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E-SERVICE QUALITY OF ONLINE TICKETING IN ESTONIA'S BUS AND TRAIN TRANSPORTATIONS

Master's thesis

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TABLE OF CONTENTS

ABSTRACT

Lifestyles have changed over the years. During the last two decades, the use of the Internet has expanded exponentially. Several businesses rely more on internet services and at the same time, customers are getting more and more used to interacting with the Internet to find better prices more conveniently. On the other hand, technological innovations have been inevitably triggering a rapid change in customers' demands and expectations. To meet these demands and expectations businesses focus on new techniques and metrics for measuring their service quality. Interaction between customers and businesses in the internet world has created the necessity for a new approach in the concept of service quality: measurement of e-service quality.

E-service quality is one of the prime determinants of consumer perception which is very important for the growth of any online business regardless of the industry. Although, e-service quality concept is still new, the identification of e-service quality dimensions received a lot of attention in marketing academics for the past decade. Accordingly, there are various scales to measure e-service quality developed by researchers.

The aim of this research is to determine consumers' perceptions on the e-service quality of online ticketing in Estonia's bus and train transportations. In order to answer research questions, a deductive approach was used in this paper. The quantitative method was applied to distribute research questionnaires among Estonia's bus and train transportations users. Data analysis was done by using statistical tools of Microsoft Excel and SPSS software. In the conclusion was discussed the main finding of the research question's answers.

The results of the data analysis on the E-S-QUAL scale in the context of travel and transportation sites present the corresponding outcome to initial research. Finally based on results from data analysis, we found that all selected components of e-service quality are positively correlated with each other which evidence a positive relationship between E-S-QUAL components. Furthermore, current reliability analysis results confirm that the data and instrument are accurate for any future question.

Keywords: Internet, e-service quality, online ticketing, bus and train transportations, Estonia

INTRODUCTION

Technological innovations have been cause rapid change in all spheres of the world. Diffusion of innovation leads to the creation of new markets, new products, and services, new customers. Due to the advances in information and communication technologies, the way products and services are delivered to people has changed exponentially. The large opportunities of the internet like immediate connections and lines of communication made the global marketplace more accessible. On the other hand, in a fast-moving, digitally-led world, today's customers have become more knowledgeable of required standards of quality and demand sufficient services. Unlike the customers of yesterday who did not have easy access to product and service information and multiple avenues by which to locate, the consumer of today can easily access information, compare prices, and review feedbacks via companies' websites. In order to reach these customers and to respond their demands and expectations businesses outline new trends which focuses to convenience, a knowledgeable workforce, speed, consistency and a great mobile experience. Interaction between customer and company throughout electronic mail (e-mail) and companies websites led to a new direction in business, electronic transactions or e-commerce. Most experienced and successful companies have to realize that the key determinants of success or failure in engaging e-commerce into their businesses are not merely the web channel presence and the low price, but also the electronic service (e-service) quality (Zeithaml, 2002, 1). As a result, they have to shift the focus of e-business from e-commerce (the transactions), to e-service (all cues and encounters that take place before, during, and after the transactions) (Parasuraman et al., 2005, 2).

Estonia is the world's first country with its fully functioned digital and electronic services. Register a company online, digitally sign and exchange encrypted documents, conduct secure online bank transfers, and make tax declarations electronically. The creation of e-Estonia has resulted in a new community that is more transparent, trustworthy, and efficient. E-services created under "e-Estonia" initiative include e-voting, e-banking, e-healthcare, e-Business, e-Banking, e-Ticket, e-School, University via internet, the e-Governance Academy , as well as the release of several mobile applications (E-Estonia – Estonia). Transportation is one of the big industries which benefited from this great development. The country fully shifted to contactless payments for public transportation and mostly online ticketing for regional and international travel.

Electronic service quality (e-service quality) has been in the focus of researchers for the past decade. Although the starting point for the researchers was a multiple-item scale called SERVQUAL that has been developed by Parasuraman, Berry, and Zeithaml (1991), with the advancement of the internet and e-commerce, service quality gained a new impetus with the focus turning into electronic service quality (e-quality). Since previous researches on e-service quality largely focuses on websites selling physical products, there are gap insights on the perceptions of consumers on pure-service sites such as those offering financial or information services. Zeithaml et al. (2002) suggested more research to understand the keys which affect the customers' perceptions about the e-service quality dimensions (Zeithaml et al., 2002, 372). Parasuraman, Zeithaml, and Malhotra (2005) made the call for further research into E-S-QUAL in the context of pure service sites.

The main problem of the master thesis stems from **the limited information on the effect** of the customers' perceptions about the e-service quality in the content of pure service sites. The master thesis seeks are: to complement existed gap in the discussed research area; and to respond to the calls made by Parasuraman, Zeithaml, and Malhotra (2005) and Zeithaml et al. (2002).

The aim of this research is **to determine consumers' perceptions on the e-service quality of online ticketing in Estonia's bus and train transportations.** Based on different researches, there is a huge literature review on scale and dimensions of e-service quality. E-S-QUAL scale by Parasuraman, Zeithaml, and Malhotra (2005) forms the basis of this project. The original dimensions were slighly modified in this study to adjust it to the context of pure service bus and train transportations websites.

The main research questions this study are:
-What are the most important factors of the e-service quality on bus and train transportations sites?
-What are the main results of the implication of the e-service quality on Estonia's bus and train transportations sites?

The thesis consists of three chapters. The first chapter is a theoretical framework where explores the literature review and an explanation of the keywords and concepts. The second chapter involves the research methodology including research design, design of the questionnaire, sampling, and data analyzing sections. The third chapter reveals results and discusses findings.

1.1. THEORETICAL FRAMEWORK

1.2. Literature Review

Consumer perception is one of the important tools for the marketer to evaluate their marketing activities. The marketers are keen on checking the consumer perception towards service, perception towards products quality, pricing, packaging and the sales promotion activities. Perception is the sum total of the immediate response of our sensory receptors (Krishnankutty and Kalita, 2011, 216). Consumer satisfaction is the perception of a product or service that has met or surpass expectations. It provides marketers and business owners with a metric that they can use to manage and improve their businesses. Customer satisfaction plays an important role in the success of business strategies (Gil and Cervera, 2008); customer satisfaction helps keep customers from request service or product from competitors (Fawcell and Sewnson, 1998). To effectively optimize sales, businesses concentrate on maintaining consumer relationships, especially in particular customer satisfaction and customer loyalty. In other words, customer satisfaction helps organizations and businesses to increase their return and achieve competitive advantage (Lewin, 2009), in addition to customer satisfaction leads to long term profits by making the customer loyal to the organization (Jochen, 2003), so customer satisfaction stems from recognizing companies that they have to interact with changing environment consistent with the behavior of customers to maintain the survival and continuity of firms in competitive markets (Smith, 1996; Al-Hawary, Al-Smeran, 2017, 171).A satisfied customer is likely to send more business back to the company, while an unsatisfied customer may be more apt to prevent the business from soaring. In other word, when a customer is satisfied with a product or service, likely to spread the word and help to increase the company's profits (S.Praveenkumar, 2015, 20).

Service is an endeavour of an enterprise, and it is achieved by satisfying the needs of customers by increasing the quality of the provided service (Chang et al., 2015). The way services are delivered to people has changed due to the advances of information and communication technologies. Time and convenience are two of the most important driving forces that lead to a more wide use of e-services in peoples' every day activities (Paschaloudis D., Tsourela M. 2014). Today's customers are busy with the everyday hustle and bustle of life. The busy customers want to be serviced in a timely manner. They want to utilize technology to assist in reducing the amount of time required to make purchasing decisions and completing transactions. In order to reach these

customers and to respond their demands and expectations businesses outline new trends which focuses to convenience, a knowledgeable workforce, speed, consistency and a great mobile experience. Interaction between customer and company is enabled through a number of internet-based protocols for business and communication such as the electronic mail (e-mail), the World Wide Web (WWW) and electronic commerce (e-commerce) (Lee-Kelley, Gilbert, and Mannicom, 2003, 239).

The consept of e-service has been increasingly recognised by both researchers and practitioners as being one of the key determinants in successful e-service (Santos, 2003; Taherdoost, H., 2020a). Electronic service is defined as delivering all interactive services via the Internet, and the use of advanced communications and information and multimedia technology (Boyers et al., 2002; Al-Hawary, Al-Smeran, 2017). Rust and Lemon (2001) show the importance of e-service on the Internet. Rowley (2006) provides an e-service definition based on information technology, includes the information provision and system support, the logistic transportation of service and the trace and exchange of information. The importance of electronic service as strong source of competitive differentiation through customer involved in product development process through quick feedback and enhance customer relationships, in addition to the e-service help get services at lower cost, as it achieve excellence in quality (De Ruyter et al., 2001; Al-Hawary, Al-Smeran, 2017, 172). Electronic service allows the business to meet the expectations of customers, and go beyond traditional consumer service, which helps these businesses to invest for the long term by promoting the growth of customers and keep customers in case of company loyalty (Lake and Hickey; 2002).

On the other hand, since the beginning of December 2019, the outbreak of Coronavirus Disease 2019 (COVID-19) has had a momentous impact on consumers' behaviour across the world at large. Coronavirus drastically changes the global trends. A rapid change has occurred in every business. It has changed the behaviour of human, nature of trading, business and even the way of life. It spread the scares among people they avoid to interact with others (Bhatti et al., 2020, 1450). Electronic service is a self-service (Surjadaja et al., 2003; Gera, 2011) instead of access to service by speaking to an employee over the phone or from behind the desk, the service is obtained through mechanical interaction and mutual between the applicant and machine (Al-Hawary, Al-Smeran, 2017).

Additional electronic service concept could include definition of electronic service by Evanschitzky and Iyer, where they defined e-service as "an act or performance that generates value and provides benefits for customers through a process that is stored as an algorithm and typically implemented by networked software" (Al-Nuaimi et al., 2013, 186).

1.2.1. Tools of Measuring Service Quality

The success of any business is inextricably linked to the quality of services it provides to customers. Over the past few decades, quality of services has gotten a noticeable attention from academic researchers. Sureshchandar et al. (2002) found that service quality and customer satisfaction were highly related. Ladhari (2009), Dahiyat et al. (2011) and Samen et al. (2013) all state that service quality is an important antecedent of customer satisfaction. Numerous researchers have stated that service quality provided by an organization impacts its performance (Portela, Thanassoulis, 2005), market share (Fisher, 2001), sales profit, (Duncan, Elliot, 2002) and customer loyalty (Ehigie, 2006). Caruana (2002) has provided evidence that loyalty, satisfaction of customers, and quality of service are interrelated (Caruana, 2002, 821). Other studies have focused on meeting customer needs. For example, Babbar (1992) defines that "Quality of service is determined primarily by the individual customers through their perceived delivery for the service attributes that they expect". According to Lewis (1991), service quality is a measure of how well the service delivered meets customers' expectations of a product and service. Chang et al., 2015 consider that service quality determines the willingness of customers to purchase a service again in the future or to accept additional add-on services. Besides, a number of definitions that focus on the importance customer needs, many researchers unambiguously support the thought that service quality, as perceived by consumers, stems from a comparison of what they feel service companies should offer rather than would offer (i.e., from their expectations) with their perceptions of the organizations' performance that are providing the services (i.e., from the actual service performance) (Dr. Marwan S. Alagha, 2020). For example, Gronroos (1984), explains service quality as a result of the evaluation process, within which the customer compares his expectations with the service he feels while he's receiving. Parasuraman et al. (1988, p 15) defined service quality as the overall assessment of a single service firm based on a comparison of that firm's output to the customer's general perceptions of how companies in that sector should operate. (Parasuraman et al., 1988, 15) The first service quality scale was developed by Parasuraman et al, (1988), known as the SERVQUAL scale. This scale was based on empirical research and suggested five dimensions: tangibility, reliability, responsiveness, assurance, and empathy (Parasuraman et al, 1988, 23). For many years the SERVQUAL scale and its latest version (Parasuraman et al,

1991) has been tested and also used by many marketing managers in different industry areas (Trocchia and Janda, 2003). Although many disagreed with the main concept of SERVQUAL to define and deliver global attributes to consumers' service quality and argued that service quality dimensions should be considered to be context-bound and service-type-depended (Yang et al, 2003, p.312), the SERVQUAL model had become increasingly popular among researchers, among the previous measurement scales of service quality. Cronin and Taylor (1992) are of the view that the conceptualization of service quality as a gap between expectations and performance is inadequate. They argue that the concept of service quality should be customers' attitude towards the service, since the concept of satisfaction is defined as a gap between expectations and performance or disconfirmation of expectations. They suggested that service quality should be measured by performances-only measures (SERVPERF). Jain and Gupta (2004) argue that the SERVQUAL scale will be able to explain greater variance in the overall service quality if measured with a single-item scale. With the advancement of the Internet and e-commerce, service quality gained a new impetus with the focus turning into electronic service quality (e-quality). In this context, researchers and managers changed the focus to the development of measures and strategies to improve e-quality (Lionello, R. L., 2020, 1).

1.2.2. Tools of Measuring Electronic Service Quality

Although service quality in traditional offline settings is much studied by marketing academics for many decades, the application of this model on online settings is relatively new. The success and prevalence of the internet has made web-based systems become an important medium in connecting service/product providers with their customers (Taherdoost, 2020a, 493). It also has created a new arena for firms in various industries (Chang et al., 2015) and even, internet application can foster social interactions (Ringas et al., 2015; Taherdoost, 2020a, 493). Measuring online service quality becomes industry or context dependent in which it may increase the difficulties to constitute a global measure (Al-Nuaimi et al., 2013, 186). A particular domain then is required to define major effects of e-service quality (Yang., 2005). The notion of e-service has been increasingly recognised by both researchers and practitioners as being one of the key determinants in successful e-service (Santos, 2003). While some researchers study the technical quality aspects of the website itself, others include interaction with customers as well as post-website services such as order fulfilment and returns (Zeithaml, Parasuraman, Malhotra, 2002, 365). Zeithaml, Parasuraman, and Malhotra (2000) provided the first definition for e-service quality where described it as the "extent to which a website facilitates efficient and effective shopping, purchasing, and delivery of products and services" (Zeithaml, Parasuraman, and

Malhotra 2000, 5). Santos (2003) characterized e-service quality as "evaluation and overall governance for customers with the excellence in electronic service offerings in the market". Praeg and Spath (2010) propose that e-service quality is ability to navigate the Web in addition to increasing the size of the data and information needed by the customer. E-services differ from traditional services, in a sense that customers interact with the organization usually through a web site, relying on sight and sound, in comparison to traditional services, where they use all their senses (Rowley, 2006; Santouridis et al. 2012). To capture electronic services in a broader sense, electronic service quality should cover the complete service offering and not exclusively transaction-specific elements (Gummerus et al., 2004). According to Parasuraman et al. (2005), e-service quality is defined broadly to encompass all phases of a customer's interactions with a web site (the extent to which a web site facilitates efficient and effective shopping, purchasing, and delivery) (Parasuraman et al., 2005, 5).

