by the sum of the ratings of all quality factors results in the individual weighting of each quality factor.

In the final part, the sociodemographic data of the participants were collected. In particular, we asked about gender, age, field of activity, and information on the buying behavior of the participants. In addition, participants rated their experience with logistics in general and the services provided by the company hosting the study. This was necessary to be able to exclude participants with experience of the company from the evaluation. The socio-demographic data were primarily collected to gain a picture of the group but were not used as control variables.

## 4.2 Statistical analysis

### Participants

As mentioned before, the dataset includes 40 purposefully sampled participants. 80% of the participants were male. Most of the participants were in the age group 20–29 years with 47.50%, followed by the age groups 40–59 years with 30%, 30–39 years with 20% and 60–79 years with 2.50%. Experience in the field of logistics was 11.40 years on average. 37.5% of the respondents had jobs directly in the field of logistics or supply chain management. 17.5% were working primarily in the domain of sales, 7.5% in IT, and 5.00% in buying and had only indirect experience with logistic issues. 81.48% of the participants had already used a potential supplier’s website in the past to obtain information during a buying decision process.

**Hypothesis 1** The focus of the first investigation was on the impact of the company website on the buying intention in the different phases of the customer journey. To create an initial data overview, the arithmetic mean of the company website’s impact on the buying intention was calculated for every customer journey phase. This resulted to a value of 4.10 for the awareness and the favorability phase, 3.85 for the consideration phase, 3.60 points for the intent to buy phase and 3.45 points for

**Table 5** Descriptive statistics buying intention

Customer journey phase	$\bar{x}$	$\Delta$	$\sigma$	CV
Awareness	4.10	0.00%	0.80	19.51%
Favorability	4.10	0.00	0.58	14.22%
Consideration	3.85	-6.10%	0.69	17.95%
Intent to buy	3.60	-12.20%	0.92	25.46%
Conversion	3.45	-15.85%	0.95	27.46%

the conversion phase. This result corresponds to an overall reduction from awareness to the conversion phase of 15.85%. The standard deviation of the ratings for buying intention is moderate within the individual customer journey phases. The coefficient of variation shows that the dispersion of the results for buying intention increases regarding the phases towards the end of the customer journey. In conclusion, descriptive statistics shows a steady decline in the influence of the company website on buying intention as the customer journey progresses (Table 5).

Next, an analysis of variances (ANOVA) was applied to investigate whether the impact differences of the company website are significant. A prerequisite of the ANOVA is the homogeneity of variances. The Levene test illustrated a lack of homogeneity of variances, which is required as a prerequisite for performing ANOVA ( $p < .01$ ). Therefore, a Welch-ANOVA was performed. The Welch-ANOVA shows a significant difference of the influence of the corporate website on the buying intention in the different customer journey phases ( $F(4, 96.63) = 4.95, p < .01$ ). To specify in which of the phases differences in impact exist, a post hoc test was conducted. Since no equality of variance can be assumed within the groups, the Dunnett-T3-corrected post-hoc test was applied. The test indicates significant differences of the buying intention only between the awareness and conversion phase ( $p = .02$ ; 0.65, 95%-CI[0.08, 1.22]), as well as the favorability and conversion phase ( $p = .02$ ; 0.65, 95%-CI[0.01, 1.00];). The Cohen's  $d$  was computed to measure the effect size of these variances. With a value of  $d = 0.69$ , the effect size is medium between the awareness and conversion phase. For the favorability and conversion phases, the effect size is  $d = 0.76$ , which corresponds to a medium effect as well.

Since the influence of the company website on buying intention differs significantly in the individual phases of the customer journey, hypothesis 1 can be supported. However, only the first two phases of the customer journey (awareness and favorability phase) differ significantly from the last phase (conversion phase).

