E-commerce Platforms In The Netherlands: The Influences Of Perceived Ease Of Use and Perceived Usefulness On The Relationship Between Cookie Notices And Trust.

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Preface

I want to speak my gratitude towards my thesis supervisor Chris van der Lee for his exceptional guidance. Conducting this research gave me the opportunity to study e-commerce in which I want to find my future career. In addition, I would like to thank my parents and my boyfriend, who always supported me.

Abstract

Trust is imperative in the success of an e-commerce platform. In recent years, e-commerce has grown exponentially, and new technology made online shopping easier to use. With this growth in e-commerce came the need to collect more personal information of customers in the form of cookies. E-commerce platforms are starting to give more customers the option to consent to these cookies and share their personal data. The purpose of this study was to investigate to what extent cookie notices have an effect on trust in e-commerce platforms and to what extent perceived usefulness (PU) and perceived ease of use (PEOU) moderate this relationship between cookie notices and trust on e-commerce website platforms. An experiment with a between- subjects design was conducted in which 129 participants were randomly assigned to one of six conditions. Participants completed an online questionnaire and subsequently the recorded data was analysed. This study found no significant effect for the type of cookie notice on trust. Moreover, no significant effect was found for PEOU and/or PU on the relationship between cookie notices and trust. Future studies should focus on PU, PEOU and trust more extensively by taking the study design, participants demographics, and their cultural differences into account.

Keywords: e-commerce, trust, cookie notices, perceived usefulness, perceived ease of use

Introduction

E-commerce

Companies often make use of the internet to provide customers with a place for more convenient access to online information and services without having to leave their personal space as it eliminates spatial and temporal barriers (Chen et al., 2002). This is known to many as e- commerce, electronic commerce or transactions through the internet (Kalamkar, 2017). Babenko et al. (2019) argued that the importance of e-commerce is not only to help businesses thrive by selling their products globally, but also to provide customers with a platform that allows them to purchase products at any available time from anywhere in the world.

In July of 2020, e-commerce in Europe was anticipated to be valued at EUR 717 billion at the end of 2020 (e-commercenews, 2020). This would signify a growth of 12.7 percent compared to the year 2019 (e-commercenews, 2020). Additionally, the current COVID-19 pandemic has ignited a global growth in e-commerce as it has changed the way business is conducted by shifting the focus from offline sales to online purchases (e-commercenews, 2020). Furthermore, retail sales of e-commerce indicate that COVID-19 had a big effect on e-commerce sales, which are foreseen to be worth around USD 6.5 trillion by 2023 (Jones, 2020).

Focusing on the Netherlands, e-commerce was worth EUR 26.6 billion in 2020. That represents a growth of seven percent compared to the situation in 2019 and constitutes 335 million online purchases, which is an increase of 27 percent compared to the situation in 2018, with the most notable e-commerce platforms being Bol.com, Zalando, H&M (ecommercenews, 2020).

E-commerce and Trust

The increasing use of the internet is pushing offline businesses in the direction of going online by bringing their business to e-commerce platforms. It could be argued that these online environments present different challenges compared to the traditional offline environments. Grabner-Krauter and Kaluscha (2003) argued that one of these challenges is trustworthiness. Trust has been studied in many different fields. Hosmer (1995) defines trust as the expectation that the other parties will act in accordance with commitments, negotiate honestly, and not take advantage, even when the opportunity to do so presents itself. The importance of trust on e-commerce is stressed by Reichheld and Schefter (2000) who stated that price is not the crucial determinant of online transactions but trust is. The attitude of consumers using e-commerce does not only rely on the consumer approval of internet technologies as a practical transaction medium, but on the consumers' acceptance of online retailers as trustworthy sellers (Pavlou, 2003).

Sullivan and Kim (2018) argued that trust in e-commerce is dependent on technology adoption models (e.g., Technology Acceptance Model, Theory Reasoned Action, etc.), in which trust was associated with perceived usefulness (PU) and perceived ease of use (PEOU). Trust is related to PEOU and PU as they decrease the efforts that would otherwise be necessary to monitor the proper functioning of the system (Pavlou, 2003). Syarifudin et al. (2018) contend that an (e-commerce) website is considered to be useful if the consumer experiences that using that particular e-commerce platform will improve its performance. On the other hand, PEOU relates to the extent to which a consumer feels that using an e-commerce platform would not require excessive effort into properly understanding how it works (Davis, 1989; Syarifudin, et al., 2018).

E-commerce, perceived ease of use and perceived usefulness

Van der Heijden (2003) concluded that previous research on the TAM model showed that there is strong empirical evidence for a positive connection between PEOU and PU which translates to the easier an e-commerce platform is to use and navigate, the more useful it would be perceived in comparison to its competitors. Van der Heijden (2003) goes on by stating that PEOU can be positively associated with perceived relative enjoyment: if the system is easy to use, it is also considered to be more enjoyable. It is plausible that a website that is easier to use generates better responses from visitors of an e-commerce platform which consequently leads to increased enjoyment and, in turn, more sales. Tractinsky et al. (2000) argue that research and real-life observations demonstrate that people will link the visual attractiveness of an e-commerce platform to PU and PEOU. This is supported by their experiment which showed that visitors assume that visually appealing e-commerce platforms will be easier to use (Tractinsky et al., 2000). An important aspect of the layout of an e-commerce platform and arguably the first thing consumers come across when visiting an e-commerce platform are cookie notices (Bornschein et al., 2020).

Cookie consent forms and PEOU and PU

Yuniar and Fibrianto (2019) described cookie notices or cookies as software that record preferences of visitors of e-commerce platforms which allows these platforms to track personal data of their visitors. It could be argued that e-commerce platforms make use of cookies in order to exploit their customers' personal information and grow their business (Muneer, 2018). However, collecting data through cookies on e-commerce platforms arouses some privacy concerns among consumers which is a potential threat to the PEOU and the PU, and influences the customers' trust in e-commerce platforms (Vakeel et al., 2016: Hoffman et al., 1999). Azeri et al. (2021) argue that this is due to the fact that the concerns of consumers

regarding web cookies are grounded in not having enough knowledge but also being uncertain about how personal data is gathered by the platforms. There are two different schools of thought within research on cookies in regard to PEOU, PU and e-commerce. On the one hand, Brunander, 2020 argued that providing visitors of an e-commerce platform the option to consent to cookies has a positive effect on customers' PEOU and PU which in turn leads to higher levels of trust. On the other hand, providing the option to consent to cookies has a negative effect on customers' PEOU and PU because customers experience these cookie consent forms as hampering the usefulness of the e-commerce platform which results in lower levels of trust.

Previous studies have addressed the effect of displaying cookie consent forms on PEOU, PU and how this affects trust. On the one hand, research by Luzak (2014) has demonstrated that cookie notices decrease trust. On the other hand, Pavlou (2003) showed that PEOU and PU by itself increases people's trust in e-commerce. However, research on the effect of different cookie types on trust, while influenced by PEOU and PU, on e-commerce platforms is absent. The current study aims to measure if the different types of cookie notices indeed decrease people's trust in e-commerce by dividing cookies into three groups: no cookies, low visibility cookies, and high visibility cookies. Furthermore, this study tries to examine the effect of introducing PEOU and PU in the relationship between cookie notices and trust in e-commerce. This leads to the first research question: Do different forms of cookie consent notices have different effects on the perceived trust of consumers on e-commerce platforms?

The second research question is: to what extent do perceived usefulness (PU) and perceived ease of use (PEOU) moderate the relationship between cookie notices and trust levels on an e-commerce platforms?

Theoretical Framework

Trust on e-commerce platforms

Pavlou (2003) contends that trust can be defined as ¨the belief that the other party will behave responsibly and will not attempt to exploit the vulnerabilities of the user¨. In regard to e-commerce trust can be defined as the belief that consumers assume that the e-commerce platform will act in their interest, are honest in the transactions and are able to complete transactions as promised (McKnight & Chervany, 2001). Chircu et al. (2000) found that empirical research showed that trust is positively related to consumers' future plans to visit and revisit the e-commerce platform.

Lin et al. (2019), argue that the decision of consumers to purchase something of an e-commerce platform depends on whether they believe the seller is trustworthy as, according to Gupta and Dubey (2016), it is also more difficult for customers to dictate the legitimacy of e-commerce platforms which makes it more difficult to trust that the retailers are who they assert to be. Different from the offline environment, it could be argued that online shopping can lead to uncertainty as customers are not able to touch, feel or try the product they are buying (Bowen & Bowen, 2015), which seems to be a significant concern when using e- commerce. In the traditional "offline" shopping environment, trust is linked to the honesty and integrity of the person giving assistance, such as a salesperson. Abyad (2017) argues that one way to resolve this in an e-commerce context is to make use of digital advisors by means of personal shopping consultants which can be there for consumers to answer questions and counter any skepticism that may arise. Basso et al. (2001) contend that experience is also an important determinant of trust as previous interaction of consumers with the e-commerce platform will either confirm that the platform can be trusted or in fact the opposite can occur. If there are no prior experiences, consumers will depend on the size of the business, reviews of other users,

previous experience of people close to them and advertising (Basso et al., 2001). Kim and Choi (2012) found that there is a positive relationship between the reputation of the e-commerce platform and consumers' initial trust in the platform.

