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Sample size and survey administration: The conventional requirement of four to five observations per item is considered sample size sufficiency (Hair et al. 1998). Some scholars (Connolly et al. 2010, Akinci et al. 2010, Boshoff 2007) have conducted study on fairly large sample size and there are few studies (Vos et al. 2014, StamenkovandDika 2016) considered sample size (table 1). Other studies under review took base of sample size i.e. approx. 150 to 500 respondents. However a sufficiently large sample size should be considered to validate the results of the study.

Online or off line, are the two methods of collecting primary data for conducting any study. For identifying and reaching online shoppers, online methodology is considered more efficient (Szymanski and Hise, 2000). Approximately 60% of the studies under review administered online survey (table 1). For conducting online survey various methods are adopted by researchers such as survey sent by e-mail, e-mail containing hyperlink to questionnaire, web survey etc. There are some studies (Sahadev and Purani 2008, Liang 2012) which have used both online as well as offline methods of survey administration. However some scholars did not adopted online surveys due to its low response rate (Herington and Weaven 2009). Hence it is advised to researchers that they should report logic behind choosing a particular mode for administrating a survey.

Dimensionality Analysis for assessing factor structure (EFA/CFA)

Researchers use exploratory factor analysis (EFA) or confirmatory factor analysis (CFA) to estimate or assess dimensionality of the scale. EFA is used to uncover the underlying structure of a relatively large set of variables. It does not involve any prehypothesized factor structure. Some studies, which are under review conducted EFA only (Herington and Weaven 2009, Connolly et al. 2010, Santouridis et al. 2012, Vos et al. 2014). EFA helps in selecting most suitable solution on the basis of theoretical interpretability among various computed solutions.

CFA tests are considered as a prehypothesized factor structure or model. Around 40 % of the studies reviewed (Sahadev and Purani 2008, Chiou et al. 2009, Saha et al. 2010, Sheng and Liu 2010, Falk et al. 2010, Akinci et al. 2010, Kimand Kim 2010, Zavareh et al. 2012, Rafiq et al. 2012, Pearson et al. 2012, Ariff et al. 2012, Suh et al. 2013, Khan et al. 2014, Kandulapati 2014, Barrera 2014, Roger-Monzo 2015) applied only CFA to test their models. The argument given by these researchers for not using EFA before conducting CFA is the existence of already theoretically supported base of E-S-QUAL scale. Moreover CFA provides goodness of fit indicators to evaluate whether factor structure fit into data or not. It further helps in comparing several model specifications and allows the researchers to examine the invariance of a specific parameter in the factor solution.

Whereas some studies (Boshoff 2007, Yang and Tsai 2007, Marimon et al. 2010, Yaya et al. 2011, Lee and Wu 2011, Marimon et al. 2012, Bernardo et al. 2012, Rao aoRao 2013, Liach et al. 2013, Cetinsoz 2015, Stamenkov and Dika 2016, Cristobal- Fransi 2017) applied both EFA and CFA in their studies. Liang 2012 used E-S-QUAL scale for the online gaming websites, which have hedonic elements like fun or pleasure in it also added one new dimension 'entertainment' in the scale but he did not apply any psychometric tests to reject/accept the items/dimension.

Reliability and Validity: The ability of an instrument to measure consistently, is termed as the reliability of the scale. Cronbach’s alpha or composite reliability are the two main tests available for assessing the reliability of any measure. Cronbach (1951) developed α, indicates the degree to which a set of items measures a single undimensional latent construct. The composite reliability also known as Jöreskog’s ρ coefficient, takes into account the actual factor loadings, rather than assuming that each item is equally weighted in the composite load
determination (Sun et al. 2009). Most of the papers under review indicated good reliability of each dimension presented with Cronbach's coefficient ranging between 0.70 to 0.96 (Nunnally and Bernstein, 1994, Peterson, 1994) which demonstrates high internal consistency.