**Hypothesis 2** The aim of the second study was to analyze the relationship between the perceived quality of the website and the participants' buying intention. To this end, it was necessary to operationalize the perceived quality of the website. The quality factors were measured on a five-point scale. The resulting arithmetic averages of the quality factors are 4.18 for content, 4.53 for layout, 4.23 for navigation and 4.53 for interactivity and the overall impression of the website. The standard deviation of the ratings for the quality factors is lower than for the rating of the buying intention, with coefficients of variation between 12.09% (interactivity) and 20.14% (navigation).

**Table 6** Descriptive statistics website quality

Quality Factor	$\bar{x}$	$\sigma$	CV	Weighting
Content	4.18	0.67	15.97%	19.00%
Layout	4.53	0.84	18.48%	16.50%
Navigation	4.23	0.85	20.14%	21.00%
Interactivity	4.53	0.55	12.09%	12.25%
Overall Impression	4.53	0.67	14.81	31.25%
Weighted overall website quality	4.40	-	-	-

A pairwise comparison was used to determine the weighting of the quality factors by comparing the individual factors in pairs to derive a ranking using a dominance score. The pairwise comparison illustrates that the quality perception is determined by the general impression with a weighting of 31.25%, navigation with 21.00%, content with 19.00%, layout with 16.50% and interactivity with 12.25%.

The results were multiplied by the associated quality factor scores to form the overall quality score per participant. In conclusion, the result for the weighted overall quality of the website is 4.40 points (Table 6).

To further specify the relationship between the influence of the quality of a website on its impact on the buying intention, a simple regression analysis was conducted. First, buying intention was considered aggregated across all phases.

The simple linear regression with website quality as the independent and the impact of the website on the buying intention as the dependent variable indicates a significant correlation ( $F(1,38)=18.51$ ,  $p<.01$ ). 32.8% of the variance from the websites impact on the buying intention can be explained by the website quality. Thus, website quality is a significant predictor of the websites impact on the buying intention. The estimated increase in the websites impact on the buying intention is 0.61, per level of website quality ( $\beta = 0.61$ ;  $t(38)=4.30$ ;  $p<.01$ ). Overall, website quality has a moderate effect ( $f=0.35$ ) on the websites impact on the buying intention.

Considering the average buying intention across all buying phases, an influence of the quality of a website on its impact on the buying intention is concluded. Thus, hypothesis 2 is supported.

**Hypothesis 3** Building on the second study, the final task was to analyze the extent to which the influence of the perceived quality of the website on its impact on consumers' buying intention differs between the different customer journey phases. The influence of the quality of a website on its impact on the buying intention was analyzed for each customer journey phase. The consideration phase ( $F(1,38)=183.40$ ,  $p<.01$ ) has the highest effect size with a value of  $f=0.60$ , followed by the intent to buy phase ( $F(1,38)=8.90$ ,  $p=.01$ ) with a value of  $f=0.48$ . This is followed by the conversion phase ( $F(1,38)=7.32$ ,  $p=.01$ ) with a value of  $f=0.44$  and the awareness phase ( $F(1,38)=6.53$ ,  $p=.02$ ) with an effect size of  $f=0.42$ . Only buying intention in the favorability phase ( $F(1,38)=5.89$ ,  $p=.02$ ), with an effect size of  $f=0.39$ , minimally fails to be classified as a strong effect. Consequently, differences in the influence of the quality of a website on its impact on the buying intention can be identified along the customer journey.

To determine the extent to which the differences between the customer journey phases are significant, a stepwise regression is conducted according to the procedure



proposed by Kühnel (1996) [37]. The group differences are determined based on the influence of the quality of a website on its impact on the buying intention between two of the five customer journey phases. This results in a total of ten multi-group comparisons.