A variety of conceptual models have attempted to measure e-service quality such as SITEQUAL (Yoo and Donthu ,2001) ,WebQual 4.0. (Barnes and Vidgen, 2002), WebQualTM (Loiacono et al., 2002), and eTailQ (Wolfinbarger and Gilly, 2003). E-S-QUAL which was developed by Parasuraman, Zeithaml, and Malhotra (2005) is the main focus of the current study. This resulting framework has been tested and confirmed by various researchers and must be considered as one of the most comprehensive works on e-service quality so far (Bauer, Falk, Hammerschmidt, 2006). Parasuraman, Zeithaml, and Malhotra (2005) selected two most frequently visited online stores at that time—amazon.com and walmart.com—to verify the psychometric properties of the E-S-QUAL scale (Parasuraman et al., 2005, 3). While walmart.com has a well-known physical counterpart, amazon.com does not, thereby allowing coverage of the two major types of online retailing. Furthermore, the two selected stores differ in terms of type and variety of products sold (Parasuraman et al., 2005, 10).

There are many studies where researchers examine e-service quality dimensions and their effects in different sectors. From more recent studies to the electronic service quality Lionello, Slongo, Matos (2020), studies were found in the literature. Lionello, Slongo, Matos (2020) found that the presence of the human factor in the provision of service over the Internet is the most responsible for the generation of perceived value. On the other hand, customer satisfaction is firmly linked with the company's ability to deliver on service promises. Lionello, Slongo, Matos (2020) concluded that perceptions of electronic service quality are strongly dependent on the context (Lionello, R. L., 2020, p.12).

Although, a wide range of researches electronic service quality, future research suggestion by Parasuraman et al. (2005): "to examine the scales in the context of pure-service sites, make any necessary modifications and assess the psychometric properties of the modified scales" (p.17), almost neglected. Rust and Lemon (2001) consider, e-retailers that sell only tangible products do not represent the true nature of eservice since most people think of their service as no more than access to goods and order fulfilment (Rust and Lemon, 2001, 86). In other words, these measurement instruments do not take into account the uniqueness of services offered by websites. For instance, some of their items can not be applied in a service context (e.g. 'This eretailer's orders are protectively packaged when shipped', 'Damage rarely occurs during transportation of my order from this e-retailer', 'Products on the site are almost always in stock' and 'The items sent by the site are well packaged') (Sabiote and Román, 2012, 157). Despite these arguments, Akinci et al. (2010) applied Parasuraman et al.'s (2005) scale to a 'pure' service context. They studied consumers' perceptions of the electronic service quality offered by 13 banks in Turkey. Although measure by Akinci et al. (2010) can only be applied to internet banking, and future research that covers different e-service industries is encouraged by the authors, the study represents an initial step in the process of taking into account the particular characteristics of services offered by online retailers (Akinci et al., 2010, 238).

1.2.3. Dimensions of Electronic Service Quality

Over the past two decades, many researchers studied the definition, measurement, and management of e-service quality. As a result, many instruments have been developed to measure the quality of service and e-service (Taherdoost, 2020a, 495). Initial, measurements of e-service quality have mostly focused on rephrasing the SERVQUAL dimensions which has been developed by Parasuraman et al. (1988). However, this instrument is very useful to evaluate the service quality, but it is not applicable to apply in online environment assessment (Cai and Jun, 2003), because of differences between online and offline service settings (Taherdoost, 2020a, 495). Although the SERVQUAL has been used by several researchers to determine the quality of service in electronic channels (Wang et al., 1999; Sullivan and Walstrom, 2001), some added new dimensions and items to adjust it to measure e-service quality (Lee and Lin, 2005; Subramanian et al., 2014), for example, Li et al. (2002) adapted the SERVQUAL instrument with consideration of the differences between online and offline services with six dimensions (Taherdoost, 2020a). Due to the challenges in measuring e-service quality, Parasuraman and Grewal (2000) recommended additional focus to the research to investigate whether "the definitions and relative

importance of the SERVQUAL dimensions change when customers interact with technology rather than with service personnel". Since there are some fundamental differences between offline services and online services such as absence of direct communication (face to face), absence of traditional tangible elements and being self-service of e-service, thus the generic dimensions of the SERVQUAL model need to be reformulated in order to be used meaningfully in the context of e-service (Li and Suomi, 2008).

Accordingly, in existing e-service quality literature, there are a variety of conceptual models to measure e-service quality.

Szymanski and Hise (2000) developed a model that take into account four web dimensions as customer satisfaction parameters: online convenience, merchandising site design, and financial security.

Yoo and Donthu (2001) developed SITEQUAL. The nine-item scale SITEQUAL allows measuring quality of retail websites on four dimensions: ease of use, aesthetic design, processing speed, and security (Yoo, Donthu, 2001). Connolly et al. (2010) proposed that this scale excludes dimensions considered central to the e-service quality evaluation and focused on the transactional part of service quality, therefore, this scale might not be relevant in the setting of electronic services.

Loiacono et al. (2002) developed a wide-ranging scale of WebQual. This scale focuses on the interface of a web site and includes 36 items and 12 dimensions, which are: information fit to task, interaction, trust, response time, design, intuitiveness, visual appeal, innovativeness, flow, integrated communication, business process and substitutability. The basic idea behind WebQuale is that it is possible to predict the behavior of a web user when he/she re-visits a web site according to their perceptions of overall web site quality (Santouridis et al. 2012).

Barnes and Vidgen (2002) in their WebQual scale identified five factors that are grouped into three main constructs which are usability (site design and usability), information quality (quality of the content of the site) and interaction quality (embodied in trust and empathy).

Wolfinbarger and Gilly (2003) proposed the eTailQ scale with website design, fulfilment/reliability, privacy/security and customer service as relevant dimensions. eTailQ scale

developed by Wolfinbarger and Gilly (2003) is based on both online and offline focus groups, a sorting task, and an online survey of a customer panel.

Parasuraman et al. (2005) made a noticeable effort into the development of a new instrument for e-service quality: E-S-QUAL scale. This scale includes four dimensions namely efficiency, system availability, fulfilment, and privacy Parasuraman et al. (2005).

1.3. Overview of selected E-S-QUAL scale for current study

The following section summarises the selected dimensions of the e-service quality that have been studied in this paper to determine consumers' perceptions on online ticketing in Estonia's bus and train transportations. E-S-QUAL scale and its dimensions by Parasuraman, Zeithaml, and Malhotra (2005) form the main basis for the subsequent study of this project. To answer research questions, the current study focuses measure transportation' website's performance based on online ticketing in Estonia's bus and train transportations. In order to assess the selected scale's reliability and validity, and to explore the nature and impact of e-service quality on customers' overall quality and value perceptions, as well as their loyalty intentions, are other main focus of this study.

Zeithaml, Parasuraman, and Malhotra (2000) proposed the first definitions of e-service quality is Initially, Zeithaml, Parasuraman, and Malhotra (2000) developed eleven dimensions e-SQ scale for assessing e-service quality. According to them, internet service quality is the extent to which a website facilitates efficient and effective shopping, purchasing, and delivery of products or services. Zeithaml (2002) conducted the comparison between SERVQUAL and e-service quality dimensions and stated that some dimensions of the SERVQUAL can be applied to e-service quality. However, there are technological-related additional dimensions in the e-service quality. Following 11 dimensions of e-service quality were proposed by Zeithaml, Parasuraman, and Malhotra's (2000) study.

1. *Reliability:* Correct technical functioning of the site and the accuracy of service promises (having items in stock, delivering what is ordered, delivering when promised), billing, and product information.
2. *Responsiveness:* Quick response and the ability to get help if there is a problem or question.

3. *Access:* Ability to get on the site quickly and to reach the company when needed.

4. *Flexibility:* Choice of ways to pay, ship, buy, search for, and return items.

5. *Ease of navigation:* Site contains functions that help customers find what they need without difficulty, has good search functionality, and allows the customer to maneuver easily and quickly back and forth through the pages.

6. *Efficiency:* Site is simple to use, structured properly, and requires a minimum of information to be input by the customer.

7. *Assurance/trust:* Confidence the customer feels in dealing with the site and is due to the reputation of the site and the products or services it sells, as well as clear and truthful information presented. *Security/privacy:* Degree to which the customer believes the site is safe from intrusion and personal information is protected.

8. Security/privacy: Degree to which the customer believes the site is safe from intrusion and personal information is protected.

9. *Price knowledge:* Extent to which the customer can determine shipping price, total price, and comparative prices during the shopping process.

10. *Site aesthetics:* Appearance of the site.

11. *Customization/personalization:* How much and how easily the site can be tailored to individual customers' preferences, histories, and ways of shopping

After conducted further analyses, the authors developed e-service quality into two separate scales: the first is named E-S-QUAL and the second is E-RecS-QUAL (Parasuraman et al. 2005, 1). E-S-QUAL scale, consisting of 22 items on four dimensions, which the authors call the core dimensions: efficiency, system availability, fulfillment, and privacy. The second scale, E-RecS-QUAL consisting of 11 items on three dimensions: responsiveness, compensation, and contact. As mentioned in previous sections E-S-QUAL scale is choosen to determine consumers' perceptions on the e-service quality of online ticketing in Estonia's bus and train transportations.

Parasuraman, Zeithaml, and Malhotra (2005) empirically examined E-S-QUAL, a multiple item scale with core service quality aspects and defined its dimensions in the following manner (Parasuraman et al., 2005, 8):

1. *Efficiency:* The ease and speed of accessing and using the site.

2. *Fulfillment:* The extent to which the site's promises about order delivery and item availability are fulfilled.

3. *System availability:* The correct technical functioning of the site.

4. *Privacy:* The degree to which the site is safe and protects customer information.

Parasuraman, Zeithaml, and Malhotra (2005) note that the "purpose of E-S-QUAL is solely to measure the service quality of websites" (Parasuraman et al., 2005, 17). Other experiential aspects such as fun or pleasure do not fall within the conceptual domain of service quality because such hedonic aspects are distinct benefits that may not be relevant in all contexts or to all customers (Parasuraman et al., 2005, 17). As, Parasuraman, Zeithaml, Malhotra (2005) conducted their study on websites selling physical products- amazon.com and walmart.com, there are gap insights on the perceptions of consumers on pure-service sites such as those offering financial or information services (Parasuraman et al., 2005, 17). The current paper, address as a response to the call made by Parasuraman, Zeithaml, and Malhotra (2005) for further research into E-S-QUAL in the context of pure service sites (Parasuraman et al., 2005, 17). Therefore four dimensions of the E-S-QUAL scale are considered the most and common dimensions for this research and hypotheses in the next section are proposed based on these dimensions. The original dimensions of the E-S-QUAL scale were modified in this study to adjust it to the context of pure service bus and train transportations websites.

1.3.1. Selected E-S-QUAL scale dimensions

Efficiency

The ease and speed of accessing and using the site (Parasuraman et al., 2005, 8). Efficiency is considered very important in e-commerce, since convenience and saving of time are generally considered as the main reasons for shopping online (Ranganathan and Ganapathy, 2002). Santos (2003), defines efficiency the speed of downloading, searching and navigation. Efficiency may be define as customer's ability to accessing and using this website quickly and easily (Mummalaneni and Meng, 2009) and to be efficient site should be easy to use and designed in a proper manner and appropriate (Parasuraman, 2005), as must be organized well and doesn't need a lot of information to answer customer interventions (Zeithaml et al., 2000), and the traditional service efficiency vary from electronic service efficiency, as efficient traditional service related to skill and ability of the service provider and his knowledge, and merit that help them to perform their task properly. Using regression analysis, Parasuraman, Zeithaml, and Malhotra (2005) proved the positive outcomes of efficiency on perceived value (standardized coefficient of 0.56) and loyalty (standardized coefficient of 0.36) (Parasuraman, 2005, 16). Hence, in this paper is assumed that

this impact is likely on travel and transportation information sites as well. In order to adjust to the context of current research original items of efficiency by Parasuraman, Zeithaml, and Malhotra (2005) slightly modified in this study. Following eight items (EFF1-EFF8) were included to measure the efficiency of travel and transportation information sites.

EFF1   Transportations websites make it easy to plan my trip

EFF2   Transportations websites make it easy to get anywhere on the site

EFF3   Transportations websites enable me to complete a transaction quickly

EFF4   All the information at transportations websites is organized well

EFF5   The pages of the web sites load fast

EFF6   Transportations websites are simple to use

EFF7   Transportations websites enable me to get on to it very quick

EFF8   Transportations websites are well organized

The symbols preceding the items replicate the symbols in original dimensions and refer to the variable names in further data analysis.

System availability

The correct technical functioning of the site (Parasuraman, 2005, 8).When consumers purchase from an online shop or they are just surfing, function problems like non-working buttons or missing links, disappoint customers and can lead to exiting. As a result, the retailer loses the opportunity to enhance customer loyalty (Wachter, 2002; Santouridis et al. 2012). Thus, in this paper is assumed that technical issues in travel and transportation information sites may negatively affect customer satisfaction as well. To examine system availability in the context of pure-service sites, original items slightly changed. The following four items of system availability were studied in this paper.