It could be argued that trust on e-commerce platforms is inherently tied to the perceived risk which consumers tie to shopping on an e-commerce platform as Pennanen et al. (2006) argue that need for trust only emerges in risky situations. When consumers shop on e-commerce platforms, it could be argued that they could experience higher levels of risk in comparison to shopping in physical shops as a result of the distance and lack of face-to-face interaction which can reduce consumers' trust (Suleman et al., 2019). These risks include consumers being dissatisfied with their purchase as the online display of the goods and services can vary from their experience in a physical store (Suleman et al., 2020). Hsu and Le (2020) argued that consumers can experience financial risks (e.g., unforeseen costs of returning goods, warranty costs and faulty products, etc.) and risks related to their security (e.g., disclosing personal information and stealing credit card information, etc.). Hence, it could be argued that these are significant risks for consumers which could potentially limit people's online shopping needs (Miyazaki & Fernandez, 2001). Therefore, Corbitt et al. (2003) believe that trust is the preliminary condition to ensure consumers' e-commerce participation by decreasing consumers' risk perception, principally in an arguably uncertain environment, like e-commerce (Zarmpou et al., 2012). The author goes on by stating that the concepts trust, risk, privacy, and security are all related (Pennanen et al., 2006). The study came up with suggestions to convince consumers that the e-commerce platform is safe and trustworthy. One of these suggestions include offering consumers safe ways to pay for their products and services. Furthermore, the authors

suggest that third party verification by e.g., Visa or a well-known bank can increase trust of the visitors.

Another threat to trust on e-commerce platforms are worries about the privacy of consumers. In order to complete purchases on e-commerce platforms, these sites need their visitors to disclose personal information e.g., their credit card information, address, and/or phone numbers, which could give consumers the feeling that their personal information is at risk when shopping online (Belanger et al., 2002). It can therefore be concluded that the most important step in creating consumer trust is making sure they know that their personal information will be protected (Cheskin Research, 1999).

In regard to opportunities for an e-commerce platform to grow, Kassim and Abdullah (2008) argue that trust plays a crucial role when it comes to creating and maintaining customer loyalty, as loyalty of customers of e-commerce goes hand in hand with customer trust (Tielman, 2003). Tielman (2003) studied customer loyalty among American, Dutch and German consumers and found that if they trusted an e-commerce provider, it was very unlikely that they would switch to another e-commerce platform offering similar products, even if the other platform offered better prices. This could be accredited to the fact that consumers were more willing to purchase something off an e-commerce site that they feel like they can trust (Cho & Fiorito, 2009). Furthermore, trust can have a direct effect on the revenue of e-commerce platforms as Awad and Ragowsky (2008) mention that a lack of trust can cause consumers to discard what is in their shopping cart during an online transaction. Hence, trust can be implemented as a tool to create long-term revenue and growth (Sullivan & Kim, 2018).

Cookie notices and trust

Bayan (2001) states that one of the most popular methods of determining and tracking online consumer activity requires e-commerce platforms to place ¨small text files¨ on a

consumer's hard drive which are returned to the website when they revisit the platform. These so-called text files are mostly known as cookie consent forms or simply known as cookies and research with respect to their usability is quite recently becoming more popular, though their use and implementations has not yet been studied in detail (Kulyk et al., 2018). The high relevance of cookies can be observed when looking at a cookie sweep conducted by a working group of the European Commission. Only seven out of 478 websites in the e-commerce, public sector, and media across eight EU member states did not make use of cookies at all.

The main reason why it is important for e-commerce platforms to implement cookies is to keep a log of the data that is stored on this platform, which eliminates the necessity of inquiries when it is visited again in the future (Velagapudi & Gupta, 2019). Though it is possible to block cookies, most e-commerce platforms will not function properly if cookies are blocked.

Recent regulatory changes in the European Union are forcing e-commerce websites to provide their visitors with more information regarding their use of cookies. Bornschein et al. (2020) contend that clients of e-commerce websites should have the option to decide on whether and how cookies can track their behavior. However, the authors state that it is difficult for e-commerce companies to do this in a uniform manner as the GDPR (General Data Protection Regulation) only specifies the general idea of what these cookie consent forms should include (e.g., consumers must be informed about data collection). Bornschein et al. (2020), state that as a result of this lack of uniformity e-commerce platforms often vary in their visualization of cookie consent forms some websites use small bars hidden at the edge of the

screen of users (low notice visibility), in comparison to other websites that present highly visible fly-in overlays (high notice visibility).

A common issue with cookie notices is the fact that many times consumers of e-commerce platforms are not sure about what they are agreeing to, do not know that these cookies are stored on their computers or for what the exact purpose is behind the collection of the data (Pollach, 2005). This causes uncertainty amongst consumers which leads to a decrease in trust on e-commerce websites (Luzak, 2014). Furthermore, cookies (especially cookies used by third parties for data analysis) can be a threat to users' privacy and decrease trust levels of consumers when they get the impression that e-commerce platforms are (mis-)using cookies by storing their data for the wrong reasons such as selling data to other parties (Sipior et al., 2011).

Luzak (2014), argued that there are ways to counter the threat of cookie notices on trust, one of those ways is to ensure that the cookie notices catch the attention of e-commerce consumers to make sure that more consumers read the cookie notices before agreeing to the terms. Furthermore, Myazaki (2008) found that it is imperative for e-commerce platforms to disclose their cookie notices in a visible way in order for it to be noticed by online consumers. Moreover, the author states that the cookie notices should truthfully reveal what information the e-commerce platform is collecting (Myazaki, 2008). Lastly, e-commerce platforms should make sure that their cookie notices are understood by internet users, which means the information needs to incorporate simple and logical language, which is positively related to the PU of the platform (Helberger et al., 2013).

This led to the formulation of the following hypotheses:

H1: No cookie notices on an e-commerce website lead to higher trust levels in comparison to low visibility cookie notices

H2: Low visibility cookie notices on an e-commerce website lead to higher trust levels in comparison to high visibility cookie notices

TAM, PEOU and PU on e-commerce platforms

As previously mentioned, Chen et al. (2011) argue that the Technology Acceptance Model (TAM) is one of the most important and debated theories in predicting and explaining end-user behavior and explaining the adoption of systems, one of which are e-commerce platforms (Pavlou, 2003). The basis of the TAM model was established by the theory of reasoned action by Ajzen and Fishbein (1975). This theory proposed that people´s beliefs influence their opinions and attitudes towards things. Azjen and Fishbein argued that attitude is a form of perceived behavioral control and believed that a high level thereof will introduce behavior intention, which results in real actions, in this case visiting an e-commerce platform. In 1989 Davis introduced the TAM model which can be considered as an effective research model to interpret the internal and external motivations to resort to e-commerce. Davis (1989) identified perceived ease of use (PEOU) and perceived usefulness (PU) as the two main items making up the TAM model which are central in explaining the intentions of visitors of an e-commerce platform (Davis, 1989). Daradkeh (2019) argued that though research on technology adoption has grown in recent years, TAM can still be considered as one of the most effective models to describe technology adoption. Furthermore, Klopping and McKinny (2004) conducted research on the TAM model in regard to e-commerce and found that the model significantly predicts e- commerce activity. Both the intention to shop online and actual purchases with the model accounting for 36% of the variance in actual use and 47% of the variance in the intention to use.

PU can be described as how effective shopping on e-commerce platforms is in helping consumers accomplish their tasks, and PEOU as how easy these e-commerce platforms are to use

as a shopping medium (Monsuwe et al., 2004). Hamid et al. (2016) believed that if a system is relatively easy to use, individuals would be more willing to learn its features and continue using it while Gefen et al. (2003) state that if more effort is placed in configuring the website so that it is usable and navigable, users will conclude that it is both easy to use and believe that the owner of the e-commerce site is investing in the relationship between merchant and consumer. Furthermore, Chircu (2000) argues that when consumers need to invest more time in understanding how an e-commerce platform works, this lowers the PEOU and PU associated with this platform.

PEOU, PU and Trust on e-commerce platforms

According to Braun (2013), trust and PU are found to be fundamental reasons behind the intention to use e-commerce platforms as PU has been confirmed as one of the main factors for the adoption of online shopping (Rezaei & Amin, 2013). Trust is related to PEOU as it decreases the efforts that consumers would otherwise need in order to monitor the proper functioning of the platforms (Pavlou, 2003). The author goes on by stating that trust can be considered as one of the main factors which influences PEOU and PU, because part of the assurance of consumers in regard to gaining the expected usefulness from an e-commerce platform is dependent on whether it can be considered as a trustworthy platform.

E-commerce interface, PEOU, PU and trust

As previously stated, it is important to take into account that the success of an e-commerce platform can be accredited to the PEOU and PU consumers experience while surfing and purchasing online (Abdallah & Jaleel, 2015). Koufaris (2002) argues that it is the interaction of consumers with the platform that results in the creation of PU and PEOU. If consumers find that the platform´s layout is logical and that its functionality helps them find desired items, this results in a positive effect (e.g., higher levels of trust) (Koufaris, 2002).

Regarding the interface of the e-commerce platforms, it is important to take the visual attractiveness into consideration as van der Heijden (2003) confirmed that visitors of an e-commerce platform will positively associate the visual attractiveness with PEOU and PU.