Reliability does not depend on validity though validity is dependent on reliability of an instrument. Validity is the extent to which an instrument measures what it intends to measure (Tavakol and Dennick, 2011). There are six types of validity classified under two categories. One is translation validity (which includes face validity and content validity), and the other is criterion validity (it includes predictive / nomological validity, concurrent validity, convergent validity and discriminant validity) (Drost 2004).

Face validity is the weaker form of construct validity than the content validity, as it includes subjective judgment on operationalization of a construct. It is used by Kim and Kim 2010 (table 1) for the purpose of translation of English language questionnaire into Korean language. Content validity on the other hand gives more insight about the domain of the concept, as expert advice is used to judge whether the measure fully represents the domain. Many studies under review have adapted the E-SQUAL, as per their field of study, hence content validity becomes more important. Marimon et al. 2010, Akinci et al. 2010, Zavareh et al. 2012, Ariff et al. 2012, Suh et al. 2013 and Stamnko and Dika, 2016 established content validity in their respective studies.

Convergent validity reflects the extent to which two measures capture a common construct. Poor convergent validity can affect the magnitudes and interpretability of research findings (Carlson and Herdman 2012). One way of calculating this type of validity is the average variance extraction. According to Fornell and Larcker (1981), hair et al. (1998), if average variance extracted (AVE) extracted from each construct exceeds 0.5 of the total variance supported convergent validity, Scholars like Cristobil- Fransi 2017, Stamenkon and Dika 2016, Barrera et al. 2014, Suh et al. 2013, Akinci et al. 2010) in their studies applied it. The other test to assess the convergent validity of an instrument is to assess factor loadings on individual items both after running exploratory factor analysis as well as confirmatory factor analysis (Parasuraman et al. 2005), which was further applied by Boshoff 2007, Connolly 2010. In a recent study conducted by Yaya et al. (2016), experts were of the opinion that it is not necessary to use more than one of these methods because some of these criteria overlap. But however they maintained that convergent validity must be reported by the researchers.

Scale’s discriminant validity is viewed as the extent to which measures of constructs that theoretically should not be related to each other (Yaya et al. 2016). The AVE values must be higher than the variance shared between a subscale so that, when performing correlations between them, the values on diagonal (corresponding to the square root of the AVE values of each of them) should be greater than the other factors of each row and column that corresponds to it and the correlations between the dimensions comprising the construct should not exceed 0.8 (Baggottti and Yi 1988). This test is applied by various scholars (Cristobil- Fransi 2017, Stamenkon and Dika 2016, Roger-Monzo 2015). One test suggested by (Fornell and Larcker 1981) to assess the discriminant validity is when average variance extracted for each factor is greater than the squared correlation between the construct and the other construct in the model used by (Yaya et al. 2011, Barrera et al. 2010, Akinci et al. 2010). Falk et al. (2010) used nested model confirmatory analysis approach to test the discriminant validity. In this approach, for each pair of factors, a constrained model is constructed in which the covariance between them is fixed to unity. Then an unconstrained model is constructed by freeing the covariance between the factors and then on the basis of Chi-square values between constrained and unconstrained models with one degree of freedom, discriminant validity is identified.
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Predictive/Nomological Validity test measures some outcomes in the future from the measured constructs (Drost 2004). If the constructs perform as predicted by theory (based on traditional service or emerging evidence on the field), then it can infer that the measurement of the constructs is nomologically valid (Yaya et al. 2012). Some authors modeled e-SQ as a first order exogenous (predictor) construct that influences the higher order constructs of predictive dimensions in the proposed model (Akinci et al. 2010, Marimon et al. 2010, Chiu et al. 2009). While others on the basis of strong positive inter-correlations among the dimensions of e-SQ, predict validity about the relationship between the respective dimensions with e-SQ and further treat e-SQ as a second order latent construct in the structural model (Roger-Monzo 2015, Kandulapati and Bellamkonda 2014).

Out of 36 studies reviewed (table 1), most of the studies reported convergent and discriminant validity, with a few exceptions like, Kurt and Attek 2012, Liang et al. 2012, who did not report convergent and discriminant validity. The studies reviewed indicated that irrespective of any particular method or tool applied to measure nomological validity, in most of the cases, relationships between the dimensions of E-S-QUAL and predictive dimensions were confirmed.