SYS1   Transportations websites always available for use

SYS2   Transportations websites launche and run straight away

SYS3   Transportations websites do not crash

SYS4   Pages at transportations websites do not freeze after I enter my order information

The symbols (SYS1- SYS4) preceding the items refer to the variable names in further data analysis.

Fulfilment

The extent to which the site's promises about order delivery and item availability are fulfilled (Parasuraman, 2005, 8). Fulfillment refers to a company's actual performance in contrast with what is promised through the website, and incorporates accuracy of service promises, such as having products in stock and timely delivery (Hapenciuc, Condratov, 2007). Li and Suomi (2008) define fulfilment as an availability of correct information to the customer about the services is important to complete the purchase and increase customer trust. Fulfilment is one of the most vital factors for the judgment of the quality of an online shop, since keeping service promises and accurate order fulfillment are elements of service quality that lead to customer satisfaction or dissatisfaction (Yang and Fang, 2004; Santouridis et al. 2012). As, Parasuraman, Zeithaml, and Malhotra (2005) demonstrated a positive, but weak, correlation between fulfillment and perceived value and customer loyalty, paper assumes that fulfilment have the greatest effect on the perceived service quality, value and loyalty. In this study minor adjustment was done on the primary items of the fulfillment. Following seven items (FUL1- FUL7) were included to examine the fulfillment dimension of the E-S-QUAL scale on Estonia's bus and train transportations sites.

FUL1 Transportations websites fulfil orders as promised

FUL2 Transportations websites make information available within a suitable time frame

FUL3 Transportations websites immediately provide the service I need

FUL4 Transportations websites send/create requested ticket

FUL5 Transportations websites have the service that the company claims available in real-time

FUL6 Transportations websites are truthful about its offerings

FUL7 Transportations websites make accurate promises about delivery of products (sends it to email/as a message to the phone/print option)

The symbols preceding the items refer to the variable names in further data analysis.

Privacy

The degree to which the site is safe and protects customer information. In other words, it is feeling safe and trusting of the site (Parasuraman, 2005, 8). The results of study by Parasuraman, Zeithaml, and Malhotra (2005) show that privacy plays a significant role in customers' higher-order evaluations pertaining to websites (Parasuraman, 2005). Privacy is one of the essential attributes of the dimensions of electronic service quality appears confidence to the user to make online transactions (Zeithaml et al., 2002, 372). Iliachenko (2006) defines privacy as ' protect

customers from fraud and protect their personal information '. On the other hand, Blut, 2016 refers to privacy to the security of credit card payments and privacy of shared information. So, in this paper is assumed, privacy is important to assess the service quality of travel and transportation information sites. The original items were adjusted in this study based on the context of research focus. The following three items of privacy dimension were studied in this paper.

PRI1   Transportations websites protect information about my online ticketing behavior

PRI2   Transportations websites do not share my personal information with other sites

PRI3   Transportations websites protect information about my credit card

The symbols (PRI1- PRI3) preceding the items refer to the variable names in further data analysis.

1.3.2.   Consumers' value perceptions and loyalty intentions.

Perceived Value

Perceived value is defined as "the total evaluation of the benefits of a product by the customer about what was purchased and what was received in terms of goods or services" (Wood and Heerden, 2007). It is a multidimensional concept and has a dynamic structure. Zeithaml's research classified four different consumer definitions of value: (1) value is low price, (2) value is whatever I want in a product, (3) value is the quality I get for the price I pay, and (4) value is what I get for what I give (Zeithaml, 1988). According to a recent empirical studies, the quality of web site is positively associated with customers' perceived value (Bauer, et al., 2006; Parasuraman etc., 2005; Wolfinbarger and Gilly, 2003). Parasuraman, Zeithaml, and Malhotra (2005) measured the perceived value construct with four items. Following items of the perceived value is a modified version of the originals.

PV1   Availability of the ticket's and transportation services' price at websites

PV2   The overall convenience of using these sites

PV3   The extent to which the site gives you a feeling of being in control.

PV4   The overall value you get from these sites for your money and effort.

The symbols (PV1- PV4) preceding the items refer to the variable names in further data analysis.

Loyalty Intentions

Customer loyalty a key mediating variable in explaining customer retention (Pritchard and Howard, 1997), is concerned with the likelihood of a customer returning,making business referrals, providing strong word-of-mouth, as well as providing references and publicity (Bowen and Shoemaker, 1998). Lin and Sun, (2009) found that technology acceptance factors positively influenced the e-satisfaction and e-loyalty of the customers which formed a way for repurchasing behaviour. Although most research onloyalty has focused on frequently purchased package goods (brand loyalty), the loyalty conceptis also important for industrial goods (vendor loyalty), services (service loyalty), and retailestablishments (store loyalty) (Dick and Basu, 1994). In this study, the loyalty intentions were measured through a five-item Behavioral Loyalty Scale developed by Zeithaml, Berry, and Parasuraman (1996).

LI1   Say positive things about online ticketing to other people?

LI2   Recommend online ticketing to someone who seeks your advice?

LI3   Encourage friends and others to purchase an online ticket ?

LI4   Consider online ticketing service as your first choice for all of your future transactions?

LI5   Will you use an online ticketing service in the coming months?

The symbols (LI1-LI5) preceding the items replicate the symbols in original dimensions and refer to the variable names in further data analysis. Original items were adjusted to the context of pure service bus and train transportations websites.

2. RESEARCH METHODOLOGY

The aim of this chapter is to present the intended methodological approach that was used to answer the research question. Section 2.1 explains the underlying research design, and section 2.2 describes the design of questionnaire including, survey scales. Section 2.3 describes used sampling technique in this study. Section 2.4 deals with the data analysis process.

2.1. Research Design

The master thesis uses scholar's theoretical approaches and ideas as a guide to study consumers' perceptions on online ticketing in Estonia's bus and train transportations. The choice of research strategy depends on data collection technique and data analysis procedures regarding numeric or non-numeric data (Saunders et al. 2009, 151). Guba and Lincon (1994) consider that there are two approaches are available to researchers-quantitative and qualitative approaches. While qualitative research allows, an internal perspective on the subject under investigation (Pratt, 2009), the quantitative method uses to test the strengths of the research model's associations and quantify the impact of the individual factors (Churchill, Iacobucci, 2005). To examine consumers' perceptions on the e-service quality of online ticketing bus and train transportations, statistical analysis is needed based on numerical data. The quantitative method in the form of an online questionnaire was identified for this study. Although there are other types of collecting primary data (observation, interview and questionnaire), according to Bryman, Bell (2013), quantitative research is, about collecting numerical data. That is why collecting data in a survey better suit to the current study. On the other hand, according Bryman, Bell, (2013) using a survey enables to reach a larger part of the population which leads to a broader and more generalized result. Thus, for reaching to high response rate for current study, the respondents were invited mostly by social media networks and the data have been collected by self-completion questionnaires.

Saunders, Lewis, and Thornhill (2008) explain two general deductive and inductive approaches for research (Saunders et al, 2009, 61). While in inductive approach the researcher explores data and develop theories from data which are related to literature, in the deductive approach the researcher tries to examine the existing theory to form a specific sequence of the investigation which is the approach towards research process and aspects of data analysis in natural sciences (Saunders et al, 2009, 124). Since, the current study uses the theoretical concept and idea

developed by Parasuraman, Zeithaml, and Malhotra (2005) as a guide, the deductive approach is the right path for this study.

Every research project is guided by a research paradigm, which is a framework that is used as a guideline when conducting a research project (Collis, Hussey, 2009). The research paradigm shows how researcher understand the reality of the world and studying it, and as Soley and Smith (2008) mentioned it leads to the use of specific methods within the research project. Bryman, Bell (2011) has classified two main research paradigms: positivism and interpretivism (Bryman, Bell 2011, 15-17). According, Bryman, Bell (2011) positivism is an epistemological position that advocates the application of the methods of the natural science to the study of social reality and beyond. Positivism aims to the development of objective knowledge (Bryman, Bell 2011, 16). The current study is considered a social phenomenon as it presents a social reality-online ticketing bus and train transportations. Based mentioned thought, the current master thesis is underpinned by a positivist approach.

2.2. Design of Questionnaire

Based on the relevant literature review, a survey questionnaire has been created. Bourque and Clark (1994) defined three ways to design questions to determine data from samples: developing your own questions; adapting from other questionnaires; adopting from other questionnaires. Although the original dimensions were slightly modified, the basis of this study forms the E-S-QUAL scale by Parasuraman, Zeithaml, and Malhotra (2005). Therefore adopting from other questions, is considered to design a questionnaire for this study. Since the research problem focuses on online ticketing in Estonia's bus and train transportations questionnaire was compiled in both English and Estonian language. The questionnaire consists of five main sections and 45 questions. The sections of the survey were placed on different pages and the participants would need to click "Next" to see the questions from the next sections based on Follows, Jobber (2000) survey. It starts with a short introduction, where participants were informed aim of the questionnaire, approximately the duration of the survey, and confidentiality of the survey. The first question applied to the questionnaire to continue the survey with participants who have experience in online ticketing bus and train transportation in Estonia (Appendix 1).

"Have you ever bought a bus and/or train ticket online in Estonia?

Yes

No"

If the participant selected "Yes", the participant was asked to answer a question from the "Internet usage experience" section to evaluate his/her engagement with the internet usage. Next, in the "E-service experience" sections respondent was asked questions to evaluate his/her engagement with general E-service. The third main section was applied to determine respondents' online bus and train transportation ticketing experience. In the "E-service quality of online ticketing," section respondents were asked about the evaluation of the selected items in the 1.2.1 section under the efficiency, system availability, fulfillment, and privacy dimensions of E-S-QUAL scale . In order to answer the research questions, in this section, the participant was asked to rate statements in three category areas: 22 items to measure transportation' web site's performance (QUALITY); the summed score on the four-item perceived value measure (VALUE); and the summed score on the five-item loyalty-intentions measure (LOYALTY) (Parasuraman et al., 2005, 14). The last section comprises questions relating to gender, age, economic status, and education.

However, if the participant selected "No" which means he/she never bought a bus and/or train ticket online in Estonia he/she was asked to answer the following question:

"Why did you not buy any bus and/or train ticket online?

Generally, I do not use a bus and/or train service in Estonia

I prefer to purchase them over the counter

I did not have the opportunity yet

I do not have information about the existence of the online ticketing"

After answering this question survey takes the participant to the last "Personal Information" section which means the participant who response first question with "No" does not participate in the rest of the questionary. According to Collingridge, Gantt (2008) this method is called

purposive, and as its name says, is used to fulfill a specific purpose. It helps to conduct the main analysis on data, based on responses of participants who have ever bought a bus and/or train ticket online in Estonia.

Four levels of measurement are used to quantify data, depending on what is being measured. Nominal measures differentiate between categories but do not place variables in any order or ranking. Ordinal measures rank categories in order but do not specify the distance between the categories. Interval measures use continuous data in which values are rank-ordered, and the distance between categories is equal. Ratio scales, the highest level of measurement, measure equal interval data and employ a fixedpoint zero (Schmidt, Brown, 2012). The following table gives the overview of questions from the questionnaire with different scales. The full questionnaire is included in Appendix 1.

Table 1: Sample survey scales from the questionnaire.

Question	Answer	Applied scale
Have you ever bought a bus and/or train ticket online in Estonia?	Yes No	Nominal measurement with multiple-choice rating scale
What do you most often use the internet for? (Check all that apply)	Web browsing Social media Shopping Bill payments Gaming Email News Music/Video Other	Nominal measurement with checkboxes rating scale
Please rank the following statements based on your online ticketing in Estonia bus and train transportations with a scale of 1 (strongly disagree) to 5 (strongly agree). - Transportation's websites make it easy to plan my trip	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).

Please indicate your likelihood of engaging in each behavior, based on your online ticketing in Estonia's bus and train transportations, with a scale of 1 (very unlikely), to 5 (very likely). How likely are you…?- Say positive things about online ticketing to other people?	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (very unlikely), to 5 (very likely)
Please evaluate following statements based on your online ticketing in Estonia's bus and train transportations with a scale of 1 (poor) to 10 (excellent)- Availability of the ticket's and transportation services' price at websites	1 2 3 4 5 6 7 8 9 10	Ordinal measurement with Likert a scale of 1 (poor) to 10 (excellent)

Source: compiled by author.

It is visible from table 1, that two types of survey scales are used in the questionnaire: nominal and ordinal. For the nominal measurement, as a rating scale, multiple-choice and checkboxes were used. Nominal measurement was applied to all sections of the questionnaire apart "E-service quality of online ticketing" section. In the "E-service quality of online ticketing" section, an ordinal measurement scale was applied. The Likert scales used in the questionnaire with the following scales:1 (strongly disagree) to 5 (strongly agree);1 (very unlikely) to 5 (very likely);1 (poor) to 10 (excellent). In addition to measuring statements, the current paper considers that in the agree to disagree Likert scale, 2 is 'disagree' where 4 is 'agree' and 3 is 'Neutral'. Same for Likelihood Likert scale, 2 is 'unlikely' where 4 is 'likely' and 3 is 'Neutral'.

2.3. Sampling

According Shiu et al., (2009) sampling is a selection of a small number of elements and expecting that the information gathered from the sample group will allow accurate judgments to be made about the larger group (Shiu et al., 2009, 451). Thus in this paper, the sampling technique is used by selecting some of the elements in an Estonian population, to come to conclusions about the whole Estonian population.

Saunders et al. (2000) divided the sampling technique into two types: probability or representative sampling; non-probability or judgment sampling. In probability sampling, sampling units are selected by chance or probability. Probability sampling is most commonly associated with survey based research. This method of sampling permits the research to make interface or projections

about the targeted population from which the sample was drawn. Non-probability samples provides a range of alternative technique based on researcher subjective judgment (Saunders et al., 2007). In non-probability sampling the selection of elements for the sample is not necessarily made with the aim of being statistically representative of the population. Rather the researcher uses the subjective methods such as personal experience, convenience, expert judgment and so on to select the elements in the sample. As a result the probability of any elements of the population being chosen is not known (Saunders et al., 2007).