Pei et al. (2007) argue that an attractive interface of e-commerce platforms is dependent on eight factors which are positively related to PEOU and PU namely promotion (product recommendations and client product reviews), user management (registration of visitors), navigation (help and FAQ´s), products (visual representation of products), purchase facilitation (clear indication of payment methods and return policies), interactive communication (experiences and opinion of other consumers), personalization (client accounts) and lastly security and privacy (cookies) should be presented in an attractive and comprehensible way.

Furthermore, the interface of an e-commerce platform influences trust as it could be argued that an e-commerce platform that is unnecessarily hard to use could give the impression that the owners of the e-commerce website do not care about its users and might even insinuate that the platform is being dishonest and hiding something through an unnecessarily complicated interface, which in turn leads to a decrease in trust (Gefen, Karahanna & Straub, 2003).

Brunander (2020), contends that there are four main elements regarding the interface of an e- commerce platform that have an influence on visitor´s trust namely, graphic, content, structure and social-cue design. In regard to graphic design, the author mentions that high quality images, a cool toned interface and symmetry had a positive effect on the trust of consumers. Content design relates to the simplicity and clear design of the e-commerce platform on which few irrelevant elements are visible. Brunander (2020) believes that this reduces consumers perceived risk of wasting time and increases trust. Content design refers to the information provided on the platform from which the users of the platform should be able

to clearly understand the purpose of the platform (Brunander, 2020). Lastly, the author states that social cue design is related to the interface of the e-commerce platform by appealing to the social cues of the platform visitors. This can be achieved by offering asynchronous communication (e.g., instant messaging, chat lines etc.) in order to create a personal experience for the visitors, which leads to higher trust levels. This led to the formulation of the following hypotheses:

H3: The negative effect of highly visible cookies on trust is less if PU is high

H4:The negative effect of highly visible cookies on trust is less if PEOU is high

Materials and Methods

Study design

The aim of this study is to investigate the effect of cookie notices on the trust of visitors of an e-commerce platform and to investigate whether the relationship between cookie notices and trust is influenced by PEOU and PU. An experiment with a between-subjects design was conducted in which participants were randomly assigned to one of six conditions which can be found in *table* 1.

Table 1.

Questionnaire design with six randomized conditions

Condition	Description
1	Shoes, no cookie notices
2	Shoes, low visibility cookie notices
3	Shoes, high visibility cookie notices
4	Books, no cookie notices
5	Books, low visibility cookie notices

A questionnaire was the method of choice as this allowed participants to participate without having to be physically present at a specific location. This was particularly important considering the COVID-19 pandemic. The questionnaire was available on the platform Qualtrics.

Participants

A total of 142 people participated in the study, of which ten had incomplete answers and were excluded from the analysis as a result. A total of 132 answers were recorded, however 129 answers were analysed as three participants stated they were of different nationality and holding the Dutch nationality was a prerequisite to participate in this research. Of the participants 42 were male and 87 were female, ranging from 15 to 67 years old with an average age of 28 years old *(SD*= 11.91). Participants were approached via snowball sampling within the network of the author, and by convenience sampling in Facebook groups in which students look for respondents and complete other's questionnaires in return.

Materials

The materials used for this study aimed to measure the effect of the cookie notices on e-commerce platforms for the dependent variables PU, PEOU and trust. In order to ensure the ecological validity of this research, the stimuli depicted a real life setting of an online e-commerce platform in the form of two web shops. Two random web shops were selected of which the researcher believed to be unfamiliar to the participants. This was assessed by doing a small test among a group of ten participants in which they saw both websites (www.zivaano.com/nl/ and www.bookspot.nl/) and were asked to answer the question whether they were familiar with both websites. In all ten cases participants were unfamiliar with the

websites. It could be argued that the participants not being familiar with these e-commerce platforms prevented the influence of preexisting emotions and avoided confounding brand effects (Bornschein et al., 2020). Furthermore Gefen et al. (2003) found that the more familiar consumers are with a website as a result of prior visits, the more they will perceive the site to be easy to use. There were a total of six conditions and participants were randomly assigned to either the book webshop or the shoe webshop. The choice for shoes and books was made due to the fact that fashion items (e.g., footwear, clothing, jewelry etc.) and books were among the top six best-selling items on e- commerce platforms worldwide (Smith, 2019) and the top two most ordered items in Europe (ecommercenews, 2020). Also, it could be argued that opting to display two e-commerce platforms increases the generalizability of the results. The manipulation consisted of different types of cookie notices which were presented on the first page of the web shop; either there was no cookie present, a low visibility cookie was shown, or a high visibility cookie was shown.

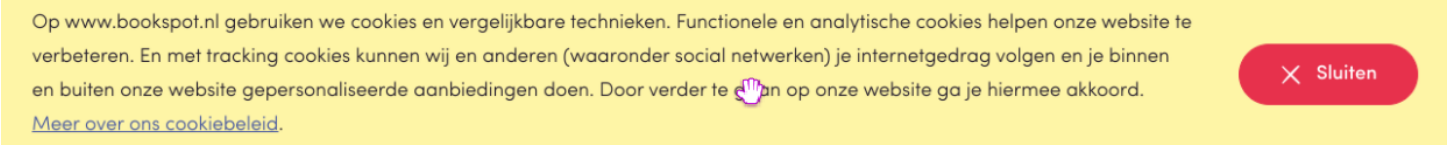
The cookies that were originally displayed on the landing page of the two e-commerce platforms were used for the questionnaire and were both categorized as low visibility cookies, thus the images of the homepage of both stores were displayed in their original form for the low visibility cookie condition (small bar hidden at the edges of users' display), as can be seen in image 1 and image 2. These cookies were cropped out of the landing pages for the no cookie condition.

Image 1

Low visibility cookie notice shoe condition

Image 2

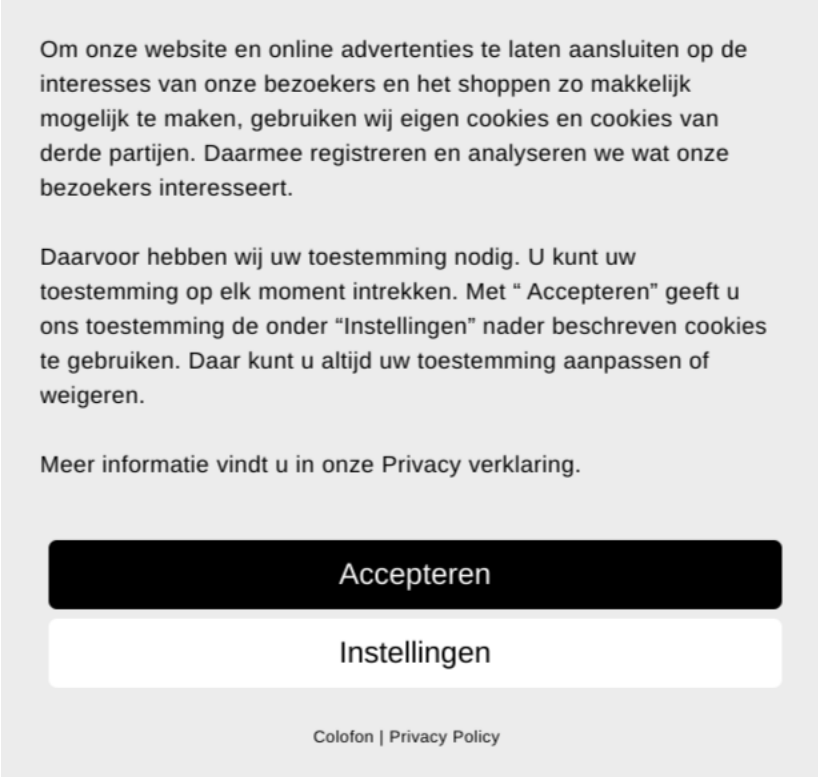
Low visibility cookie notice book condition



Furthermore, in the high visibility cookie notice condition, a high visibility cookie was photoshopped on to the images of both e-commerce platforms. This cookie notice was found on google images with the search term “cookiemelding voorbeeld” as it had to be in Dutch, and met the requirements to be categorized as a high visibility cookie notice as described by Bornschein, Schmidt and Maier (2020), and can be seen in image 3.

Image 3

High visibility cookie notice



Questionnaire

The questionnaire questions were related to the PU, PEOU and trust of the web shops and sought to predict consumer acceptance of e-commerce. In regard to PU a combination of two scales was made of the PU scale by Pavlou (2001) which showed a high level of internal consistency (α = .92), and of the PU scale by Gefen and Straub (2000), which also showed a high level of internal consistency (α = .91). The author of this research opted to combine the scales as the scale by Pavlou (2001) measured the more general PU of e-commerce platforms, and the scale by Gefen and Straub (2000) focused more PU in regard to searching and buying on e-commerce platforms. It could be argued that combining these scales suited the current study better in order to gain a more complete sense of PU, especially in the context of this study as participants were inquired to imagine themselves on an e-commerce platform searching and buying books or shoes. The choice to combine the two scales did not negatively affect the internal consistency of the PU subscale implemented in this study which consisted of nine items (α = .86). The PEOU subscale consisted of four items (α = .85) and was based on the PEOU scale by Pavlou (2001) which had a high level of internal consistency (α = .95).