Observation regarding dimensionality validated: Out of the 36 studies reviewed, 19 studies (approx. half of the studies) reported four dimensions which were in line with the universal dimensions proposed by the Parasuraman et al. (2003) for measuring service quality delivered by customers' online web sites. It has also been observed that scholars have altered the number of items in dimensions, names of the dimensions and wordings of the statements as per their context of the study. Disagreement over one dimension 'fulfilment' is also found across studies. Boshoff (2007) and Yaya et al. (2011) removed 'fulfilment' dimension from their model while Rafiq et al. (2012) and Chiu et al. (2009), regarded 'fulfilment' as one of the core elements for online services. The review of literature also shows that dimensional structure is very unstable even within same sector and country as well. For example, Marimon et al. 2012 and Yaya et al. 2011 both conducted study to measure the service quality provided by online banking websites in Spain. The number and items used by both researchers in their study is not same as Marimon et al. 2012, used five dimensions namely efficiency, system availability, privacy, responsiveness and contrast, while Yaya et al. 2011 used efficiency, system availability and privacy. Similarly, dimensions and items within dimensions, considered for measuring e-service quality provided by general online retailing companies operating in different cultures or countries, were also different. Barrera et al. 2014 (Spain), used five dimensions with 22 items, Vos et al. 2014 (Greece) used four dimensions with 22 items, Sheng and Liu 2010 has considered four dimensions with 18 items. Lot of disagreement felt across studies about the importance or relevance of the dimensions which suggested by Parasuraman et al. (2005) for measuring e-service quality.

CONCLUSION
The present study has raised some concerns about the different methodology used by researchers associated with the re-assessment of E-S-QUAL in different countries for varied e-services. Review of literature shows that all the studies are of the same view about the multidimensionality of the e-service quality as a construct. However, disagreement found in reviewed studies regarding the dimensionality of the e-service quality construct across industry or country. Bauer et al. (2006) draws attention towards the inability to measure the hedonic elements of service quality which are crucial determinants of service quality. Boshoff 2007, who was one of the first to examine the relationship between e-quality and e-loyalty, proposed that the E-S-QUAL scale should have six dimensions rather than the original four. He also advised that proper examination and evaluation of the dimensions
should be done by researchers before capturing the data by the original scale given by Parasuraman et al. 2005. Some studies (Roger-Monzo et al., 2015; Rao and Rao 2013; Connolly et al., 2010) reported the same results as reported by Parasuraman et al. 2005. Majority of the studies documented contrast results regarding the comparative importance of dimensions of e-service quality. For example, Privacy is found to be least important dimension in the studies conducted by Bernardo et al. (2012), Rafiq et al. (2012) while the results of the studies done by Kurt and Atrek (2012) and Kim and Kim (2010) reported it as most important dimension for e-service quality. After reviewing more than 35 studies it can be concluded that the E-S-QUAL scale which is claimed to be a generic scale given by Parasuraman et al. 2005, for measuring e-service quality is however gives researchers an idea about the important dimensions and attributes which should be considered for measuring any e-service quality but it does not provide the exhaustive list of items. Variables can be different across industry and culture. Scholars should keep in mind the nature of the service and the context of the study before applying the scale in adopted form. A thorough revision of items is advised to researchers before conducting the study using E-S-QUAL in the original form.

On the whole, this study is a small endeavor to highlight the results obtained by several authors on the same platform so that concrete conclusions can be formed. Having said that, in this new environment of electronic service, practitioners in general need a generic scale that provides the potential for cross-industry and cross-functional comparisons.