To draw up the necessary sample for the research, the non-probabilistic convenience sampling technique is used in this study. The sample size was generated based on Cochran's sample size formula:

$$n_0 = \frac{Z^2 pq}{e^2} \qquad (1)$$

where: e is the margin of error; p is the estimated proportion of the population; q is 1 – p. The z-value is found in normal distribution table.

The data for the study were collected from 2nd April 2021 until 14th April 2021, for 12 days period through Google Forms online survey platform. The questionnaire was sent to randomly selected respondents from Estonia by different social media networks. Based on formula 1, the target sample size was chosen 162 respondents who live in Estonia. Where the population of Estonia is 1,329,460 (Population of Estonia., n.d.). The margin of error and confidence level are chosen at 6.5% and 90% respectively. Participation in the survey was voluntary, and all participants were informed that their anonymity and privacy was assured. Participants were not asked to provide their name or other personal details apart from general information (age, gender, economic status, and level of education). The following table shows the results of demographic factors from this study.

Table 2. Demographic profile

Demographics variable	Category	Responses	Percentage of the sample
Gender	Female	63	53.85%
	Male	53	45.30%
	Other	1	0.85%

Age group	Below 20	6	5.13%
	20-34	69	58.97%
	35-44	32	27.35%
	45 year or over	10	8.54%
Economic Status	Employed	62	52.99%
	Student	37	31.62%
	Retired	8	6.83%
	Unemployed	7	5.98%
	Other	3	2.56%
Level of Education	Primary education	4	3.42%
	Secondary school	14	11.97%
	Bachelor's degree	35	29.91%
	Master's degree	54	46.15%
	Doctoral degree	9	7.69%
	Other	1	0.85%

Source: compiled by the author, based on questionnaire responses

In total, 117 respondents participated in the survey. From 117 respondents, 63 women and 53 men participated in the survey. 1 participant selected "Other" as a gender. The largest age group was people between 20 and 34 years old with 58,9% and it follows with 27,4% of responses from the 35-44 group. The percentage of the participants younger than 20 years old and 45 years or over almost similar, 5,1% and 8,5% respectively.
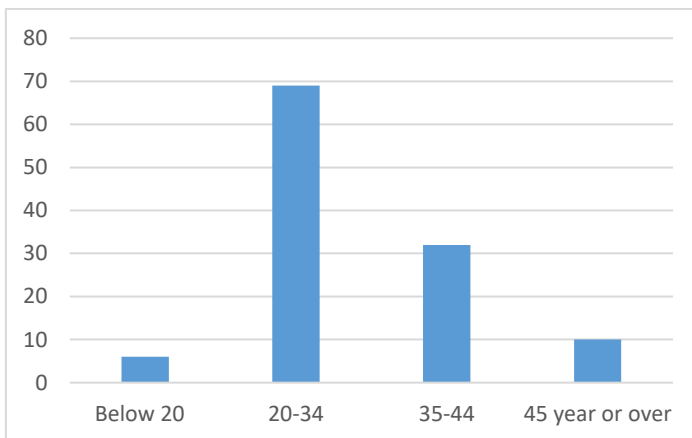
Figure 1. Age of participants

Source: compiled by the author, based on questionnaire responses

Next questions related to the respondent's level of education and economic status. Figure 2 and figure 3 represent the level of education and economic status samples, respectively.
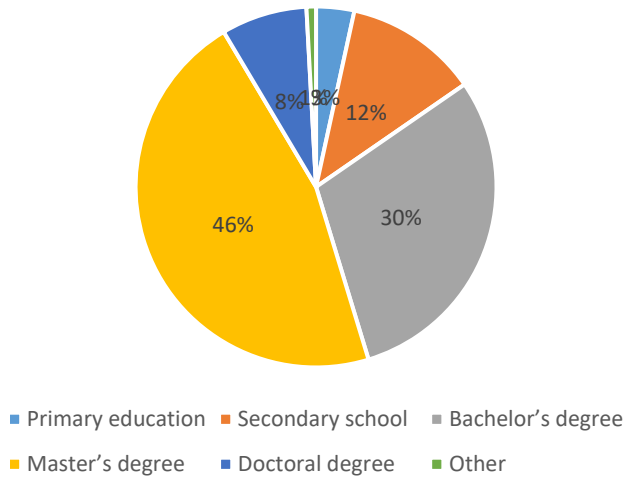
Figure 2. Level of education sample

Source: compiled by the author, based on questionnaire responses

From figure 2 it is visible that, the highest degree of education obtained, "Master's degree" is the highest degree obtained by 46% of the respondents; 30% of the respondents hold a Bachelor's degree. 12% of participants obtain a Secondary school while only 3% obtain Primary education. 8% of participants have a Doctoral degree. Furthermore, only one respondent selected "Other".
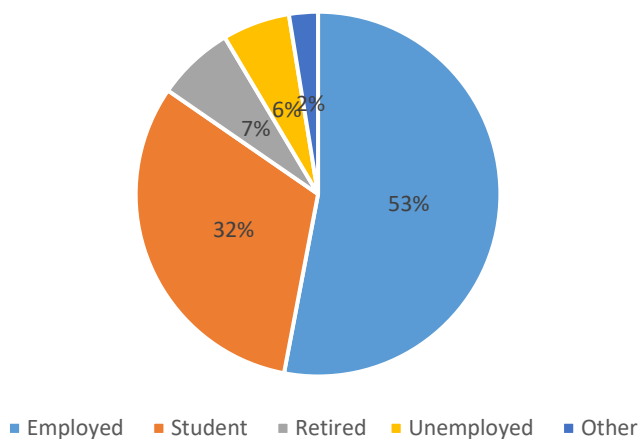
Figure 3. Economic status sample

Source: compiled by the author, based on questionnaire responses

In a term of economic status, 53% participants are currently employed and 32% of them are a student. Furthermore, retired and unemployed respondents contain 7% and 6% respectively. 2% of the respondents selected "Other" (Figure 3).

2.4. Data analysing

Once data collected, they were examined using suitable diagrams and univariate descriptive statistics, which show the accuracy of the input like plausible means and standard deviations, out-of-range values, and univariate outliers (Field, 2013). Statistical tools of Microsoft Excel and SPSS software were used for data analysis. For general information about participants' approach on online ticketing first, percentage of all participants based on their online ticket purchase in Estonia's bus and train transportations was calculated based on questionnaire responses. The results of the analysis on the E-service quality of online ticketing were given in two parts. The first part represents results of descriptive analisy. Results in this part were shown in table 4. In the second part, the data were analyzed with the help of statistical tools, such as Cronbach's alpha, the extraction method, and the rotation method (with Kaiser normalization). In order to confirm the item's validity, factor analysis was applied in this paper.

3. RESULTS AND FIDINGS

This chapter concludes the main results and analyses of this study which were obtained by applying statistical methods and tools. Firstly an overview vision of descriptive analysis is represented and in the next step of results of the deductive analysis are given. Results of descriptive analysis present frequency figures for demographic information about the respondents. Then frequency descriptive statistics is demonstrated for the questions related to Internet usage, E-service, and Online bus and train transportation ticketing experience which contains mean, mod, and variance. Finally, frequency descriptive statistics for the E-service quality of online ticketing are given in this chapter.

As a deductive analysis, regression analysis and correlation between sub-factors of e-service quality are demonstrated.

3.1. Results of online ticket purchase

As mentioned in part 2.2 to analyze data based on responses of participants who have ever bought a bus and/or train ticket online in Estonia, all collected data divided into two parts, based on responses to the first question: data in which the first question was answered by "Yes"; data in which the first question was answered by "No". The following table represents the number and percentage of all participants based on their online ticket purchase in Estonia's bus and train transportations. 97 respondents answered the first question of the questionary "Yes", while 20 of them responded as a "No".

Table 3. Online ticket purchase

Online ticket purchase in Estonia's bus and train transportations					
Valid		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	97	82.91	82.91	82.91
	No	20	17.09	17.09	100
	Total	117	100.00	100.00	

Source: Author's calculations, based on questionnaire responses

The participants who responded "No" on the first question, were asked the reason for their preference. Figure 1 shows the percentage of the participants by their answers to the question "Why did you not buy any bus and/or train ticket online?".
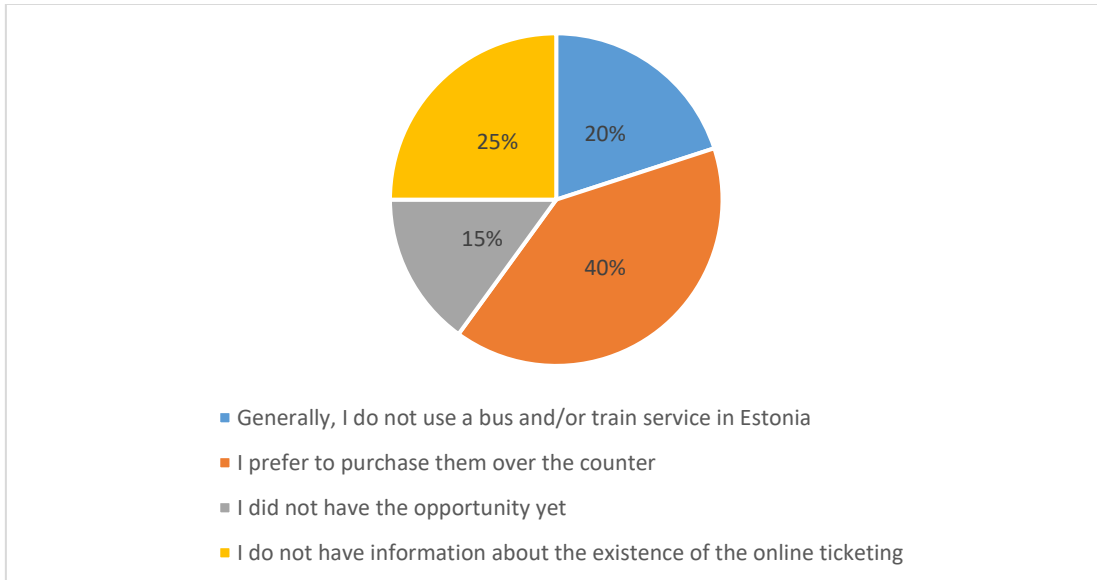
Figure 4. The reason for negative responses on online ticket purchases based on responses to the question "Why did you not buy any bus and/or train ticket online?".
Source: compiled by the author.

While 20% of participants, in general, do not use the bus and/or train in Estonia, 40% of them prefer to purchase bus and/or train tickets over the counter. 15% of respondents did not have the opportunity to online ticketing. 25% of participants responded that they do not have information about the existence of online ticketing in Estonia (Figure 4).

3.2.   Descriptive statistics about E-S-QUAL dimensions

The fourth section of the questionary, represents E-service quality of online ticketing. The purpose of this section to answer the main research questions of this study. As mentioned in section 3.1, the main analysis was conducted on the data selected based on responses to the first question of the questionary. It is visible from table 3 that only 97 participants answered to first question "Yes". Therefore data analysis in this section is conducted based on data collected from 97 responds. As mentioned in section 2.2, participants were asked to rate statements in three category areas: 22 items to measure transportation' web site's performance (QUALITY); the summed score on the

four-item perceived value measure (VALUE); and the summed score on the five-item loyalty-intentions measure (LOYALTY) (Parasuraman et al., 2005). In order to answer the first research question of this study, participants were asked to rank the statements based on their online ticketing in Estonia bus and train transportation. Based on selected dimensions of e-service quality in section 1.2, 22 statements were used to measure four independent variables i.e. efficiency, fulfillment, system availability, privacy. Likert scale was used for measuring the statement level ranging from 1 to 5. According to the research methodology of this study, the scale of 1 is for "Strongly disagree" and 5 is for the top scale level "Strongly agree". Table 4 illustrates frequency distribution for each e-service dimensions' item and show other information such as mean and standard deviation for each of item.

Table 4. Descriptive statistics about e-service quality dimenstions

Items	n	Minimum	Maximum	Mean	Std. Deviation	Variance
Efficiency						
Transportation's websites make it easy to plan my trip	97	2	5	4.11	0.852	0.725
Transportation's websites make it easy to get anywhere on the site	97	2	5	4.06	0.835	0.697
Transportation's websites enable me to complete a transaction quickly	96	1	5	4.06	0.893	0.797
All the information at transportations websites is organized well	97	1	5	4.05	0.905	0.82
The pages of the web sites load fast	97	1	5	4.03	0.907	0.823
Transportation's websites are simple to use	97	1	5	3.99	0.882	0.779
Transportation's websites enable me to get on to it very quick	97	1	5	3.96	0.933	0.871
Transportation's websites are well organized	97	1	5	3.85	0.889	0.79
System availability						
Transportation's websites always available for use	97	1	5	4.14	0.913	0.833
Transportation's websites launch and run straight away	97	1	5	4.03	0.973	0.947

Transportation's websites do not crash	96	1	5	3.97	1.073	1.151
Pages at transportations websites do not freeze after I enter my order information	96	1	5	3.92	1.071	1.146
Fulfillment						
Transportation's websites fulfil orders as promised	97	1	5	4.11	0.988	0.977
Transportation's websites make information available within a suitable time frame	96	1	5	4.08	0.966	0.934
Transportation's websites immediately provide the service I need	96	1	5	4.06	0.934	0.873
Transportation's websites send/create requested ticket	95	1	5	4.06	0.996	0.993
Transportation's websites have the service that the company claims available in real-time	97	1	5	4.05	0.973	0.947
Transportation's websites are truthful about its offerings	96	1	5	4.03	0.96	0.922
Transportation's websites make accurate promises about delivery of products (sends it to email/as a message to the phone/print option)	96	1	5	4.03	0.971	0.943
Privacy						
Transportation's websites protect information about my credit card	97	1	5	4.02	1.06	1.125
Transportation's websites protect information about my online ticketing behavior	97	1	5	3.97	1.065	1.134
Transportation's websites do not share my personal information with other sites	97	1	5	3.84	1.187	1.41

Source: compiled by the author, based on questionnaire responses

Here, the mean for each item calculates with formula 2:

$$\bar{x} = \frac{1}{N} \sum_{i=1}^{N} x(i) \tag{2}$$

And standard deviation for each item is calculated with:

$$\tag{3}$$

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^{N} (x_i - \bar{x})^2}$$

Efficiency Statements Results

Efficiency is the first independent variable of the e-service quality factor of online ticketing bus and train transportations websites. There are eight statements to measure the efficiency of transportations websites, using by Likert scale. The following figure demonstrates the results of these questions. Detailed numerical results can be found in Appendix 2. The results of efficiency statements demonstrate consumers' perceptions of the ease of use and speed of accessing the transportations websites.