To perform the stepwise regression, three variables are considered in the regression analysis. The first variable represents the influence of the quality of a website on its impact on the buying intention (output variable). Second, a dichotomous dummy variable is added to the dataset that assigns the values of the dependent and independent variables to one of the two compared customer journey phases based on the assigned number '0' or '1' (0/1 coded dummy variable). The third variable represents the product of the output variable and the 0/1 coded dummy variable (product variable). Since the 0/1-coded dummy variable for one of the two compared customer journey phases has the value '0', all values of the corresponding product variables also need be zeroed. The product variables calculated based on the dummy value '1' are again identical to the initial variable.

Based on the determined variables, we calculated two regression analyses to test the group differences. The first regression equation determines the influence of the quality of the website on its impact on buying intention (simple regression model). The second regression analysis includes the 0/1 coded dummy variable and the product variable as an independent variables in addition to the initial variable (multiple regression model). Based on the results of the two regression analyses, an F-test is performed, and the F-statistic is determined using the following formula:

$$F = \frac{(SS(E0) - SS(E1)) / (df0 - df1)}{SS(E1) / df1}$$

$SS(E0)$	Square sum of the residuals from the simple regression model
$SS(E1)$	Square sum of the residuals from the multiple regression model
$df0$	Degrees of freedom of the simple regression model
$df1$	Degrees of freedom of the multiple regression model

The F-statistic uses the sums of squares of the residuals and freedom variables of the simple and multiple regression models to test whether the group means of the two models are equal.

Table 7 shows the relevant results for hypothesis 3 for each pair of customer journey phases. There are differences between the customer journey phases regarding the influence of the quality of a website on its impact on the buying intention. In customer journey phases that are close to each other, such as the awareness and favorability phase ( $F(2,76)=0.19$ ,  $p=.83$ ), no differences in influence can be identified. In customer journey phases that are further apart, however, the influence of the quality of a website on its effect on buying intention differs. Thus, the multi-group comparison revealed significant differences for the awareness and intent to buy phase ( $F(2,76)=4.00$ ,  $p=.02$ ), awareness and conversion phase ( $F(2,76)=6.26$ ,  $p<.01$ ), favorability and intent to buy phase ( $F(2,76)=5.54$ ,  $p<.01$ ), as well as favorability and conversion phase ( $F(2,76)=8.18$ ,  $p<.01$ ). Considering the determined effect

**Table 7** Results of multi group comparison

Compared groups	F-value	Degree of freedom counter	Degrees of freedom denominator	P-value
awareness – favorability	0.19	2	76	0.83
awareness – consideration	1.36			0.26
awareness – intent to buy	4.00			0.02*
awareness – conversion	6.26			>0.01*
favorability – consideration	2.39			0.09
favorability – intent to buy	5.54			>0.01*
favorability – conversion	8.18			>0.01*
consideration – intent to buy	1.19			0.31
consideration – conversion	2.77			0.07
intent to buy – conversion	0.30			0.74

\*Significant differences

sizes, the influence in the intent to buy ( $f=0.48$ ) and conversion ( $f=0.44$ ) phases is more pronounced than in the awareness ( $f=0.42$ ) and favorability ( $f=0.39$ ) phases.

Even if the differences in the multi-group comparison are not significant for each pair, differences in the influence of the quality of a website on its impact on buying intention can be identified when all customer journey phases are considered. These significant differences in the influence of website quality are particularly significant for customer journey phases that are distant from one another. It becomes clear that the influence of the quality of a website on its effect on buying intention increases in the later phases of the customer journey. Thus, hypothesis 3 is supported.

## 5 Results and implications

The findings of our empirical analysis provide a basis to derive implications for research and practice regarding customer journey analyses and touchpoint management. Companies use customer journey analyses to examine in different buying phases which touchpoints are available to consumers, which ones they select, and how they interact with them [40, 63]. The results of our study extend this perspective on customer journey analysis by highlighting the importance of the qualitative design of touchpoints. Following, we present our three key findings that are of particular importance for future studies on customer journey analyses and practitioners.