REFERENCES

Balasubramani P. and Rajamohan A. (2011), ‘Satisfaction level of tourists towards online shopping with reference to Paducherry’, International journal of research in management and technology, 1(2), 87-92
Cai S. and Jun M. (2003), ‘Internet users' perceptions of online service quality: a comparison of online buyers and information searchers’, Managing service quality, 13(6), 504-19
Cronbach, L.J.(1951), ‘Coefficient alpha and the internal structure of tests’, Psychometrika, 16(3), 297-334
Cristobal-Franzi E., Hernandez-Soriano F., and Marimon F., (2017), ‘Critical factors in the evaluation of online media: creation and implementation of a measurement scale (e-SQ-Media)’, Univ. access.informed, 16, 235-46
Application of E-S-QUAL:
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metrics’, Information system research 13(3), 316-33


Fornell C. and Larcker D.F. (1981), ‘Evaluating structural equation models with unobservable variables and measurement error’, Journal of marketing research, 18(1), 39-50


Liang H. (2012), ‘Exploring the relationship between perceived electronic service quality, satisfaction, and personality: a study of Taiwan’s online game industry’, Total quality management, 23(8), 949-63


Nagesh S., Ryab T. and Jigiria M. (2003), ‘Quality and effectiveness in web-based customer support systems’, Information and management, 40(8), 757-68


Roger-Monzo V., Martí- Sanchez M., and Guijarro-García M.
Application of E-S-QUAL:
Assessment of Studies Across the Globe


Sam M.F.M., Tahir, M.N.H. (2009), ‘Website quality and consumer online purchase intention of air ticket’, International journal of basic and applied science, 9(10), 4-9

Sahadev S. and Purani K. (2008), ‘Modelling the consequences of e-service quality, Marketing intelligence and planning’, 26(6), 605-20


Suh Y. (2013), Ahn T. and Pederson P. F. (2013), ‘Examining the effects of team identification, e-service quality (e-SQ) and satisfaction on intention to revisit sports websites’, International journal of sports marketing and sponsorship, 2-20


Yoo, Boonghee and Douthu, Naveen (2001), ‘Developing a scale to measure the perceived quality of an internet shopping site (SITEQUAL)’, Quarterly Journal of Electronic Commerce, 2(1), 31-47


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This paper reviews range of studies that have applied the E-S-QUAL scale for measuring the quality of e-services from the year 2006 till recently. The research papers are sourced from prestigious databases such as ABI/Inform, ScienceDirect, Emerald, Sage, Springer, Routledge, EBSCOhost, Google Scholar. The paper identifies and summarizes the dimensional structure of E-S-QUAL that appears to be very unstable, even within a given sector. Majority of the studies documented contrast results regarding the comparative importance of dimensions of e-service quality. After reviewing more than 35 studies it can be concluded that the E-S-QUAL scale which is claimed to be a generic scale given by Parasuraman et al. 2005, for measuring e-service quality however gives researchers an idea about the important dimensions and attributes for measuring any e-service quality but it does not provide the exhaustive list of items. This paper is first to undertake the comprehensive review of the studies undertaken using E-S-QUAL scale since its inception. The paper is an attempt to highlight various methodological differences in studies while adopting the scale across industries and countries. From a managerial perspective, author believe that the E-S-QUAL instrument is an excellent instrument to measure electronic service quality but practitioners must examine and evaluate the dimensionality before drawing any conclusions.

Keywords: E-S-QUAL, e-service quality, online shopping, review of literature, methodological issues

INTRODUCTION

Traditional bricks and mortar service providers like real-estate brokers, marriage bureaus, letting agents, betting houses, mortgage advisors, etc. are all now being taken over by online service providers (Sahadev and Purani 2008). Businesses are transforming and disruptive innovations have forced to think marketers about inventing more and more novel services and adopt them to deliver through the internet. Online consumers have not only clear expectations regarding their interactions with online vendors; they also demand high level of services. Research in the context of electronic commerce has been studied from two different perspectives. Scholars have generally carried out their studies on customer satisfaction of consumers shopping from e-commerce (Balasubramani and Rajamohan 2011, Pritwani K., Sharma N.K.) and the assessment of the service quality presented by websites to consumers (Parasuraman et al. 2005, Sam and Tahir 2009). In the above context, service quality is given importance and not manufacturing quality regardless of the industry (Vargo and Lusch, 2004).