Figure 5. Results of efficiency statements' rank

Source: compiled by the author, based on questionnaire responses

Note: In order to adjust the figure properly to the page, the phrase "Transportation's websites" is abbreviated to "Websites".

It is clear from table 4 that, all 97 participants ranked seven efficiency statements (N=97). Only one participant missed the third question (N=96). The highest value for the mean of efficiency items is 4.11 and the minimum mean value is 3.85 which both are greater than 3. Overall, more than 20% of respondents opted '5 (strongly agree)', where more than 40% of participants opted

'4' for all efficiency statements. However, the total percentage of the responses based on ranks '2' and '1 (strongly disagree)' is below 10% (Figure 5). Consequently, the results of frequency for efficiency and efficiency statements' rank show that 'strongly agree' and 'agree' are more than 'strongly disagree' and 'disagree'.

System availability Statements Results

System availability is a second independent variable of e-service quality which plays important role in the determination of consumers' perceptions of bus and train transportations websites. There are four statements to measure the perception of the technical functionality of websites. Figure 11 and Appendix 2 demonstrate participants' responses to system availability-related statements.
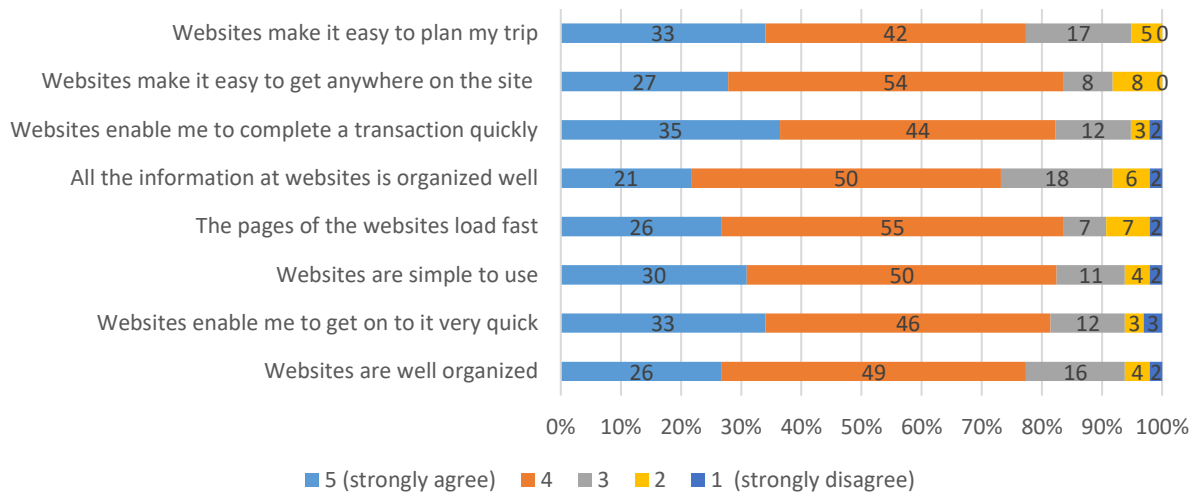

Figure 6. Results of system availability statements' rank
Source: compiled by the author, based on questionnaire responses

Note: In order to adjust the figure properly to the page, the phrase "Transportation's websites" is abbreviated to "Websites".

According to table 4, 97 (N=97) participants ranked first and second statements of the system availability while the last two statements were ranked by 96 participants (N=96). It is clear from descriptive statistics that, the highest value for the mean of system availability items is 4.14 and the minimum mean value is 3.92 which both are greater than 3 (Table 4). Based on the information given in figure 6, more than one-third of respondents selected '5 (strongly agree)' for all statements. Approximately 40% of participants opted '4' for 'Websites always available for use'

and 'Websites launch and run straight away' statements and 35% for the last two statements. The proportion of the participants who opted to '2' and '1 (strongly disagree)' less than 10% for all statements, except 'Websites do not crash' (12.37%). It is obvious that the percentage of the 'strongly agree' and 'agree' ranks are more than 'strongly disagree' and 'disagree' within all system availability statements.

Fulfillment Statements Results

Fulfillment is the third independent variable of e-service quality in this study. Seven statements were asked participants to measure the quality of ticket delivery and information availability of websites. Respondents responded to all the required questions and the results are given in Figure 12. Numerical results can be found in Appendix 2.
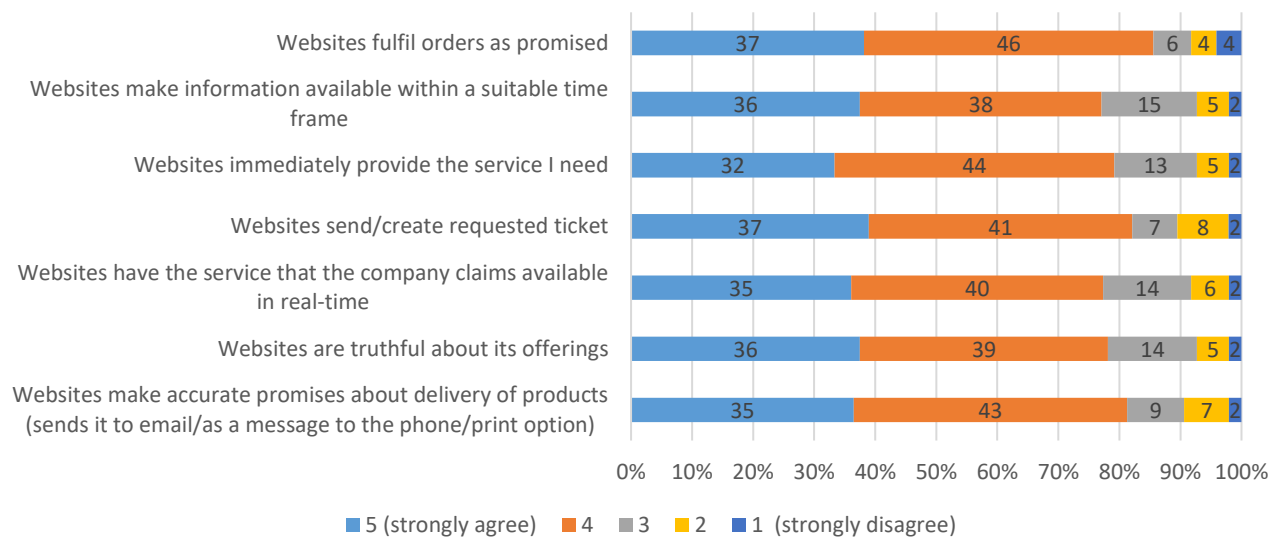
Figure 7. Results of fulfillment statements' rank
Source: compiled by the author, based on questionnaire responses

Note: In order to adjust the figure properly to the page, the phrase "Transportation's websites" is abbreviated to "Websites".

97 (N=97) participants responded 'Transportation's websites fulfill orders as promised' and 'Transportation's websites have the service that the company claims available in real-time' fulfillment statements while 95 (N=95) participants responded 'Transportation's websites send/create requested ticket'. The rest of the fulfillment statements were ranked by 96 with N=96

(Table 4). The highest value for the mean of system availability items is 4.11 and the minimum mean value is 4.03 (Table 4). According to figure 7, more than 30% of respondents selected '5 (strongly agree)' for all fulfillment statements. Approximately 40% of participants selected '4' for all statements. In contrast, the percentage of the respondents who selected '2' and '1 (strongly disagree)' for all fulfillment statements was below 11% (Figure 7). Consequently, the percentage of the 'strongly agree' and 'agree' ranks are more than 'strongly disagree' and 'disagree' within all fulfillment statements.

Privacy Statements Results

Privacy is the fourth independent variable of e-service quality to understand consumers' perceptions on transportations websites. Figure 13 illustrates how participants evaluate the safety and protection of customer information in online ticketing bus and train transportations websites. Detailed numerical results can be found in Appendix 2.
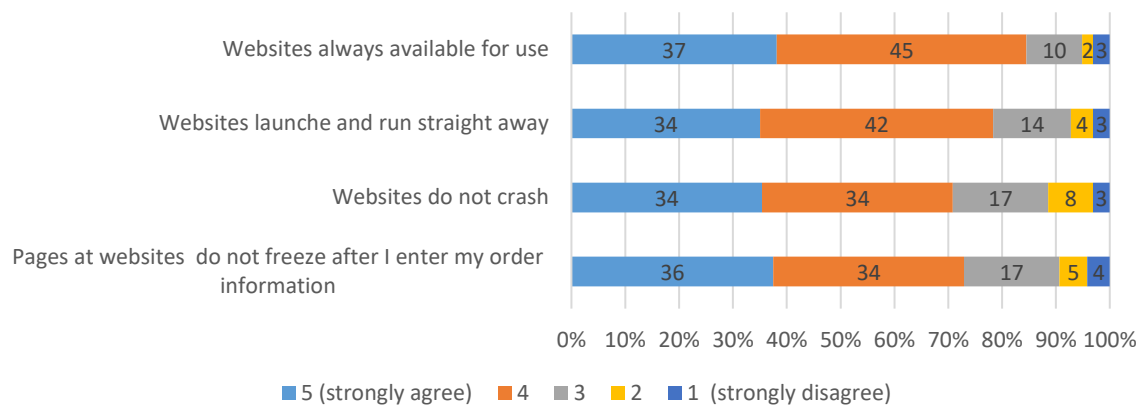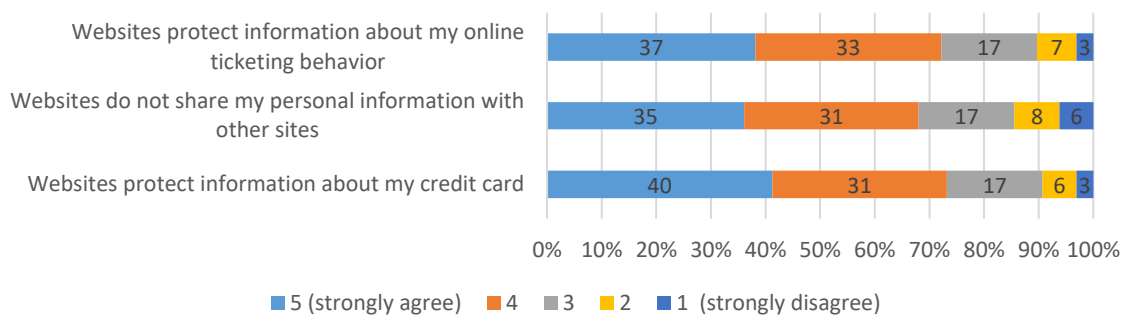

Figure 8. Results of privacy statements' rank
Source: compiled by the author, based on questionnaire responses

Note: In order to adjust the figure properly to the page, the phrase "Transportation's websites" is abbreviated to "Websites".

Table 4 shows that 97 (N=97) participants responded to all privacy statements. The highest value for the mean of system availability items is 4.02 and the minimum mean value is 3.84 where both are greater than 3. It is clear from figure 8 that more than 35% of respondents selected '5 (strongly agree)' for all privacy statements while approximately 30% of participants selected '4'. The proportion of the participants who opted to '2' and '1 (strongly disagree)' less than 10% for all

statements, except 'Websites do not share my personal information with other sites' (14.43%). Based on results of frequency for privacy and privacy statements' rank show that 'strongly agree' and 'agree' are more than 'strongly disagree' and 'disagree'.

As mentioned in previous sections, in order to answer the second research question this study analysis selected the E-S-QUAL scale's dimensions effect on customers' overall quality and value perceptions, as well as their loyalty intentions.

Perceived Value measure results

Perceived value is the first indicator variable of the e-service quality to investigate its effects on customers' overall quality and value perceptions (Parasuraman et al., 2005). In section 1.2.1 four items were selected for value measure and respondents were asked to rate these items, by using a scale of 1 (poor) to 10 (excellent). Figure 14 and Appendix 2 demonstrate participants' rate to perceived value items.
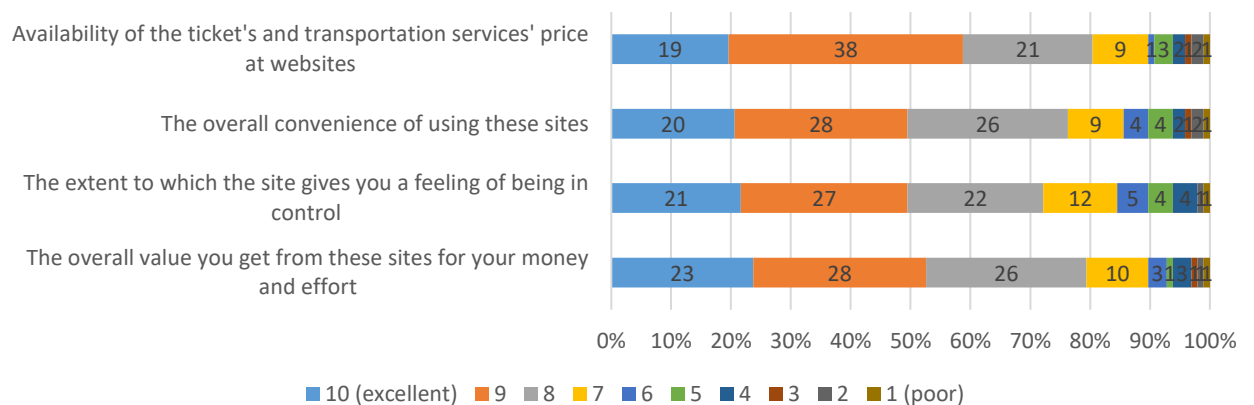
Figure 9. Results of perceived value measure
Source: compiled by the author, based on questionnaire responses

It is clear from figure 9 that more approximately 20% of respondents rated '10 (excellent)', around 30% rated '9' and more than 20% '8' for all value measure items. In contrast, the total proportion of the participants who opted '4', '3', '2', '1 (poor)' for all statements, less than 10%.