The trust subscale consisted of six items (α = .46) which were selected from the original scale by McKnight et al. (2002) that consisted of 60 questions, and had a high level of internal consistency (α = .96). The research by McKnight et al. (2002) investigates the role of trust in helping consumers overcome perceptions of risk and insecurity in online shopping. Their questionnaire was set out to measure different trust constructs one of which was institution-based trust which the authors describe as the consumer's perception that e-commerce platforms' institutional mechanisms are in place to facilitate transaction success (McKnight et al., 2002). The author of this research found this scale to include the best fitting questions in regard to the context of this study hence the choice to only use these six items.

The questions were measured on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). As this research was mainly focused on Dutch consumers, the questions were translated into Dutch. The English version of the questionnaire questions for PU and PEOU can be found in table 2 and table 3. See appendix A for the images of the questionnaire.

Table 2

The scale items used to measure PU

Item	Perceived Usefulness
Overall, I find this retailer's Website useful	
I think this retailer's Website creates value to me	
The content on this retailer's Website is useful to me	
This retailer's Website is functional	
The Website is useful for searching and buying	
The Website improves my performance searching and buying	
The Website enables me to search and buy	
The Web site enhances my effectiveness in book searching and buying	
The Website makes it easier to search for and purchase books	

Table 3

The scale items used to measure PEOU

Item	Perceived Ease of Use
My interaction with this retailer's Website is clear and understandable	
Interacting with this retailer's Website does not require a lot of mental effort	
I find this retailer's Website easy to use	

I find it easy to locate the information that I need on this retailer's website

Table 4

The scale items used to measure trust

Item	Trust
I feel good about how things go when I make purchases or other activities on the Internet	
I am comfortable making purchases on the Internet	
I feel that most Internet vendors would act in a customers' best interest	
If a customer required help, most Internet vendors would do their best to help	
Most Internet vendors are interested in customer well-being, not just their own wellbeing	
I am comfortable relying on Internet vendors to meet their obligations	

Procedure

Participants were invited to click on a Qualtrics link which redirects them to the online questionnaire environment. Participants were thanked for taking the time to participate in the study. Then, the participants filled in the consent form which was set-up by the researcher of this study in which participants were informed about the fact that they could withdraw from the study at any given time without any consequences. Also, participants were informed about their information remaining anonymous and that it would be stored for a period of ten years. If for any reason participants decided not to agree with the terms and thus not take part in the study the questionnaire immediately ended. Furthermore, participants were made aware of the fact that

they could contact the researcher if they had any questions and the adequate email address was listed. Following the consent form, participants were randomly assigned to one of the six conditions. After answering questions about their demographics such as gender, age, nationality and highest achieved level of education, participants were given a brief explanation about the next step:

> "You will now see a series of images of the buying process on a website that sells shoes (or books). Try to imagine yourself in this buying process as if you were buying the shoes (or books) yourself. Study the images carefully and only then click on 'next'. At the end there will be some questions about your experience".

Next, participants clicked through screenshots of the e-commerce website which depicted the process of buying a pair of shoes or books, depending on which condition they were randomly assigned to (Appendix A). Lastly, participants were asked if they were familiar with the websites in question of which *N*=9 were familiar with the website, however they were not excluded from the study as being familiar with the website did not directly influence the manipulation concerning the cookie notices.

Results

To test whether seeing cookie notices has an effect on trust in e-commerce websites and to what extent perceived usefulness (PU) and perceived ease of use (PEOU) moderate the relationship between cookie notices and trust levels on an e-commerce website a moderation analysis was conducted using Hayes' PROCESS macro model 2 with trust as the dependent variable, type of cookie notices (no cookie, low visibility cookie and high visibility cookie) as the independent variable and PEOU and PU as the moderating variables. Type of cookie notices was a multicategorical variable investigated with Helmert contrasts (no cookies vs. cookies and low visibility vs. high visibility).

First, the Cook's distance was examined in order to identify influential outliers that negatively affect the model. The analysis showed that the largest Cook's distance was 0.24. However, this was not a cause for concern as Cook's distance was <1.

The Mahalanobis distance, which was analysed in order to find multivariate outliers that indicate unusual combinations of two or more variables, showed three cases with cause for concern as these cases were > 7.81, which is the critical value according to Chi-square distribution for three predictors (Field, 2013). However, these three cases did not have concerns about Cook's distance or leverage values, so it was not necessary to remove them.

In order to test the assumptions of independent errors, the Durbin-Watson test was conducted to test for autocorrelation (the level of correlation between the values of variables of the data set) in the residuals. The test indicated that there was no cause for concern (Durbin-Watson value = 2.26) which means that there is a slightly negative autocorrelation in the residuals. Field (2009) concluded that values under one or more than three are a certain cause for concern. Furthermore, an analysis of standard residuals was carried out to assess the strength of the difference between observed and expected values. The analysis showed that the data contained no outliers (Std. Residual Min = -1.90, Std. Residual Max = 2.38), as Field (2013) argues that standardized residuals that are larger than three can be categorized as an outlier.

To test if the data met the assumption of collinearity, tolerance and VIF were evaluated (Cookie notices tolerance = .97, VIF = 1.03, Usefulness tolerance = .62, VIF = 1.62, Ease of use tolerance = .62, VIF =1.60). In Table 1, an overview showing the correlations between the model variables is presented. Within the correlation table, it is visible that multicollinearity is not present. Thus, multicollinearity (which examines whether two or more independent variables are highly correlated with one another in the model) was not a concern.

Table 1

Correlations of the model variables

	Variable	1	2	3	4
1.	Cookie notices				
2.	Trust	-.07			
3.	Perceived Usefulness	-.11	.21*		
4.	Perceived Ease of Use	.04	.23**	.61**	

Note: *p <.05 and **p <.01

Table 2

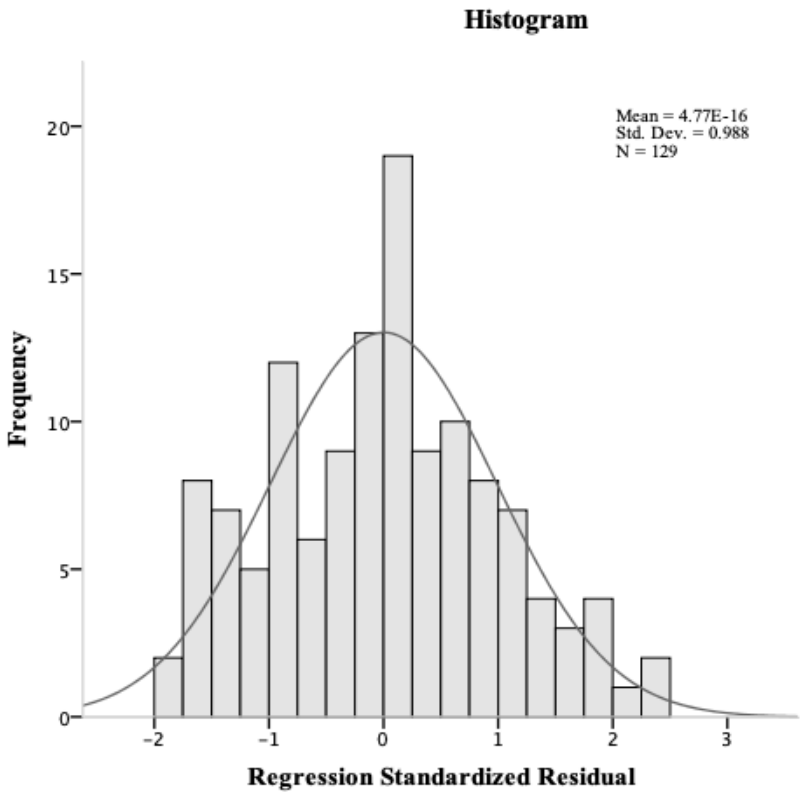
Means and standard deviations of the model variables

	No cookies	Low visibility cookies	High visibility cookies
Trust	3.68 (*SD* = .42)	3.65 (*SD* =.53)	3.59 (*SD* =.61)
PU	3.85 (*SD* =.48)	3.81(*SD* =.43)	3.72 (*SD* =.57)
PEOU	3.88 (*SD* =.54)	3.87 (*SD* =.53)	3.94 (*SD* =.66)

Residuals were normally distributed, because the K-S-statistic was not significant, $D(129) = 0.05$, $p = .179$. The histogram of standardised residuals in figure 1 indicated that the data contained approximately normally distributed errors, as did the normal Q-Q plot of the standardised residuals in figure 2, which showed points that were not completely on the line, but close.