REVIEW OF LITERATURE

Important studies in the past have focused on issues like, the search behavior of individuals with regard to a website, consumer behavior in the context of internet retailing and characteristics of online consumers, information agents, consumer communities etc. (Sahadev and Purani 2008). New researches in the area has responded to the changing
nature of the online marketing effort by focusing on new issues like moderating effect of culture on e-service quality (Sabiote et al. 2012), conceptualization of service quality for hybrid services (Ganguli and Roy 2013), transaction cost and repurchase-intention in online shopping (Wu et al. 2014) etc.

Given the importance of service quality, it is not surprising that a number of tools have been developed to measure it. Probably the best known and most commonly used measure has been the SERVQUAL scale, which was originally developed by Parasuraman et al. (1985) and subsequently refined by Parasuraman et al. (1991, 1994). Although SERVQUAL was developed for the measurement of service quality in a traditional service context, the applicability of the instrument in the online environment has been assessed in a few studies (Devraj et al. 2002, Nagesh et al. 2003). Gefen (2002) applied an adapted SERVQUAL instrument to the online service context and reported that the five dimensions of the scale collapsed into three namely tangibles, empathy, and one combined dimension of responsiveness, reliability and assurance. The results of the study demonstrated a need to further research in the area of e-service quality to Parasuraman et al. (2005) and they stated that service quality needed to be extended to the online shopping environment, so that the firms could benefit from the increased interest in online shopping (Pearson et al. 2012).

E-S-QUAL SCALE (What and Why)

To build a multidimensional measure of online quality, Parasuraman et al. (2005) developed two scales to evaluate e-service quality. The first scale, E-S-QUAL, provides a more comprehensive approach, since it supports the measurement of both pre and post e-service quality aspects with the research focus on those web sites which sold physical products. E-S-QUAL scale consists of 22 items on four dimensions, which they labeled and defined as follows:

1. Efficiency: The ease and speed of accessing and using a site.
2. Fulfillment: The extent to which the site's promises about order delivery and item availability are fulfilled.
4. Privacy: The degree to which the site is safe and protects customer information.

The second multidimensional scale to measure service recovery is E-ReCS-QUAL contains 11 items having responsiveness, compensation, and contact dimensions that is intended for assessing the quality of a website's service in response to problems or questions experienced by customers. (However, this scale is not replicated much, as compared to E-S-QUAL, thus this scale has not been considered as a part of the review).

Authors used focus groups to understand respondents' reaction to alternative ways of phrasing scale items and anchors (Likert-type versus low or high performance anchors). On the basis of insights from focus groups, study adopted a five-point Likert scale (1= strongly disagree, 5= strongly agree) format for capturing responses. Both the scales demonstrated good psychometric properties based on findings from a variety of reliability and validity tests.

Why E-S-QUAL

The main reason behind the widespread use of E-S-QUAL is that it focuses on measuring the quality of the core service attributes rather than technical quality of the website measured by other models (Yoo and Donthu 2001, Brantes and Vidgen 2002). Scholars find E-S-QUAL scale relatively simple (Sheng and Liu 2010) as it is able to make accurate assessment of quality from customer's perspective
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(Marimon et al. 2010). It also takes into account consumers’ entire shopping experience (Kim and Kim 2006) and demonstrates good psychometric properties during its development phase (Connolly et al. 2010). Additionally, developers of E-S-QUAL suggested directions for further research in the area by highlighting various gaps which could be the objectives of various studies. Various scholars took the clue from these identified gaps and helped in further validation of the scale. The first gap identified is the need to examine the scale in the pure service sites. Authors of E-S-QUAL also suggested that adapted versions of scale need to be created and formally for other kind of e-service websites, which gives relevance to scholars to replicate the E-S-QUAL scale in their research area.