Loyalty Intentions measure results

Loyalty intentions are the next indicator variable of the e-service quality to investigate its effects on customers' loyalty intentions (Parasuraman et al., 2005). In order to measure loyalty, participants were asked to indicate their likelihood of engaging in five selected behavior on a 5-point scale (1 = very unlikely, 5 = very likely). Figure 15 illustrates the results of participants' responses. Detailed numerical results can be found in Appendix 2.
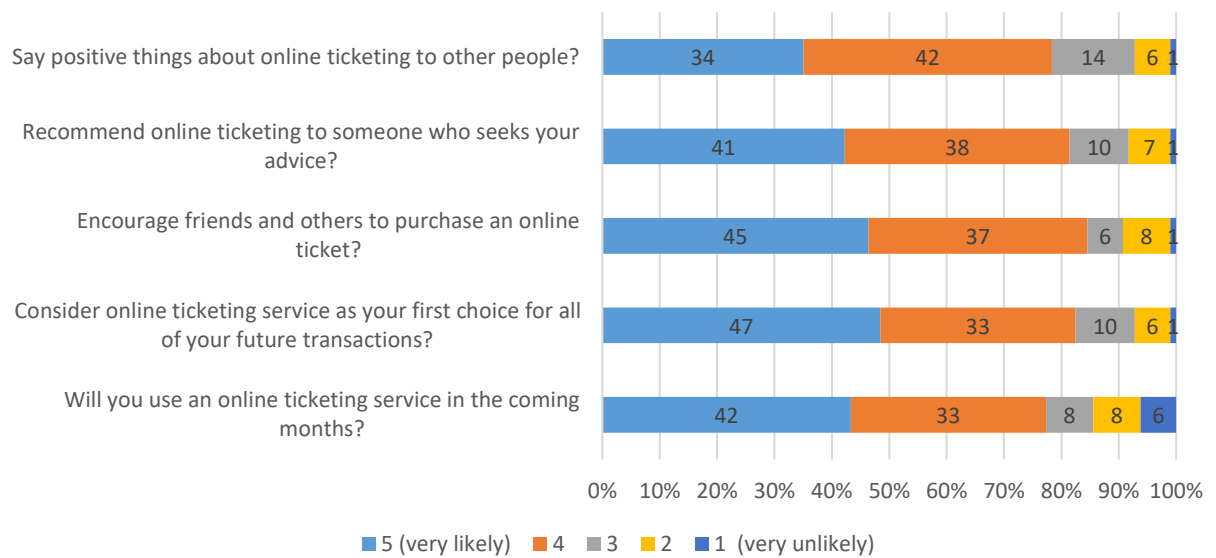
Figure 10. Results of loyalty intentions measure

Source: compiled by the author, based on questionnaire responses

According, figure 10, in total approximately 80% of respondents indicated '5 (very likely)' and '4' while the total percentage of respondents who indicate loyalty items with '2' and '1 (very unlikely)' below 15%.

3.3. Reliability and Factor analysis

In order to understand the results of the current study, reliability and factor testes applied to selected companents of the E-S-QUAL scale.

Reliability is "concerned with the robustness of your questionnaire and, in particular, whether or not it will produce consistent findings at different times and under different conditions". (Saunders et al., 2008 P: 373). Mitchell (1996) defined three types of reliability method: internal consistency; test re-test; alternative form. Cronbach alpha reliability that expresses the reliability of multiple element scales was used in this paper, to examine the reliability of the variables. Table 5 presents reliability analysis results.

Table 5: Reliability analysis results

Variables	Items	Cronbach's Alpha
Fulfillment	7	0.962
Perceived Value	4	0.961
Privacy	3	0.949
Loyalty Intentions	5	0.928
Efficiency	8	0.926
System availability	4	0.922

Source: compiled by the author, based on questionnaire responses

According to DeVellis (2003), a Cronbach's alpha coefficient of $\alpha \geq 0.7$ is considered acceptable to indicate internal consistency. It is obvious from table 5, that value of Cronbachs alpha is greater than 0.9 for all variables which indicates a positive conclusion about the validity of the current research's variables. Furthermore, current reliability analysis results confirm that the data and instrument are accurate for any future question.

The main purpose of the factor analysis in this study is to determine the relationship between factors and variables. First, correlation analysis was applied in this research. Appendix 3 presents the estimated coefficients of the correlation matrix. The results of the correlation analysis preliminary proof that all correlations are positive and significantly different from zero. The all values are from 0.157 to 0.909 correlations range which means they are positively correlated (Appendix 3). Consequencly, correlation analysis indicates a positive relationship between E-S-QUAL components.

The next step, of this study, is to determine how many factors must be retained for rotation. Here, based on the results of principal component analysis, communalities are calculated. Communality

is as the proportion of common variance which is found in a particular variable. It indicates how much of the variance associated with each indicator is shared variance. The communality is the sum of the squared component loadings up to the number of extracted components and for each variable calculates with following formula:

$$h_i^2 = L_{i1}^2 + L_{i2}^2 + \cdots + L_{im}^2 \qquad (4)$$

Here, L is matrix of factor loadings.

In order to calculate communalities of five companents PCA, extraction method applied in this study. Appendix 4 presents the amount of loaded factors in component matrix. According, Appendix 4 , all items have items highest a correlation of with component 1. Items of the efficiency variable have the lowest with component 2 and items of the system availability have a low correlation with components 2, 4, and 5. Fulfillment and privacy variables' items have the lowest with component 3.

Based on the results of the factor loading, commonalities are calculated for each item in this study. Table 6 illustrates the extraction communalities of items.

Table 6: The extraction communalities of items

		Communalities
		Extraction
Efficiency	EFF1	0.758
	EFF2	0.816
	EFF3	0.744
	EFF4	0.707
	EFF5	0.695
	EFF6	0.787
	EFF7	0.867
	EFF8	0.823
System availability	SYS1	0.796
	SYS2	0.743
	SYS3	0.806
	SYS4	0.834
Fulfillment	FUL1	0.814
	FUL2	0.711
	FUL3	0.758

	FUL4	0.769
	FUL5	0.805
	FUL6	0.822
	FUL7	0.868
Privacy	PRI1	0.864
	PRI2	0.754
	PRI3	0.857
Perceived Value	PV1	0.846
	PV2	0.926
	PV3	0.855
	PV4	0.884
Loyalty Intentions	LI1	0.758
	LI2	0.819
	LI3	0.874
	LI4	0.850
	LI5	0.649

Extraction Method: Principal Component Analysis.

Source: compiled by the author, based on questionnaire responses

Since principal component analysis is an iterative estimation process, the current paper assumes that the initial value of all variance is an equal one. The values in the extraction column show the proportion of each variable's variance that can be clarified by the retained factors. Higher number of communalities show that indicates that the indicators for the data are well fitted.

Table 7. Total Variance Explained

Component	Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	16.921	54.585	54.585	6.235	20.112	20.112
2	3.208	10.347	64.932	6.116	19.730	39.842
3	2.032	6.555	71.487	4.469	14.417	54.259
4	1.409	4.544	76.031	4.065	13.113	67.372
5	1.289	4.160	80.191	3.974	12.819	80.191

Extraction Method: Principal Component Analysis.

Source: compiled by the author, based on questionnaire responses

Table 7 shows proportions of variance explained by each factor. Based on the eigenvalue criterion five factors were retained. According to Parasuraman, Zeithaml, and Malhotra (2005) in the next step exploratory factor analysis on the items, using principal component analysis as the extraction method and rotation method (with Kaiser normalization) were conducted in this paper. There are two main types of rotation methods: orthogonal and oblique. Orthogonal rotation methods assume that the factors in the analysis are uncorrelated, while oblique rotation methods assume that the factors are correlated. The oblique rotation method was used in the next step exploratory factor analysis. Based on the results of loaded items in the rotated component matrix next step is to examine the items that have high weights from each factor to check whether they theoretically fit together. Tabel 8 shows the quality factor classifications and their loadings.

Table 8. E-S-QUAL scale items classifications

Rotated Component Matrix[a]					
	Component				
	1	2	3	4	5
EFF1					0.840
EFF2					0.796
EFF3					0.801
EFF4		0.577			0.575
EFF5		0.694			
EFF6		0.771			
EFF7		0.800			
EFF8		0.727			
SYS1		0.587			
SYS2		0.638			
SYS3	0.552	0.627			
SYS4	0.607	0.604			
FUL1	0.617	0.570			
FUL2	0.566				
FUL3	0.585				
FUL4	0.626				
FUL5	0.653				
FUL6	0.717				
FUL7	0.777				
PRI1	0.849				

	1	2	3	4	5
PRI2	0.779				
PRI3	0.839				
PV1			0.824		
PV2			0.865		
PV3			0.835		
PV4			0.877		
LI1				0.593	
LI2				0.751	
LI3				0.759	
LI4				0.784	
LI5				0.772	
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 7 iterations.					

Source: compiled by the author, based on questionnaire responses

It is clear from table 8 that selected variables related to online ticketing in Estonia's bus and train transportations are grouped into five interfering grouping of components. The factor's loadings between 0 and 1. Here the items with a loading factor greater than 0.4 are eliminated. (Straub et al., 2004; Dwivedi et al., 2006). The numbers 1 to 5 in the columns represent the five components that all e-service are grouped by based on data obtained by the survey. It is clear from the table 8 that EEF1-EFF4 efficiency items are loaded with component 5, and the last four items EEF4-EFF8 are loaded with component 2. All availability items and first fulfillment item (FUL1) are loaded with component 2. SYS3-SYS4, all fulfillment items, and all privacy items are loaded with component 1. All value items and all loyalty items are loaded with component 3 and component 4 respectivly. LI1 are loaded with component 4.

3.4. Suggestions

The results of data analysis evidence that there is an obvious link between consumers' perceptions and selected dimensions of e-service quality of online ticketing in Estonia's bus and train transportations. Since participants opted for 'strongly agree' and 'agree' more than 'strongly disagree' and 'disagree' for all selected dimensions of e-service quality, it can be deduced that from the customers' point of view, efficiency, system availability, fulfillment, privacy are the important factors of e-service quality in the context of bus and train transportations sites. In other words,

customers' evaluations of bus and train transportations sites on selected dimensions interpret a significant impact of e-service quality on their perceptions. Although the means for all items of E-S-QUAL dimensions have significant values from the theoretical mean (greater than 3), they slightly differ from each other based on participants' rates (Table 4). The master thesis proposes bus and train transportations business can develop their websites according to following some research results concern.

The first selected dimension is efficiency which indicates ease and speed of accessing and using the site. Based on customers' rates on efficiency statements it is clear that they give the highest importance on ease and speed of accessing the sites rather than how it is organized. Thus businesses must pay special attention to the development of the organization of the sites as the statements rated to websites organizations got low rates to compare speed related statements (Figure 5). In other words, bus and train transportation should be well organized where it will help to consumers to make an easy purchasing decision.

The second dimension is system availability where respondents rated four statements. Based on evaluations it is suggested to IT responsibility team of the bus and train transportations sites to conduct periodic tests on the websites.

Fullfilment the extent to which the site's promises about order delivery and item availability are fulfilled. Based on evaluation of the fulfillment statements it is clear that businesses have to be more transparent about the availability of the offered service in real-time via sites.
For taking into account privacy statement rates it is clear that privacy is an important factor based on customer viewpoint in online ticketing in Estonia's bus and train transportations (Figure 8). Businesses have to develop their privacy policy for the customer's personal and card information.

To sum up, it is recommended that the businesses maintain high-level relations with the consumers so that they can quickly reach sites for any additional information they need while making purchase decisions. At the same time it is suggested to businesses of the bus and train transportations sites to conduct periodic tests on the websites and their services.

CONCLUSION

The main problem of the master thesis stems from the limited information on the effect of the customers' perceptions about the e-service quality in the context of pure service sites. Thus, the focus of the thesis was directed to the existed gap in the application of e-service quality in the pure service context.

The aim of this research is to determine consumers' perceptions on the e-service quality of online ticketing in Estonia's bus and train transportations. The main research questions this study were:
-What are the most important factors of the e-service quality on bus and train transportations sites?
-What are the main results of the implication of the e-service quality on Estonia's bus and train transportations sites?

To answer these questions, several works of literature on the subject of electronic service quality and its dimensions have been studied. As masther thesis problem is to responds to the calls made by Parasuraman, Zeithaml, and Malhotra (2005), research methodology replicate methodology given by Parasuraman, Zeithaml, and Malhotra (2005). Thus E-S-QUAL scale by Parasuraman, Zeithaml, and Malhotra (2005) was chossen for as a basis of this reserch. The original dimension of the E-S-QUAL scale was selected for current research: Efficiency, System availability, Fulfillment, Privacy. However, in order to adjust E-S-QUAL scale's dimensions to the context of pure service bus and train transportations websites, the original dimensions were slightly modified in this study.

In order to answer the research questions, a quantitative research method was applied in this study. 117 respondents with different backgrounds participated in the survey. The respondents were invited mostly by social media networks and the data have been collected by self-completion questionnaires. The participants were asked to rate statements in three category areas: 22 items to measure transportation' web site's performance (QUALITY); the summed score on the four-item perceived value measure (VALUE); and the summed score on the five-item loyalty-intentions measure (LOYALTY) (Parasuraman et al., 2005). After conducting the survey, the data were analyzed with the help of statistical tools, such as Cronbach's alpha, the extraction method, and the rotation method (with Kaiser normalization). In order to confirm the item's validity, factor analysis was applied in this study.