Figure 1

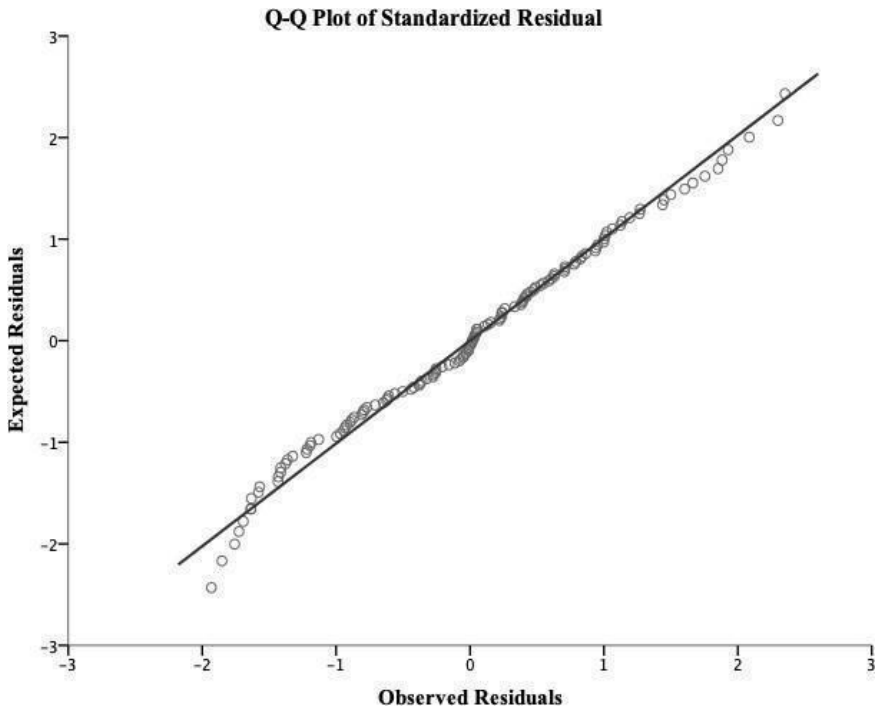
Histogram of standardised residuals showing a normal distribution



In case the assumptions were not met, transformation of the data could have been a possible solution to address the normality issues. Field (2009) contends that bootstrapping would be necessary in order to compute robust estimates, as lack of normality makes it difficult to demonstrate the shape of the sampling distribution.

Figure 2

Normal Q-Q plot of standardised residual



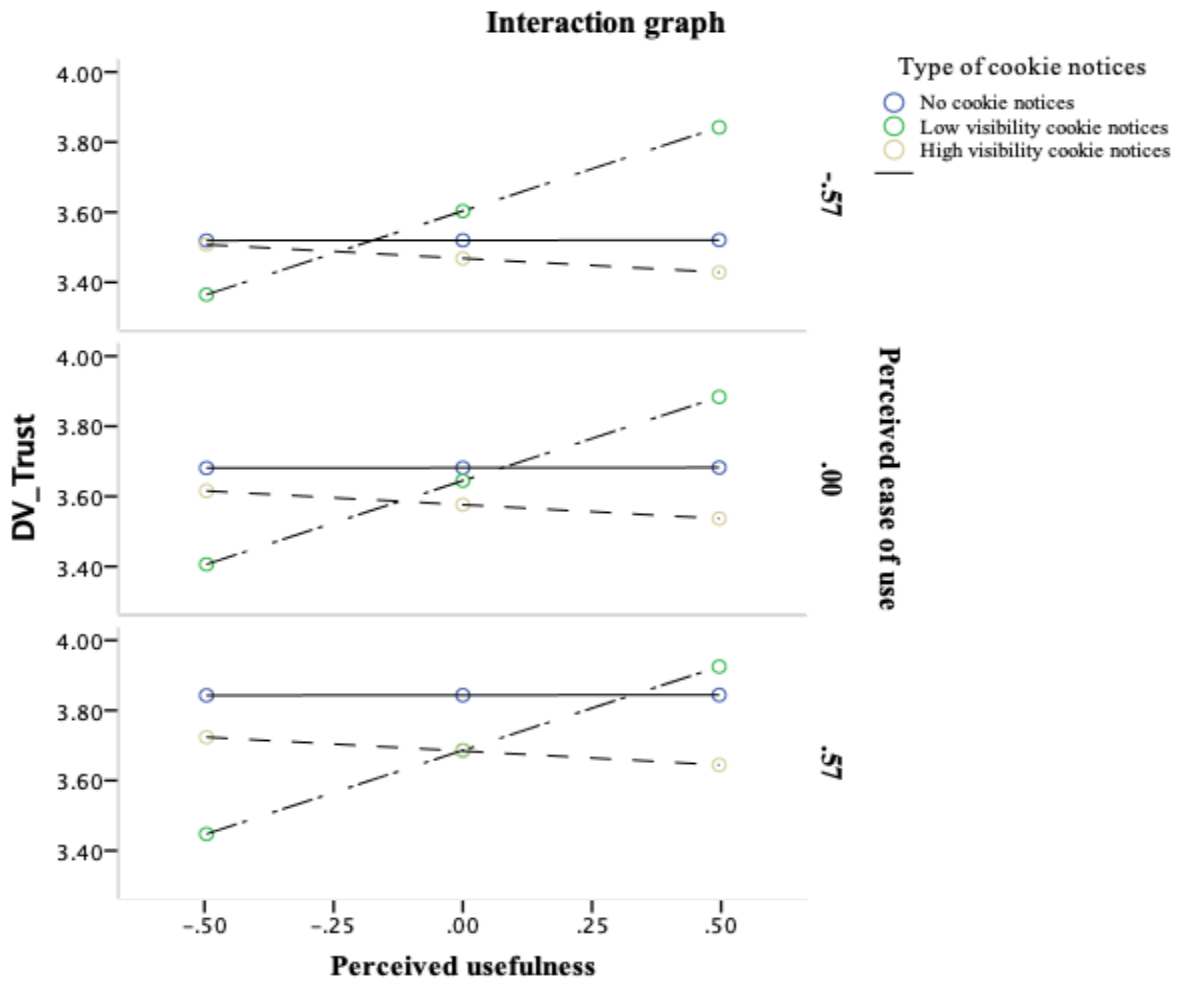
In order to test if there were differences between the shoes e-commerce platform and the books e-commerce platform a multivariate ANOVA was performed, with platform type as the independent variable and PU, PEOU and trust as the dependent variables. Wilks's Λ showed that there is no significant difference between the shoes e-commerce platform and the books e-commerce platform, $\Lambda = 0.97$, $F(3, 128) = 1.52$, $p = .213$. This showed that there were no differences between both platforms. Thus, these two platforms will be combined in further analyses.

The overall model summary for the moderation is not significant $F(8, 120) = 1.67$, $p = .112$, $R2 = .11$. First, there was no effect on trust by showing cookie notices to the participants (no cookies vs. low and high visibility cookie notices) $b = -.07$, $t(120) = -.77$, $p = .444$. Second, there was no effect between the types of cookie notices visible to the participants (high visibility cookie notices vs. low visibility cookie notices) $b = -.07$, $t(120) = -.52$, $p = .604$ on trust.

Figure 3

Interaction graph of no cookie notices, low visibility cookie notices, and high visibility cookie notices on

trust moderated by PU and PEOU.



The interaction graph depicted in figure 3 shows that low visibility cookie notices present a steady increase in trust levels moderated by PU and PEOU. The relationship between low visibility cookie notices and trust is moderated more strongly by PU than by PEOU. High visibility cookie notices show a slight decrease in trust by PU. However, the relationship between high visibility cookie notices and trust is moderated more strongly by PEOU than by PU.

PU does not significantly moderate the relationship between cookie notices and trust b = .20, $t(120)$ = .81, p = .419. When comparing different types of cookie notices, PU does not moderate the relationship between low visibility cookie notices or high visibility cookie notices on trust b = -.56, $t(120)$ = .-1.55, p = .124. Thus, there was no difference between low visibility

cookie notices and high visibility cookie notices on trust when moderated by PU.

PEOU does not significantly moderate the relationship between cookie notices and trust $b = -.15$, $t(120) = -.65$, $p = .516$. When comparing different types of cookie notices, PEOU does not moderate the relationship between low visibility cookie notices or high visibility cookies on trust $b = .12$, $t(120) = .36$, $p = .723$. Thus, there was no difference between low visibility cookie notices and high visibility cookie notices on trust when moderated by PEOU.

In conclusion, all interaction effects were found to be statistically non-significant. Although there was no significant moderation effect, PU had a larger effect size ($F(2,120) = 1.60$, $p = .207$, change $R2 = .03$) than PEOU ($F(2,120) = .33$, $p = .723$, change $R2 = .01$). This means that participants' trust levels increased more when they experienced a positive PU than when they experienced a positive PEOU. As can be seen in figure 3, this was only the case for the low visibility cookie notices condition.

Discussion

Various studies have demonstrated the relevance and the effect of studying trust in e-commerce (Corbitt et al., 2003; Abyad, 2017). Previous studies showed the effects of cookie notices, PEOU, and PU on trust in e-commerce independently (Luzak, 2014). It could be argued that understanding how trust in e-commerce is established plays an important role in customer loyalty (Gefen, 2002; Eid, 2011). However, it is unclear to what extent PEOU and PU have an effect on the relationship between cookie notices and trust.

Miyazaki (2008) found that asking consumers to consent to cookies was associated with lower trust levels in e-commerce. Pavlou (2003), argues that higher PEOU and PU levels were associated with higher trust levels in e-commerce. It could be argued that trying to understand the effects of PEOU and PU on the relationship between cookie notices and trust is relevant as it

can present new insights for researchers seeking to increase trust levels on e-commerce platforms. The current study investigated the effect of PEOU and PU on the relationship between cookie notices and trust. To study this effect, 129 participants were evaluated on their level of PEOU, PU, and trust by completing an online questionnaire.