First, our findings illustrate how the quality of touchpoints affects consumer behavior in the buying process. The regression analysis indicates that website quality has a medium to high influence on the effect of the website in influencing visitors' buying intention. Previous studies measuring the effectiveness of touchpoints focus on whether a specific touchpoint was used as part of the customer journey and to what extent its use affected the likelihood of buying [6, 32]. How the consumer qualitatively evaluates the touchpoint is not considered in determining the effectiveness of the touchpoint. Thus, our study demonstrates the influence of the perceived quality on the effectiveness of a touchpoint in shaping buying intention.

This finding points to the need to extend attribution modeling by integrating the quality perception of touchpoints to measure touchpoint performance more precisely. To better explain differences in touchpoint performance, there is need for cross-dis-

disciplinary-research including studies that combine attribution modeling with research on customer journey and user experience design to better understand touchpoints' impact on buying behaviour. For example, surveys on the perception of touchpoint quality can integrate quantitative indicators like the duration of website usage that provide information about the perceived quality of the touchpoint.

Integrating qualitative aspects in customer journey analysis also allows practitioners to improve the effectiveness of how they allocate marketing resources, i.e., advertising budgets. Instead of investing the advertising budget primarily in those touchpoints that lead to the most sales in present, companies should also invest in touchpoints' potential and determine whether investing in the perceived quality of an underperforming touchpoint would be more effective than just promoting well performing touchpoints. Thus, considering the perceived quality of touchpoints in customer journey analysis can help companies explain differences in performance and re-consider the advertising potential of their touchpoints to improve the allocation of their advertising budget.

Second, our study shows how the quality of a touchpoint affects buying behavior in different phases of a customer journey, leading to new insights about the effective design of touchpoints. Research describes the customer journey as a nonlinear process with ongoing relationships between brands and consumers [15, 40] and that touchpoints can be visited multiple times during different phases in the buying procedure. The results of our study show that also the quality of a website has a different impact on buying intention depending on the phase of the customer journey the consumer is in. Consistent with findings that consumers form beliefs and expectations about the quality and suitability of an offer that need to be met to create customer satisfaction [2], consumers also seem to form expectations about the quality of a touchpoint along the customer journey. To create satisfaction, touchpoints must fit customers' expectations derived from their individual experience and usage intentions which differ depending on the customer journey phase consumers are in when visiting a touchpoint. To exceed a moderate satisfaction level, the expectations must be topped. For example, in the initial phases of the customer journey, consumers' expectations are not yet solidified due to lower levels of experience. As the customer journey progresses, each contact with the company impacts the customer experience, thereby solidifying the expectations of the interaction [23]. To exceed an established satisfaction level and to improve a touchpoints ability to shape buying intention in later phases of the customer journey, there is need to exceed the perceived quality of a website. Consumers in the later phases are already better informed and search more specifically for answers to their questions. In order to be able to influence the already established buying intention in these phases, the rating of the website quality from the consumer's point of view must be comparatively high.

These results suggest that the contributions to the qualitative design of touchpoints must be more differentiated. For example, the design of the website differs depending on whether the goal is to make the website visitors aware of the service offering at the beginning of the customer journey or to motivate them to make a buying at the end of the customer journey. Studies must therefore clarify how the design of individual touchpoint elements (e.g., content, layout) can affect consumers' buying behavior at different stages of the customer journey.

Practitioners can take the results to rethink possibilities for improving customer experience. In particular, our research suggests that companies may not only align their website regarding different customer segments that have different needs and wants, but also to align the design of their touchpoints dynamically regarding the different stages of the customer journey in which a touchpoint may be contacted by a customer. To improve customer experience at a specific touchpoint, companies must design their touchpoints sensitively regarding the phase in which it is contacted. This requires that they group touchpoint visitors according to pre-defined customer segments and according to the buying phase in which they are. For example, at the beginning of their journey, websites should be designed that they display general company information, visually supported by appealing graphic elements to foster awareness. Customers who are further along in their customer journey, on the other hand, should be offered additional landing pages that are easy to find and offer in-depth content on their specific search queries to promote a higher level of perceived quality.