The results of descriptive data analysis evidence applicability of e-service quality to bus and train transportations sites. The means for all items of E-S-QUAL dimensions' value measure and loyalty-intentions measure have significant values from the theoretical mean (greater than 3). Hence respondents opted for 'strongly agree' and 'agree' more than 'strongly disagree' and 'disagree'. Choosing 'strongly agree' and 'agree' indicates the positive influence of the E-S-QUAL scale on customers' perception. On the other hand, factor analysis for dimensions confirmed the applicability of the E-S-QUAL scale and its dimensions on Estonia's bus and train transportations sites. Results of the correlation matrix analysis show that selected dimensions of the E-S-QUAL scale correlate with perceived value and loyalty intentions.To sum up, the results and research questions current study evidence that the e-service quality and its dimension have significant effects on online bus and train transportations ticketing.

Results of the analysis on e-service quality and its main components show that efficiency, system availability, fulfillment, privacy are major concerns of customers of Estonia's bus and train transportations sites when they receive e-service. And this can be a crucial factor to choose the online ticketing site between multiple competitors. Although the results of the current study evidence participants positively percept online ticketing in Estonia's bus and train transportations, based on descriptive statistics of this study there are some suggestions for the businesses.
-It is recommended that the businesses maintain high-level relations with the consumers so that they can quickly reach sites for any additional information they need while making purchase decisions.
-At the same time it is suggested to businesses of the bus and train transportations sites to conduct periodic tests on the websites and their services.

Every research has some limitations in order to achieve the best results, and the current study is no exception. Although the target sample size was chosen approximately 162 respondents who live in Estonia, 117 respondents participated in the survey. If the whole participates from the target sample responded questionary, current research would be more reliable and data analysis would be stronger.

The outbreak of Coronavirus Disease 2019 (COVID-19) drastically changes the global trends. It has an inevitable impact on both offline and online travel and transportation business as well. Hence there is a decrease in both offline and online ticket sales. In order to reassess reliability current paper proposes to repeat the study after Coronavirus Disease finishes.

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APPENDICES

Appendix 1. Questionnaire (Scales and Percentages)

Questionnaire for master thesis research work / Küsimustik magistritöö uurimuseks
Dear participant, My name is Aytan Osmanzade and I am a graduate student of Tallinn University of Technology. For my final project, I am examining consumers' perceptions on the E-service quality of online ticketing in Estonia's bus and train transportations. I am inviting you to participate in this research study by completing the survey. The following questionnaire will require approximately 5-7 minutes to complete. To ensure that all information will remain confidential and anonymous, you will not be asked to provide any personally identifiable information. If you choose to participate in this project, please answer all questions as honestly as possible. Please know that there are no right or wrong answers. If you require additional information or have questions, please contact me via the email listed below. Thank you for taking the time to assist me in my educational endeavors. Thank you very much for your time and cooperation! Sincerely Yours, Aytan Osmanzade ayosma@ttu.ee Hea osaleja, Minu nimi on Aytan Osmanzade ja ma olen Tallinna Tehnikaülikooli magistritaseme üliõpilane. Oma lõputöö jaoks uurin tarbijate arvamust E-teenuse kvaliteedi kohta Eesti bussi- ja rongiliikluse piletimüügil. Kutsun teid küsimustikule vastates selles uuringus osalema. Küsimustiku täitmiseks kulub umbes 5–7 minutit. Et kogu teave jääks konfidentsiaalseks ja anonüümseks, ei paluta teil esitada isikut tuvastavat teavet. Kui otsustate selles projektis osaleda, vastake kõigile küsimustele võimalikult ausalt. Pange tähele, et pole õigeid või valesid vastuseid. Kui vajate lisateavet või teil on küsimusi, võtke minuga ühendust allpool toodud e-posti aadressi kaudu. Tänan, et leidsite aega mind haridusalastes ettevõtmistes abistada.. Suur aitäh teie aja ja koostöö eest! Lugupidamisega, Aytan Osmanzade ayosma@ttu.ee
Background knowledge

Have you ever bought a bus and/or train ticket online in Estonia?/Kas olete kunagi Eestis internetist bussi- ja / või rongipiletit ostnud?	Yes/ Jah No/ Ei	Nominal measurement with multiple-choice rating scale
Why did you not buy any bus and/or train ticket online?Miks te ei ole ostnud veebist bussi- ja / või rongipiletit?	• Generally, I do not use a bus and/or train service in Estonia/ Üldiselt ei kasuta ma Eestis bussi- ja / või rongiteenust • I prefer to purchase them over the counter/Eelistan pileteid osta käsimüügist • I did not have the opportunity yet/ Mul pole olnud võimalust • I do not have information about the existence of the online ticketing/ Mul ei teadnud, et veebist saab pileteid osta	Nominal measurement with multiple-choice rating scale
Internet usage experience/ Interneti kasutamise kogemus		
Do you have a device (desktop computer, laptop computer, mobile phone, or other) that has access to the Internet? Kas teil on olemas seade (lauaarvuti, sülearvuti, mobiiltelefon või muu), millel on juurdepääs Internetile?	Yes/ Jah No/ Ei	Nominal measurement with multiple-choice rating scale
How often do you use the internet? Kui tihti te internetti kasutate?	• Few times a year/ Paar korda aastas • Few times a month/ Mõni kord kuus • Few times a week/ Mõni kord nädalas • Daily/ Iga päev	Nominal measurement with multiple-choice rating scale
What do you most often use the internet for? (Check all that apply)/ Milleks te internetti kõige sagedamini kasutate?(Märkige kõik sobivad)	• Web browsing/ Erinevatel veebilehtedel käimine • Social media/ Sotsiaalmeedia kasutamine • Shopping/ Ostude sooritamine • Bill payments/ Arvete maksmine • Gaming/ Mängimine • Email/ E-post • News/ Uudised • Music or video/ Muusika või video • Other / Muu	Nominal measurement with checkboxes rating scale
E-service experience/ E-teenuse kogemus		

How often do you use electronic services (for example, website services, software services, supply of video, music, games, lotteries and other games of chance/ supply of distance teaching, provision of text, images and databases and etc.)?/ Kui tihti kasutate elektroonilisi teenuseid (näiteks veebisaiditeenused, tarkvarateenused, video, muusika, mängude, loteriide ja muude õnnemängude pakkumine / kaugõppe pakkumine, teksti, piltide ja andmebaaside pakkumine jne)?	• Daily/ Iga päev • Weekly/ Iga nädal • Monthly/ Igakuine • Yearly/ Iga aasta • Never/ Mitte kunagi	Nominal measurement with multiple-choice rating scale
If you have never used any electronic services, what are the major barriers? (Check all that apply)/ Mis on peamised takistused, kui te pole kunagi ühtegi elektroonilist teenust kasutanud? (Märkige kõik sobivad)	• Concerned about security/ Muret turvalisuse pärast • Finding the technology difficult/ Tehnoloogia tundub keeruline • Do not have internet access/ Puudub internetiühendus • Product or service details insufficient / Toote või teenuse üksikasjad on ebapiisavad • Long process for the creation of an account/ Konto loomise protsess on pikk • Complex checkout process/ Keeruline makseprotsess • Final payment problems with an online bank/ Probleemid internetipangas makse sooritamisega • Not aware of electronic services/ Ei ole teadlik elektroonilistest teenustest	Nominal measurement with multiple-choice rating scale

Online bus and train transportations ticketing experience/ / Bussi- ja rongitranspordi piletimüük veebis

From where do you normally purchase tickets for bus or train?/ Kust ostate tavaliselt bussi- või rongipileteid?	• From a travel office/travel center/bus station/booking office/ Reisibüroost / bussijaamast / kassast • Online via a travel website/ Veebisaidi kaudu • Both/ Mõlemad • Other/ Muu	Nominal measurement with multiple-choice rating scale

How often do you online purchase ticket for bus or train?/ Kui tihti ostate bussi- või rongipilet internetis?	• Few times in a year/ Paar korda aastas • Few times in a month/ Paar korda kuus • Few times in a week/ Paar korda nädalas • Always/ Pidevalt	Nominal measurement with multiple-choice rating scale
Do you usually succeed in your online tickets purchase?/ Kas veebist piletite ostmine õnnestub teil tavaliselt?	• Yes, I manage by myself/ Jah, saan ise hakkama • Yes, I manage with the help of a representative on the website-"Live chat"/ Jah, ma saan hakkama esindaja abiga reaalajas vestluse võimalust kasutades • Yes, I manage by completing a contact form on the website/ Jah, saan hakkama täites veebisaidil kontaktivormi • Yes, I manage by phoning the organization/ Jah, saan hakkama asutusse helistades • Yes, I manage with the help of a friend or family member/ Jah, saan hakkama sõbra või pereliikme abiga • No, I always face difficulties when purchasing an online ticket/ Ei, mul on veebipileti ostmisel alati raskusi	Nominal measurement with multiple-choice rating scale
E-service quality of online ticketing/ Veebis piletite müügi teenuse kvaliteet		
Please rank the following statements based on your online ticketing in Estonia bus and train transportations with a scale of 1 (strongly disagree) to 5 (strongly agree)./ Palun reastage järgmised väited lähtuvalt oma kogemusest veebis piletite müügiga Eesti bussidele ja rongidele, skaalal 1 (ei nõustu) kuni 5 (nõustun täielikult)..		
Transportation's websites make it easy to plan my trip/ Reisi planeerimine transpordi veebilehtedel on lihtne	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites make it easy to get anywhere on the site/ Transpordi veebilehtedel on hõlbus ringi liikuda	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites enable me to complete a transaction quickly/ Transpordi veebilehed võimaldavad mul tehingu kiiresti lõpule viia	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).

All the information at transportations websites is organized well/ /Kogu transpordi veebilehtedel olev teave on hästi organiseeritud	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
The pages of the web sites load fast/ Veebilehed laaditakse kiiresti	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites are simple to use/ Transpordi veebisaite on lihtne kasutada	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites enable me to get on to it very quick/ Transpordi veebilehed võimaldavad mul sellega kiiresti peale hakata	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites are well organized/ Transpordi veebilehed on hästi organiseeritud	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites always available for use/ Transpordi veebilehed on alati kasutamiseks kättesaadavad	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites launch and run straight away/ Transpordi veebilehed avanevad ja toimivad koheselt	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites do not crash/ Transpordi veebilehed ei jookse kokku	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Pages at transportations websites do not freeze after I enter my order information/ Transpordi veebilehed ei jookse kokku, kui olen tellimuse teabe sisestanud	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites fulfil orders as promised/ Transpordi veebilehed täidavad tellimusi lubatud viisil	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites make information available within a suitable time frame/ Transpordi veebilehed teevad teabe kättesaadavaks sobiva aja jooksul	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).

Transportation's websites immediately provide the service I need/ Transpordi veebilehtedel pakutakse mulle kohe vajalikku teenust	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites send/create requested ticket/ Transpordi veebilehed saadavad või loovad soovitud pileti	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites have the service that the company claims available in real-time/ Transpordi veebilehtedel on lubatud teenused reaalajas kättesaadavad	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites are truthful about its offerings/ Transpordi veebilehtedel olevad pakkumised on tõesed	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites make accurate promises about delivery of products (sends it to email/as a message to the phone/download option)/ Transpordi veebilehed annavad toodete tarnimise kohta täpseid lubadusi (saadavad pileti e-kirjana / sõnumina telefoni / allalaadimise võimalus)	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites protect information about my online ticketing behavior/ Transpordi veebilehed kaitsevad infot minu veebist tehtud piletiostude kohta	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites do not share my personal information with other sites/ Transpordi veebilehed ei jaga minu isiklikke andmeid teiste saitidega	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Transportation's websites protect information about my credit card/ Transpordi veebilehed kaitsevad minu krediitkaardi andmeid	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (strongly disagree) to 5 (strongly agree).
Please indicate your likelihood of engaging in each behavior, based on your online ticketing in Estonia's bus and train transportations, with a scale of 1 (very unlikely), to 5 (very likely).How likely are you…?/ Palun märkige, kui tõenäoliselt käituksite allkirjeldatud viisil, tuginedes kogemusele Eesti bussi- ja rongitranspordi piletimüügiga, skaalal 1 (väga ebatõenäoline) kuni 5 (väga tõenäoline). Kui tõenäoliselt te…?		

Say positive things about online ticketing to other people?/ Räägiksite teistele positiivseid asju veebis piletite ostmise kohta	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (very unlikely), to 5 (very likely)
Recommend online ticketing to someone who seeks your advice?/ Soovitaksite veebis piletite ostmist kellelegi, kes teie nõu küsib?	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (very unlikely), to 5 (very likely)
Encourage friends and others to purchase an online ticket?/ Julgustaksite sõpru ja teisi veebist pileteid ostma?	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (very unlikely), to 5 (very likely)
Consider online ticketing service as your first choice for all of your future transactions?/ Kaaluksite veebist piletite ostmist oma kõigi tulevaste tehingute jaoks esimese valikuna?	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (very unlikely), to 5 (very likely)
Will you use an online ticketing service in the coming months?/ Kas kasutate lähikuudel veebipiletite teenust?	1 2 3 4 5	Ordinal measurement with Likert scale of 1 (very unlikely), to 5 (very likely)
Please evaluate following statements based on your online ticketing in Estonia's bus and train transportations with a scale of 1 (poor) to 10 (excellent)/ Hinnake järgmisi väiteid, tuginedes teie kogemusele veebist piletite ostmisel Eesti bussi- ja rongitranspordile, skaalal 1 (halb) kuni 10 (suurepärane)		
Availability of the ticket's and transportation services' price at websites/ Piletite ja transporditeenuste hinna kättesaadavus veebilehtedel	1 2 3 4 5 6 7 8 9 10	Ordinal measurement with Likert a scale of 1 (poor) to 10 (excellent)
The overall convenience of using these sites/ Nende saitide kasutamise üldine mugavus	1 2 3 4 5 6 7 8 9 10	Ordinal measurement with Likert a scale of 1 (poor) to 10 (excellent)
The extent to which the site gives you a feeling of being in control/ Mil määral annab sait teile tunde, et olukord on teie kontrolli all	1 2 3 4 5 6 7 8 9 10	Ordinal measurement with Likert a scale of 1 (poor) to 10 (excellent)
The overall value you get from these sites for your money and effort/ Nende saitide pakutav koguväärtus teie kulutatud raha ja aja eest	1 2 3 4 5 6 7 8 9 10	Ordinal measurement with Likert a scale of 1 (poor) to 10 (excellent)
Personal Information/ Isiklik informatsioon		

Gender/ Sugu:	• Female/ Naine • Male/ Mees • Other / Muu	Nominal measurement with multiple-choice rating scale
Age group/ Vanuserühm:	• Below 20/ Alla 20 • 20-34 • 35-44 • 45 years or over/ 45-aastane või vanem	Nominal measurement with multiple-choice rating scale
Economic Status/ Majanduslik seisukord	• Employed/ Töötaja • Student/ Üliõpilane • Retired/ Pensionil • Unemployed/ Töötu • Other/ Muu	Nominal measurement with multiple-choice rating scale
Level of Education/ Haridustase	• Primary education/ Põhiharidus • Secondary school/ Keskharidus • Bachelor's degree/ Bakalaureusekraad • Master's degree/ Magistrikraad • Doctoral degree/ Doktorikraad • Other/ Muu	Nominal measurement with multiple-choice rating scale

Source: compiled by the author.