First, no significant difference was found between the shoes e-commerce platform and the books e-commerce platform. Second, the results showed that no significant effect was found for no cookie notices on trust. Furthermore, no significant effect was found for low visibility cookie notices on trust. Lastly, no significant effect was found for high visibility cookie notices on trust. As a result of these findings the first and second hypotheses were rejected. For the moderation analysis, no significant effect was found for PEOU and/or PU on the relationship between cookie notices and trust. However, PU showed a larger non-significant effect size than PEOU as a moderating variable. Thus, no significant moderation effect was found for the different conditions of cookie notices (e.g., no cookie notices, low visibility cookie notices, and high visibility cookie notices) on trust. It is because of these findings that the third and fourth hypotheses were rejected.

The current research was based on two e-commerce platforms namely a books e-commerce platform and a shoes e-commerce platform. Previous research (Gefen and Straub, 2000) based their study on a single e-commerce platform. In the current study, a multivariate ANOVA was performed to investigate whether having more than one e-commerce platforms would yield a significant difference between the e-commerce platforms, however no difference was found.

Furthermore, the study showed no differences between no cookie notices, low visibility cookie notices, and high visibility cookie notices on trust. However, related studies found that users of e-commerce platforms are skeptical about sharing their personal information through

cookies (Zarouali, 2017; Pierson, 2011). Users who were informed and asked to consent to cookies and share personal data in an online experiment were more trusting of the platform than users who did not receive the possibility to consent (Strycharz, 2021). These findings contradict the current study results. A possible reason could lie in the pre-testing phase of related studies. Strycharz (2021) had a more extensive pre-testing phase as it used 91 respondents in two pretests evaluating their general knowledge, technical knowledge and familiarity with e-commerce. By doing so it could be argued that Strycharz (2021) had a more accurate representation of the respondents. The current study conducted a pre-test among ten respondents to probe their familiarity with the e-commerce platforms used for this study. However, this study did not ask for respondents' general knowledge and technical knowledge of e-commerce platforms. This could have led to a less accurate representation of the respondents by assuming that the respondents had enough knowledge to understand the materials.

Several studies found that cookie notices are seen as a threat and could decrease customers' trust levels (Miyazaki, 2008; Luzak, 2014; Kim, & Peterson, 2017). Results showed that the effects of PEOU and PU on the relationship between cookie notices and trust were not significant. Previous studies showed that PEOU and PU have an effect on cookie notices and trust independently (Braun, 2013; Heijden, 2003; Pavlou, 2003). This study aimed to investigate if PEOU and PU would positively affect the relationship of cookie notices on trust. However, this was not the case.

The results of the current study clearly differentiate from previous studies in e-commerce. The findings by Putra et al. (2017) contradict results of the current study, as it found that when personal information was shared through cookies, customers' trust levels significantly decreased. A possible explanation behind why the current study did not find such a significant decrease in trust based on cookie notices could be due to the non-experimental setting. Arceneaux (2010)

argued that, if a study does not follow a controlled experimental setting, participants could be presented with multiple external factors that are likely to influence test results. Because the current study did not make use of a controlled experimental setting, external factors (e.g., distraction by the environment or sounds) could have biased the results.

Another explanation could be found in the sample size. Kim and Sullivan (2018) found that perceived risk and PU are related in affecting customers' trust level and repurchase intentions positively within e-commerce. On the contrary, the current study did not find significant evidence for the effect of PU on customers' trust levels. A closer look reveals that the main difference between previous studies and the current study is the study design (e.g., sample size). This study recorded the responses of 129 participants, while Kim and Sullivan (2018) analysed 312 respondents. Furthermore, participants in the study of Kim and Sullivan (2018) spent around 20 minutes on the shopping websites alone. However, in this study, the average time for completing the questionnaire was around ten minutes. One could argue that using time pressure as a tool would be beneficial in this setting, however, (Peng et al., 2019) found that time pressure negatively affects purchase intention and consequently leads to lower trust in e- commerce.

It could be argued that the price of the segment chosen for this study, namely books and shoes, could have an effect on the level of trust of the participants. The products used in this segment are relatively low-priced which could lead to participants trusting the platform quicker in comparison to products in a more expensive segment. The cause for this could be that there are fewer financial risks tied to purchasing inexpensive products.

Limitations and suggestions for future research

In spite of the interesting findings of this study, there are some limitations that could provide promising directions for future research. First, this study used screenshots of existing e-

commerce pages instead of letting participants navigate the e-commerce platforms themselves. Kim and Sullivan (2018) had participants make one real transaction on the e-commerce platforms during the experiment. The current study did not allow its participants to complete a transaction in practice during its experiment. Such experimental design differences could affect test results as participants did not have a natural interaction with the web elements as they would if they visited the platform themselves. Furthermore, it could be possible that the screenshots of the purchase process were not clear for everyone and the flow was not understood by all participants. Future research could replicate the design of this study in an experimental setting, in which they complete an online transaction, in order to examine whether this would yield different results. After, they would partake in a questionnaire about their experience which is set out to measure their levels of PU, PEOU and trust.

Second, males were underrepresented in this study as there were twice as many female participants. Future research should take gender differences into account. Although the number of Internet users is equally divided among the genders as presented by Szymkowiak and Garczarek-Bąk (2018) more men than women engage in online shopping and make e-commerce purchases (Rodgers & Harris, 2003). Also, men rated the trustworthiness of e-commerce websites higher, and gave lower ratings to its complexity, in comparison to women in a study by Riedl et al. (2010).

It could be possible that different results would be established if the distribution between male and female participants is more equal. Wu (2003) found that, in comparison to women, men have a relatively more positive and trusting attitude when shopping on an e-commerce site. Furthermore, Nissen and Krampe (2020), found that several studies have shown that men consider PU to be more important, and that they are more focused on the content in comparison to the visual attractiveness and design of the e-commerce platform. On the contrary, the author

states that women value PEOU (e.g., navigation of the page) more compared to their male counterparts. Future research should investigate the effect of this gender difference on trust.

Third, the current study did not take cultural differences into consideration. These differences should be investigated in relation to trust on e-commerce platforms and their use of cookie notices. It could be argued that culture and trust are linked (Doney et al., 1998, Hofstede, 1980). This study was conducted among Dutch participants, which Hofstede (1980) categorised as an individualistic culture. Huff and Kelley (2003) found that trust tends to be higher in collectivistic cultures in comparison to individualistic cultures. Hence, it might be that the same study could yield different results in a collectivistic culture. Consequently, generalising data outcomes has to be executed with caution.

Fourth, it could be argued that generalizing the results of this study among other age groups can prove to be problematic as the average respondent was around 28 years old. Mccloskey (2006) conducted research among participants with an average age of 64 and found that shopping on e-commerce needs to be easy enough for visitors in order to discover its usefulness. The author goes on by stressing that PU and PEOU is particularly important for older consumers as participants of the study were less likely to complete e-commerce if they considered it to be too complex (Mccloskey, 2006). In the Netherlands, as from 2018, the share of online shoppers increased the most among people over the age of 65 (Centraal Bureau voor de Statistiek, 2018). Therefore, it could be concluded it is of interest to owners of e-commerce to attend to the needs of this age group.

Sullivan and Kim (2018) contend that trust is a multidimensional construct. The scale which was implemented in this study only measured trust as a unidimensional construct as it exclusively measured the general attitudes of consumers in regard to e-commerce platforms and not specifically trust of the manipulated materials applied in this study, which makes it

unsuitable to generalize these attitudes as trust in e-commerce. Future studies need to develop a scale that measures trust before and after participants are exposed to the manipulation or focus on designing a scale that measures trust differences during the experiment to achieve a more thorough picture of trust differences during these manipulations. Also, it is important to take into consideration that the Cronbach's alpha for the trust scale was considerably low ($\alpha = .46$). As previously mentioned, this was due to the fact that it was opted to only consult a number of questions instead of the complete trust scale by McKnight et al. (2002) which consisted of 60 questions. Besides the fact that the author of this study chose the questions that she believed to be best fitting for this research, it could be argued that opting not to include all 60 questions could have lowered the chances of participants dropping out of the study before completing it as Konstabel et al. (2012) argue that people are more likely to participate in a study if it's less time consuming. Furthermore, Bean and Roszkowski (1995) contend that the willingness to participate decreases as the number of items increases.

Although the current study results are insignificant, PU had a larger effect on the relationship between cookie notices and trust when compared to PEOU. One could argue that PU plays an important role in enhancing trust levels in e-commerce. This is in line with Braun (2013) and, Rezaei and Amin (2013) emphasizing that PU is one of the main factors for the adoption of online shopping.

Practical implications

It could be argued that this study provides information that could be of relevance for people who are interested in setting up an e-commerce platform, or even for owners of existing e-commerce sites. Firstly, research has demonstrated that the e-commerce platform should have an aesthetically pleasing and logical interface. Wording on the platforms should be clear and concise so visitors can immediately find what they are looking for. Furthermore, the platform

should be easy to navigate meaning that visitors should not have to spend unnecessary time finding what they came for. The platform should also make sure that customers can always reach them if necessary, by giving them the option to chat with or call representatives that can answer any questions that may arise.

It could be argued that the use of cookie notices is indispensable on e-commerce platforms in order for them to function properly. As previously mentioned, Myazaki (2008) found that consumers are unlikely to read and fully understand cookie notices. If owners of an e-commerce platform want to make sure that consumers trust their platform, they should confirm that their visitors are aware of the cookie notices and the terms to which they are agreeing. This could be achieved by ensuring that the cookie notices are displayed in a noticeable way and that the language is not overly complex.