METHODOLOGICAL ANATOMY OF REVIEWED STUDIES

Widespread use across countries and cultures: The review of literature demonstrated that E-S-QUAL scale developed by Parasuraman et al. in 2005, has been so far able to attract the attention of researchers across the countries. This scale has been used (adapted/adopted) in approximately twenty countries like China, India, Turkey, Taiwan, Spain, U.K., Australia, Ireland etc. which have diverse languages and cultures (Table 1). The reason of such an overwhelming response to this particular scale of measurement is because it’s the first scale of its kind to capture the nature of electronic service quality from the consumer’s perspective for shopping online through a website (Boshoff, 2007). Since service quality is important for success of e-retailers, external validation of e-service quality measures through replication is extremely important, particularly in cases where measures developed in one country are intended for use in other countries (Rafiq et al. 2012). Kim and Kim (2010) examined E-S-QUAL on a cross-cultural basis aiming to examine how consumers in two different countries (Korea and USA) perceived e-service quality in relation to overall e-service quality, e-satisfaction, and e-loyalty. The result of the study confirms the significant relationship among overall e-service quality, e-satisfaction and e-loyalty. Such relationships are validated in India (SahadevandPurani 2008), Ireland (Connolly et al. 2010), Taiwan (Liang et al. 2012) and in Spain (Marimon et al, 2010, Cristobal-Fransi et al. 2017). The results of another study which was conducted by Khan et al. in 2014 using E-S-QUAL, compared the online service quality of the websites, which offers services in China with that of Kingdom of South Africa (KSA) in order to identify cultural variations.

Types of Service Industries: Various endeavors have been made by the scholars to validate the results of E-S-QUAL scale for different industries which has originally been designed to assess quality in services in general. This scale had been successfully adopted (Yang and Tsai 2007, Lee and Wu 2011, Santouridis et al. 2012, KandulapatiandBellamkonda 2014) and adapted (Chiou et al. 2009, Falk et al. 2010, Barrera et al. 2014, Stamenkov and Dika 2016), for different sectors (travel agency, media, auction, sports, banking, portal sites, gaming etc). The reason behind using E-S-QUAL model of assessing the service quality in general to measure the service quality of specific sector is to analyze the quality of service and particular the structure in which it operates, not the product (Cristobal-Fransi et al. 2017). The dual usage of the scale in the field of service marketing and IS provides sufficient confidence about the appropriateness of using it across sectors (StamenkovandDika 2016).

Scales Used: Studies under review shows that approximately 65 percent of the studies (table 1) adopted Likert type 5 point scale to capture the respondents’ views for the service quality dimensions. One justification of being 5 point scale so widely used is given as it helps in increasing the quality of response rate and reduces the respondents’
fatigue. There are some studies (Cristobal-Francs et al. 2017, Stemenkov and Dika 2016, Vos et al. 2014, Ariff et al. 2012, Zavareh et al. 2012, Saha et al. 2010) under review which have not reported any information about the scale they have used. Boshoff (2007) has used 6 point Likert-type scale and other studies by researchers (Yang and Tsai 2007, Rafiq et al. 2012, Liang et al. 2012, Barrera et al. 2014) have used 7 point scale as they consider it helpful in broadening the range and variability of responses.

Sampling Method: Sixty percent of the studies reviewed (table 1) adopted convenience sampling as their sampling technique. Number of researchers have acknowledged the limitation of convenience sampling (Francis and White 2002, Cai and Jun 2003, Yang et al. 2003), and expressed their concern about generalization of their results to broader population because the sample may not consists of truly representative population. Still only a few actually applied it (Ariff et al. 2012, Marimon et al. 2012, Rafiq et al. 2012, Yaya et al. 2011, Connolly et al. 2010, Boshoff 2007). Kurt and Attek (2012), expressed their infeasibility to use random sampling on the basis of non availability of list of population which opts for online shopping. Similarly Kim and Kim (2010), expressed their inability to use online survey because of the less availability of online survey companies in South Korea. Other arguments for the use of convenience sampleings having an additional advantage of choosing homogenous samples which typically provide a stronger test of theory (Akinci et al. 2010). Some researchers (Zavareh et al. 2012, Cristobal-Francs et al. 2017) have not reported any information about their sampling techniques.