Appendix 2. E-service quality of online ticketing numerical results

Please rank the following statements based on your online ticketing in Estonia bus and train transportations with a scale of 1 (strongly disagree) to 5 (strongly agree).	Scale	Results with %
Transportation's websites make it easy to plan my trip	1	0.00
	2	5.15
	3	17.53
	4	43.30
	5	34.02
Transportation's websites make it easy to get anywhere on the site	1	0.00
	2	8.25
	3	8.25
	4	55.67
	5	27.84
Transportation's websites enable me to complete a transaction quickly	1	2.08
	2	3.13
	3	12.50
	4	45.83
	5	36.46
All the information at transportations websites is organized well	1	2.06
	2	6.19
	3	18.56
	4	51.55
	5	21.65
The pages of the web sites load fast	1	2.06
	2	7.22
	3	7.22
	4	56.70
	5	26.80
Transportation's websites are simple to use	1	2.06
	2	4.12
	3	11.34
	4	51.55
	5	30.93
Transportation's websites enable me to get on to it very quick	1	3.09
	2	3.09

	3	12.37
	4	47.42
	5	34.02
Transportation's websites are well organized	1	2.06
	2	4.12
	3	16.49
	4	50.52
	5	26.80
Transportation's websites always available for use	1	3.09
	2	2.06
	3	10.31
	4	46.39
	5	38.14
Transportation's websites launch and run straight away	1	3.09
	2	4.12
	3	14.43
	4	43.30
	5	35.05
Transportation's websites do not crash	1	3.13
	2	8.33
	3	17.71
	4	35.42
	5	35.42
Pages at transportations websites do not freeze after I enter my order information	1	4.17
	2	5.21
	3	17.71
	4	35.42
	5	37.50
Transportation's websites fulfil orders as promised	1	4.12
	2	4.12
	3	6.19
	4	47.42
	5	38.14
Transportation's websites make information available within a suitable time frame	1	2.08
	2	5.21
	3	15.63

	4	39.58
	5	37.50
Transportation's websites immediately provide the service I need	1	2.08
	2	5.21
	3	13.54
	4	45.83
	5	33.33
Transportation's websites send/create requested ticket	1	2.11
	2	8.42
	3	7.37
	4	43.16
	5	38.95
Transportation's websites have the service that the company claims available in real-time	1	2.06
	2	6.19
	3	14.43
	4	41.24
	5	36.08
Transportation's websites are truthful about its offerings	1	2.08
	2	5.21
	3	14.58
	4	40.63
	5	37.50
Transportation's websites make accurate promises about delivery of products (sends it to email/as a message to the phone/download option)	1	2.08
	2	7.29
	3	9.38
	4	44.79
	5	36.46
Transportation's websites protect information about my online ticketing behavior	1	3.09
	2	7.22
	3	17.53
	4	34.02
	5	38.14
Transportation's websites do not share my personal information with other sites	1	6.19
	2	8.25
	3	17.53
	4	31.96

	5	36.08
Transportation's websites protect information about my credit card	1	3.09
	2	6.19
	3	17.53
	4	31.96
	5	41.24
Please indicate your likelihood of engaging in each behavior, based on your online ticketing in Estonia's bus and train transportations, with a scale of 1 (very unlikely), to 5 (very likely).How likely are you…?	**Scale**	**Results**
Say positive things about online ticketing to other people?	1	1.03
	2	6.19
	3	14.43
	4	43.30
	5	35.05
Recommend online ticketing to someone who seeks your advice?/ Soovitaksite veebis piletite ostmist kellelegi, kes teie nõu küsib?	1	1.03
	2	7.22
	3	10.31
	4	39.18
	5	42.27
Encourage friends and others to purchase an online ticket?	1	1.03
	2	8.25
	3	6.19
	4	38.14
	5	46.39
Consider online ticketing service as your first choice for all of your future transactions?	1	1.03
	2	6.19
	3	10.31
	4	34.02
	5	48.45
Will you use an online ticketing service in the coming months?	1	6.19
	2	8.25
	3	8.25
	4	34.02
	5	43.30

Please evaluate following statements based on your online ticketing in Estonia's bus and train transportations with a scale of 1 (poor) to 10 (excellent)	Scale	Results
Availability of the ticket's and transportation services' price at websites	1	1.03
	2	2.06
	3	1.03
	4	2.06
	5	3.09
	6	1.03
	7	9.28
	8	21.65
	9	39.18
	10	19.59
The overall convenience of using these sites	1	1.03
	2	2.06
	3	1.03
	4	2.06
	5	4.12
	6	4.12
	7	9.28
	8	26.80
	9	28.87
	10	20.62
The extent to which the site gives you a feeling of being in control	1	1.03
	2	1.03
	3	0.00
	4	4.12
	5	4.12
	6	5.15
	7	12.37
	8	22.68
	9	27.84
	10	21.65
The overall value you get from these sites for your money and effort	1	1.03
	2	1.03
	3	1.03
	4	3.09

5	1.03
6	3.09
7	10.31
8	26.80
9	28.87
10	23.71

Source: compiled by the author, based on questionnaire responses

Appendix 3 Correlation Matrix

	EFF1	EFF2	EFF3	EFF4	EFF5	EFF6	EFF7	EFF8	SYS1	SYS2	SYS3	SYS4	FUL1	FUL2	FUL3	FUL4	FUL5	FUL6	FUL7	PRI1	PRI2	PRI3	PV1	PV2	PV3	PV4	LI1	LI2	LI3	LI4	LI5
EFF1	1.000																														
EFF2	0.755	1.000																													
EFF3	0.655	0.741	1.000																												
EFF4	0.513	0.611	0.642	1.000																											
EFF5	0.465	0.574	0.598	0.799	1.000																										
EFF6	0.389	0.634	0.591	0.657	0.690	1.000																									
EFF7	0.472	0.628	0.585	0.720	0.723	0.854	1.000																								
EFF8	0.476	0.566	0.492	0.688	0.663	0.780	0.838	1.000																							
SYS1	0.513	0.570	0.569	0.548	0.631	0.736	0.779	0.768	1.000																						
SYS2	0.459	0.578	0.499	0.554	0.490	0.665	0.759	0.802	0.816	1.000																					
SYS3	0.215	0.354	0.327	0.505	0.507	0.564	0.626	0.650	0.669	0.720	1.000																				
SYS4	0.258	0.395	0.372	0.509	0.544	0.610	0.661	0.673	0.682	0.674	0.904	1.000																			
FUL1	0.323	0.439	0.436	0.490	0.497	0.661	0.667	0.682	0.758	0.739	0.762	0.859	1.000																		
FUL2	0.434	0.501	0.510	0.526	0.594	0.614	0.593	0.578	0.705	0.560	0.560	0.667	0.765	1.000																	
FUL3	0.408	0.583	0.471	0.578	0.566	0.680	0.699	0.652	0.729	0.672	0.623	0.684	0.686	0.787	1.000																
FUL4	0.458	0.539	0.485	0.608	0.581	0.612	0.630	0.597	0.664	0.570	0.630	0.694	0.651	0.764	0.827	1.000															
FUL5	0.415	0.504	0.486	0.521	0.488	0.555	0.563	0.566	0.649	0.594	0.618	0.704	0.734	0.701	0.788	0.871	1.000														
FUL6	0.421	0.526	0.477	0.470	0.470	0.531	0.514	0.550	0.674	0.598	0.579	0.622	0.676	0.701	0.749	0.779	0.860	1.000													
FUL7	0.430	0.495	0.502	0.511	0.429	0.471	0.527	0.572	0.604	0.602	0.625	0.666	0.717	0.705	0.727	0.757	0.819	0.857	1.000												
PRI1	0.266	0.443	0.377	0.386	0.379	0.451	0.463	0.478	0.516	0.520	0.579	0.601	0.619	0.590	0.671	0.632	0.655	0.743	0.777	1.000											
PRI2	0.198	0.369	0.342	0.466	0.455	0.511	0.570	0.522	0.453	0.525	0.615	0.581	0.626	0.509	0.575	0.594	0.621	0.640	0.731	0.811	1.000										
PRI3	0.238	0.405	0.379	0.428	0.411	0.468	0.543	0.489	0.528	0.513	0.579	0.596	0.659	0.606	0.638	0.623	0.602	0.701	0.757	0.909	0.848	1.000									
PV1	0.213	0.344	0.264	0.259	0.243	0.355	0.356	0.411	0.496	0.490	0.468	0.462	0.469	0.446	0.454	0.485	0.479	0.568	0.579	0.485	0.339	0.420	1.000								
PV2	0.214	0.403	0.263	0.326	0.268	0.430	0.493	0.452	0.433	0.497	0.416	0.423	0.429	0.483	0.522	0.494	0.412	0.451	0.483	0.453	0.343	0.445	0.878	1.000							
PV3	0.176	0.346	0.243	0.240	0.290	0.428	0.452	0.443	0.446	0.453	0.372	0.404	0.428	0.512	0.509	0.396	0.357	0.438	0.478	0.441	0.381	0.407	0.781	0.852	1.000						
PV4	0.185	0.267	0.212	0.224	0.181	0.298	0.363	0.383	0.426	0.465	0.407	0.423	0.435	0.458	0.436	0.457	0.408	0.460	0.496	0.414	0.285	0.412	0.838	0.869	0.842	1.000					
LI1	0.203	0.291	0.262	0.323	0.263	0.322	0.374	0.419	0.498	0.472	0.438	0.488	0.494	0.567	0.544	0.566	0.554	0.627	0.627	0.568	0.431	0.508	0.635	0.627	0.575	0.630	1.000				
LI2	0.231	0.325	0.328	0.315	0.301	0.407	0.397	0.405	0.534	0.532	0.483	0.536	0.545	0.568	0.550	0.522	0.550	0.582	0.582	0.438	0.379	0.397	0.574	0.553	0.571	0.586	0.814	1.000			
LI3	0.303	0.421	0.370	0.337	0.381	0.468	0.455	0.462	0.588	0.538	0.521	0.557	0.569	0.628	0.613	0.628	0.598	0.624	0.624	0.506	0.416	0.436	0.623	0.608	0.627	0.607	0.794	0.879	1.000		
LI4	0.386	0.431	0.349	0.328	0.363	0.431	0.434	0.417	0.561	0.478	0.499	0.433	0.542	0.603	0.547	0.591	0.565	0.557	0.572	0.399	0.372	0.352	0.611	0.580	0.606	0.572	0.699	0.808	0.854	1.000	
LI5	0.233	0.300	0.262	0.157	0.315	0.376	0.313	0.320	0.452	0.344	0.297	0.288	0.354	0.449	0.408	0.317	0.363	0.338	0.379	0.226	0.243	0.180	0.426	0.387	0.457	0.312	0.516	0.563	0.634	0.679	1.000

Source: compiled by the author, based on questionnaire responses

Appendix 4. Principal Component Analysis

Component Matrix[a]

		Component				
		1	2	3	4	5
Efficiency	EFF1	0.512	-0.352	0.430	0.313	0.299
	EFF2	0.665	-0.331	0.371	0.148	0.324
	EFF3	0.611	-0.391	0.334	0.207	0.251
	EFF4	0.669	-0.461	0.184	-0.068	0.092
	EFF5	0.664	-0.446	0.219	-0.055	-0.063
	EFF6	0.760	-0.331	0.197	-0.217	-0.120
	EFF7	0.793	-0.345	0.179	-0.290	-0.053
	EFF8	0.785	-0.291	0.136	-0.301	-0.113
System availability	SYS1	0.838	-0.173	0.142	-0.075	-0.191
	SYS2	0.803	-0.143	0.079	-0.238	-0.126
	SYS3	0.759	-0.092	-0.257	-0.258	-0.299
	SYS4	0.802	-0.091	-0.245	-0.173	-0.304
Fulfillment	FUL1	0.833	-0.094	-0.207	-0.099	-0.242
	FUL2	0.825	-0.030	-0.024	0.151	-0.075
	FUL3	0.859	-0.093	-0.079	0.067	-0.019
	FUL4	0.844	-0.091	-0.126	0.179	0.031
	FUL5	0.827	-0.071	-0.221	0.258	-0.020
	FUL6	0.829	0.001	-0.242	0.240	0.136
	FUL7	0.845	0.041	-0.287	0.216	0.153
Privacy	PRI1	0.745	0.018	-0.480	0.071	0.270
	PRI2	0.700	-0.122	-0.484	-0.022	0.122
	PRI3	0.732	-0.051	-0.501	-0.016	0.260
Perceived Value	PV1	0.670	0.535	0.107	-0.214	0.232
	PV2	0.670	0.495	0.193	-0.334	0.289
	PV3	0.646	0.516	0.197	-0.303	0.204
	PV4	0.622	0.579	0.121	-0.293	0.249
Loyalty Intentions	LI1	0.703	0.478	-0.019	0.177	-0.057
	LI2	0.710	0.440	0.113	0.216	-0.250
	LI3	0.771	0.410	0.145	0.228	-0.196
	LI4	0.722	0.395	0.249	0.276	-0.185
	LI5	0.510	0.315	0.324	0.267	-0.336

Source: compiled by the author, based on questionnaire responses

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