Conclusion

This study investigated the effects of low visibility cookie notices and high visibility cookie notices on trust moderated by PU and PEOU. However, no significant findings were found in the current study for this relationship. The findings support previous research that emphasize the importance of researching trust in e-commerce to help bridge the gap between e-commerce platforms and their customers. Finally, these results suggest that numerous factors, like sample size, experimental setting, environment, and study design could have influenced testing results. Raising awareness regarding these effects may lead future researchers to obtain more accurate test outcomes.

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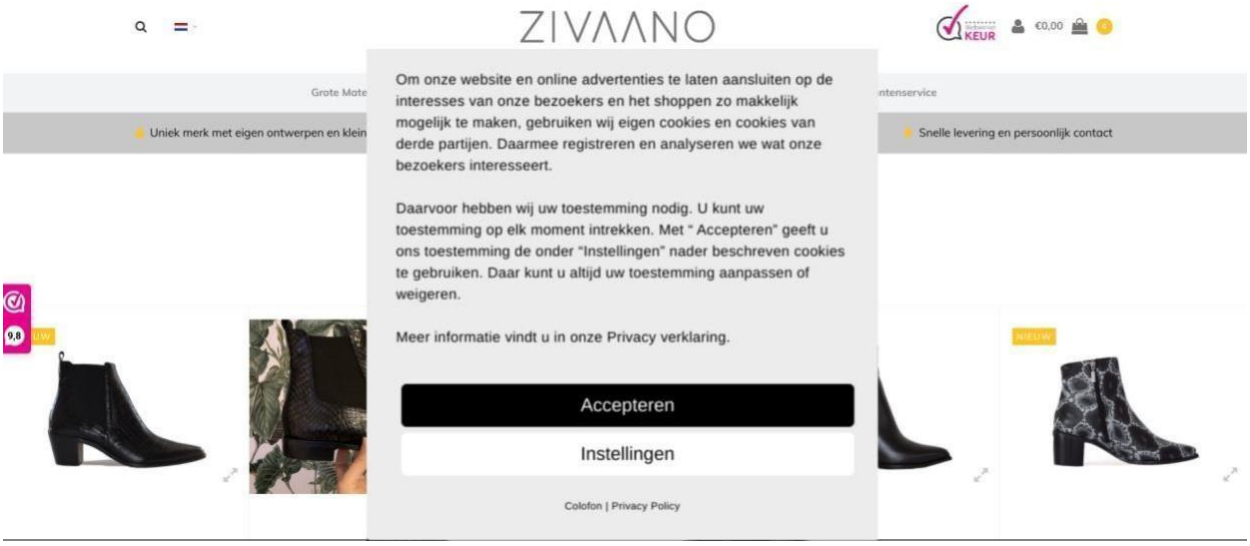
Appendix A

Pictures of the purchase process which were depicted in the questionnaire:



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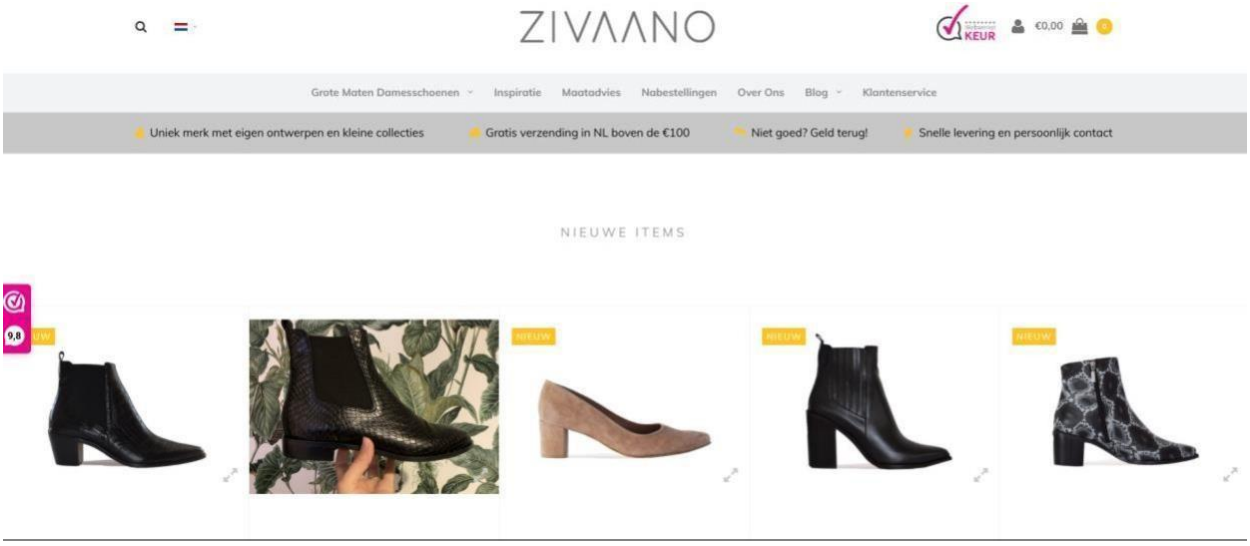

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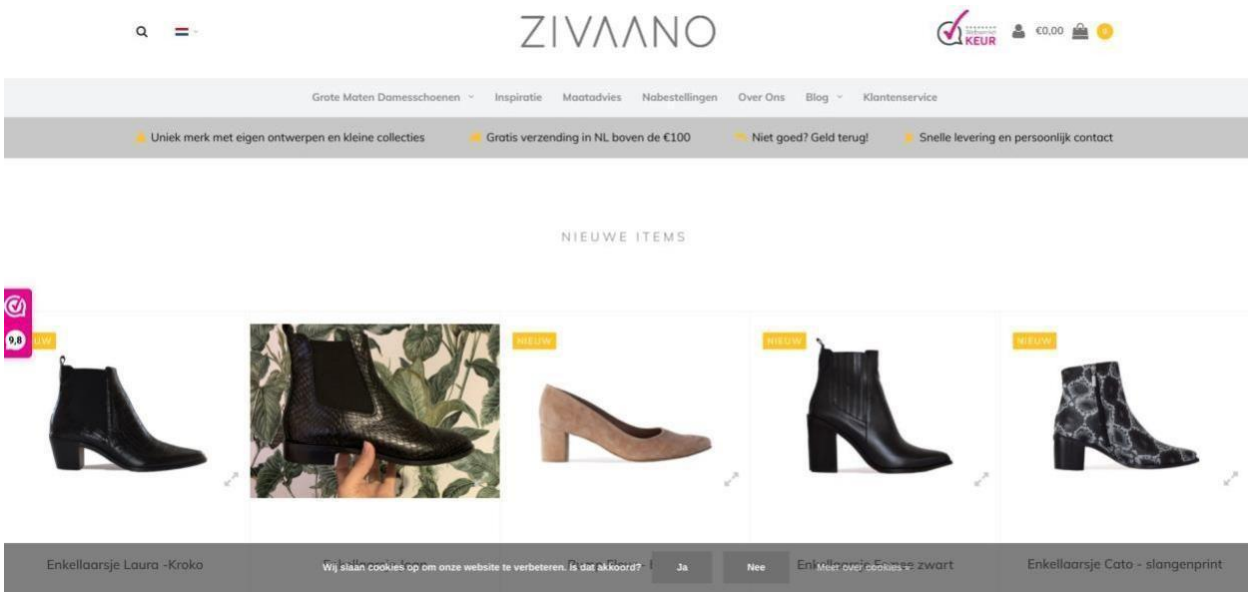

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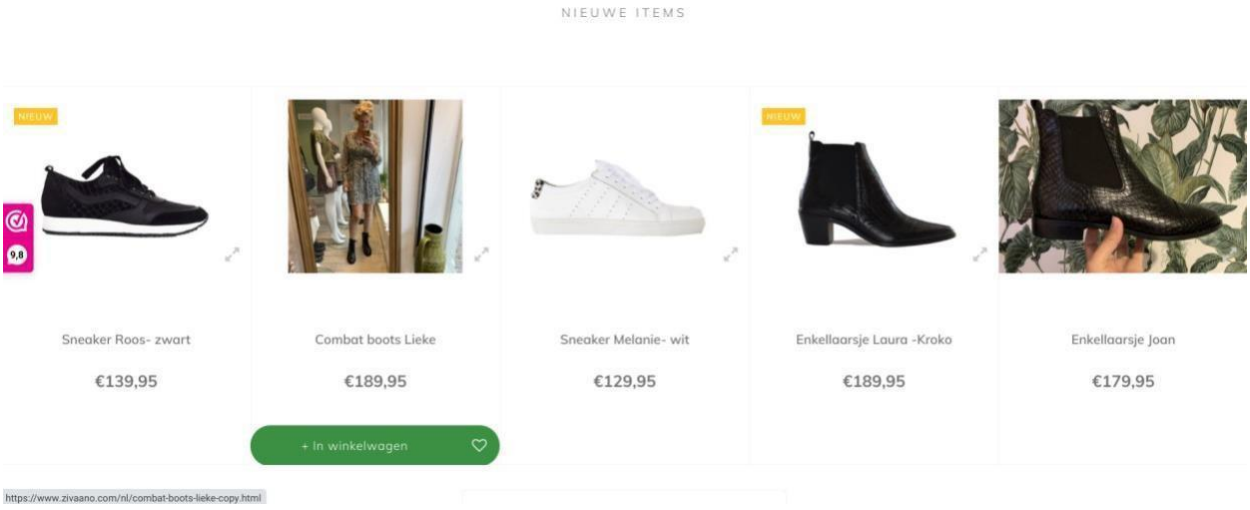