Third, our findings provide insights on the role websites play in the B2B context. While B2B settings are typically associated with more rational decision processes, the role of aesthetics often is downplayed considering the importance of informativeness and usability of a website [10]. The pairwise comparison in our study shows that the overall impression of the web page has the strongest influence on the perception of website quality with a weighting of 31.25%. In this vein, our study highlights the importance of aesthetic aspects in designing B2B web pages to support the creation of a desired image and the buying intention. Consequently, further studies should be conducted that deal with the perception of the design of B2B websites. Studies should shed light on how companies succeed in designing the various elements of a website to create a seamless overall picture. In this context, the interaction of content, navigation and layout of the website is of particular importance.

From a practitioner's point of view, the result suggests that marketing managers in B2B settings should adhere to insights from user experience design to promote customer experience and take care when designing the website to create a coherent overall image. B2B marketers can refer to user experience design approaches and use A/B tests to check the effectiveness of their measures.

Furthermore, our research results confirm the importance of a company website in B2B settings for shaping the buying intention beyond the creation of awareness. In particular, the website's impact on the buying intention demonstrates its special importance as a touchpoint in the first two phases of the customer journey, i.e., awareness and favorability. This finding highlights the importance and potential of websites to form buying decisions even in complex B2B settings.

A practical implication is that B2B companies offering customized solutions should position the corporate website as an important touchpoint containing information that go beyond the mere presentation of a companies' offerings to create awareness. The website should also allow customers to evaluate the company's competences to foster favorability. This finding may encourage companies to integrate more functionalities in their website that previously have been fulfilled by sales agents, e.g., provision of information about possible technical solutions offered.

## 6 Limitations of the study and future research directions

In our study, we quantified the influence of a touchpoint's perceived quality on consumer buying intention with special regard to different customer journey phases in which a touchpoint may be contacted. To conduct the study, data was collected in the B2B context to be able to differentiate more precisely between different phases of the customer journey a customer is in. The research design required a selective sampling of decision makers in a specialized field to foster external validity. However, the strict sampling process resulted in a small number of participants, thus limiting internal validity. Furthermore, to simulate conversion, participants were asked about their intention to buy the service offered but not to undertake a transaction. This procedure represents a realistic B2B scenario since a detailed buying contract is typically negotiated with sales representatives. Nevertheless, our results only show the intention to behave but not behaviour. Thus, it would be useful to initiate a replication study with creating a setting attracting more participants and testing for conversion rates by integrating e-shopping options to validate results.

By creating an artificial environment, surveys do not necessarily correspond to a truthful answer, or they are distorted by a false self-perception of the participants. It would be useful to validate the research results by tracking unmodified transaction data of customers in an unmodified environment and different industries. Tracking real customer journeys is complicated given increasing data protection regulations. However, newer technologies in marketing automation and web analytics can pinpoint each touchpoint in the customer journey and provide important information about the buying behavior of potential customers.

In addition to conducting the study as a survey in an online real life setting with a single test group, it would be fruitful to conduct an experiment with two groups, qualitatively distinct websites, and by performing A/B testing. The resulting divergence of scores could highlight the findings of this study. Furthermore, physiological response measuring techniques from the field of neuromarketing such as eye tracking can help improve the collection of data on the perceived quality of touchpoints [17, 51].

Finally, the study examines buying intention up to the conversion phase. To advance the results of this study, it would be useful to also gain insights into the relevance of the touchpoint website in the post-buying phase to consider the entire customer journey.

This research provides a starting point for linking the different research strands of touchpoint effectiveness measurement with customer journey design and user experience design to evaluate the performance of touchpoints and channels more validly. Our findings suggest that further studies on touchpoint effectiveness measurement and the use of attribution models should also consider the perceived quality of touchpoints.

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## Declarations

**Conflict of interest** All authors declare that they have no conflict of interest.

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