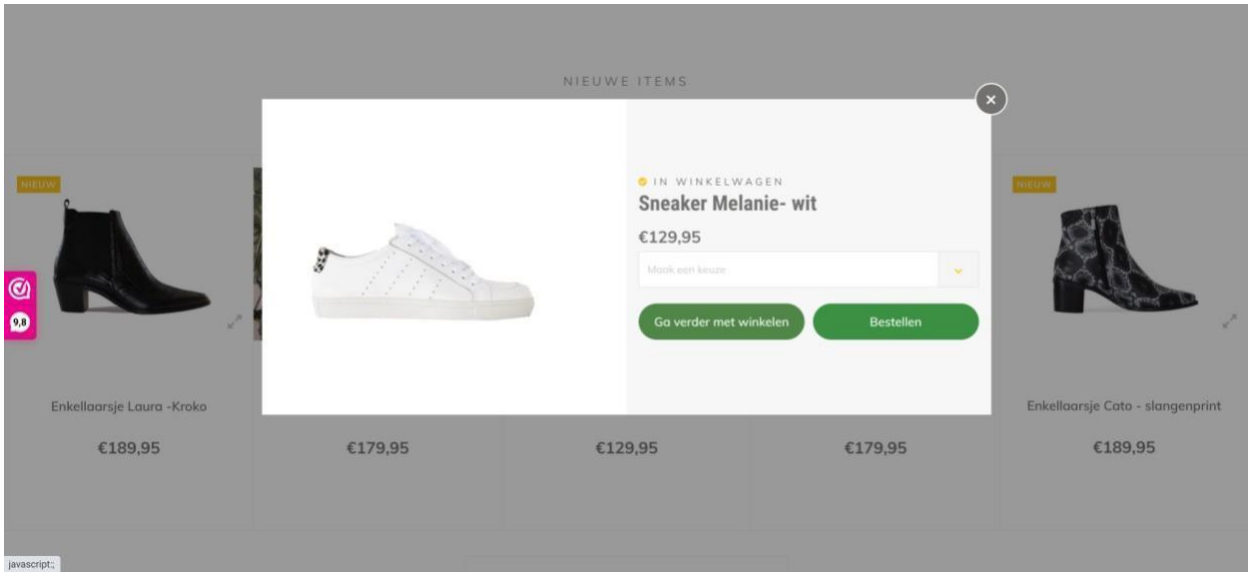
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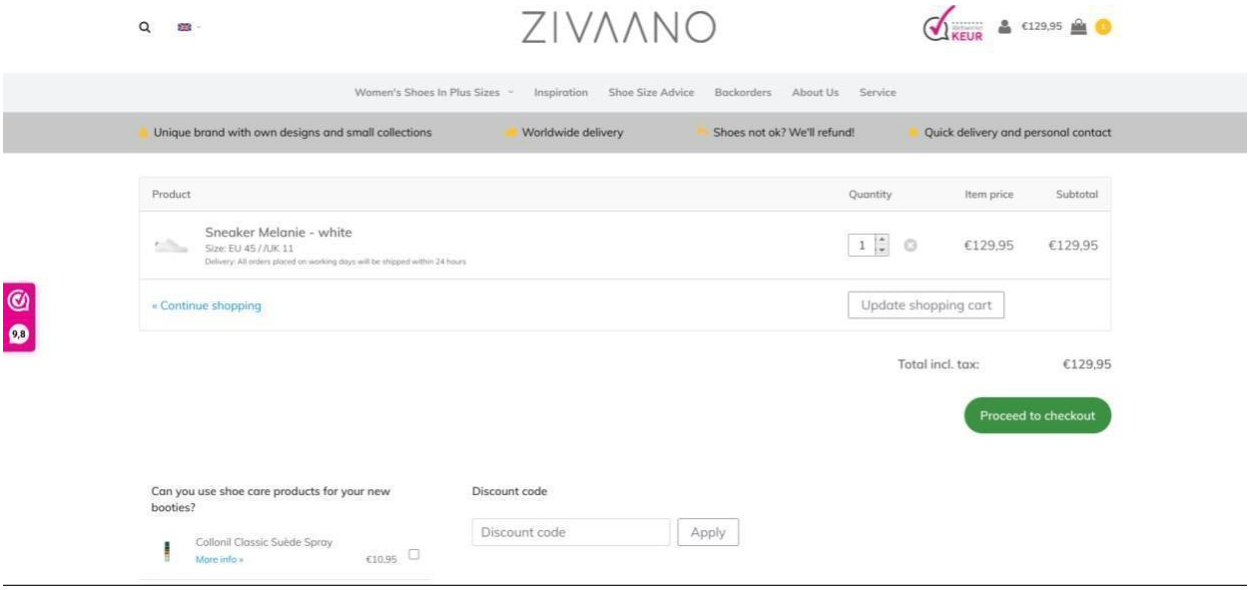
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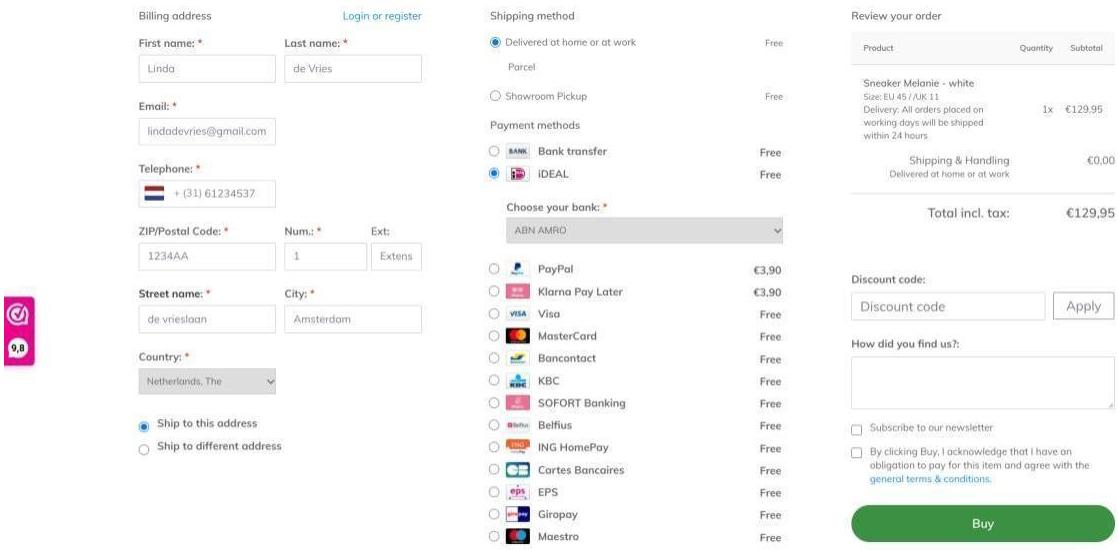

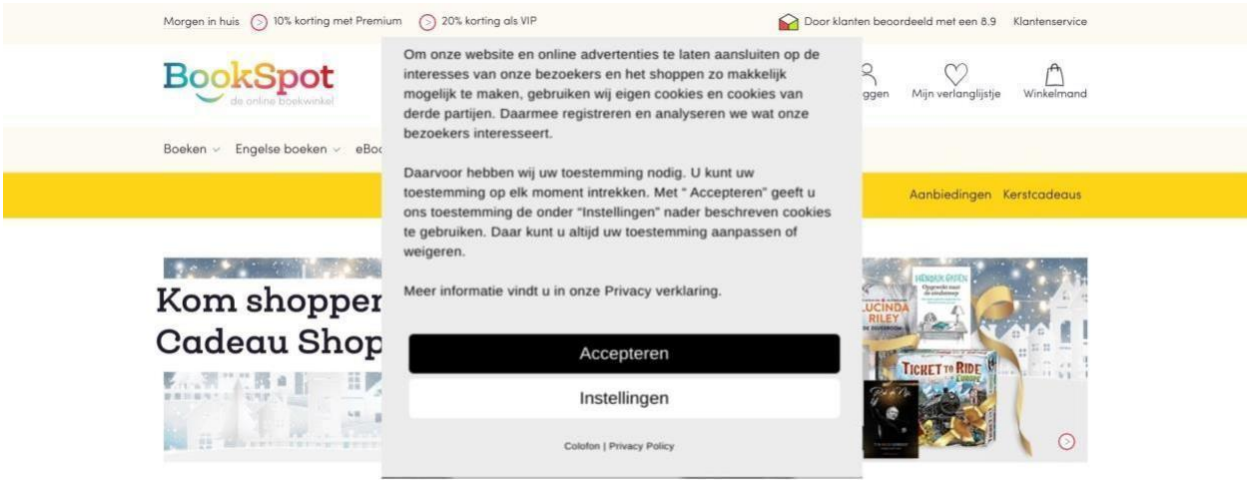

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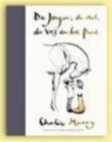

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