<table>
<thead>
<tr>
<th>No.</th>
<th>Study</th>
<th>Country</th>
<th>Type of website</th>
<th>Sample size and sampling method</th>
<th>Survey</th>
<th>Internal reliability/Composite construct reliability p</th>
<th>Validity</th>
<th>Adoption/Adapted</th>
<th>Dimensions considered for study</th>
<th>Instrument related to</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cristobal-Francs et al. (2017)</td>
<td>Spain</td>
<td>Online Newspaper</td>
<td>211 Respondents, 57.8% Gender. (Not reported about sampling method)</td>
<td>Online survey (No information about anchors of scale)</td>
<td>Ranges from .77 to .896</td>
<td>Convergent Diveolimental, Nonological</td>
<td>Adapted</td>
<td>Efficiency (15) System availability (8), reliability (4), privacy (7), Interaction (7)</td>
<td>Perceived quality</td>
</tr>
<tr>
<td>2.</td>
<td>Stemenkov and Dika (2016)</td>
<td>Republic of Macedonia</td>
<td>Employee's Attitude towards e-banking service (cross sectional study)</td>
<td>112 for internal e-service perspective, 113 for external e-service perspective, no demographic information reported, Convenience sampling</td>
<td>Internet survey, uploaded on websites for 30 days, (No information about anchors of scale)</td>
<td>For internal perspective: ranges from .73 to .76 For external perspective: ranges from .72 to .07</td>
<td>Content, Convergent, Divoelimental, Nonological</td>
<td>Adapted</td>
<td>QUARED (5), QUAREDB (5), QUAREDR (5), QUAREDG (5), QUAREDF (5)</td>
<td>Satisfaction - Loyalty</td>
</tr>
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<td>3.</td>
<td>Roge-Muracio et al. (2015)</td>
<td>Portugal, Spain and the USA</td>
<td>Travel agency</td>
<td>334 Respondents, 54% Spanish Respondents Average age: 33 years, Gender: 56.3% Female, Convenience sampling</td>
<td>Offline administration through personal survey, (3 point scale)</td>
<td>Ranges from .80 to .88</td>
<td>Convergent, Divoelimental, Nonological</td>
<td>Adapted</td>
<td>Efficiency (8), system availability (4), fulfillment (4), privacy (3)</td>
<td>Perceived value, Loyalty</td>
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<td>4.</td>
<td>ÇETINSOZ &amp; Mersad (2015)</td>
<td>Turkey</td>
<td>Tourist service</td>
<td>342 respondents, 44.5% Gender: 37.8% Female, Convenience sampling</td>
<td>Offline administration of questionnaire (3 point scale)</td>
<td>Ranges from .95 to 0.96</td>
<td>Divoelimental, Nonological</td>
<td>Adapted</td>
<td>Efficiency (8), system availability (4), fulfillment (4), privacy (3)</td>
<td>Perceived value</td>
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<tr>
<td>S. No.</td>
<td>Study</td>
<td>Country</td>
<td>Type of website</td>
<td>Sample size and sampling method</td>
<td>Surveys</td>
<td>Internal reliability/Composite construct reliability</td>
<td>Validity</td>
<td>Adoption/Adapted</td>
<td>Dimensions considered for study items</td>
<td>Directly related to</td>
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<td>5</td>
<td>Enrime et al. (2014)</td>
<td>Spain</td>
<td>Online shopping</td>
<td>269 respondents: Age: &lt; 21 years: 47.6% Gender: 49% females (Convenience and snowball sampling)</td>
<td>E-mail invitation with embedded URL link to the website hosting the survey (7-point scale)</td>
<td>Ranges from 0.780 to 0.920</td>
<td>Convergent, Discriminant</td>
<td>Adopted</td>
<td>Design(3), functionality(4), privacy(5), reliability(5), recovery(5)</td>
<td>N/A</td>
</tr>
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<td>6</td>
<td>Zhao et al. (2016)</td>
<td>China</td>
<td>Online service quality across cities</td>
<td>551 respondents (230 Chinese respondents, 321 Saudi Arabian respondents), no demographic information reported (Convenience sampling)</td>
<td>Online administration of questionnaire (7-point scale)</td>
<td>For most of the dimensions &lt; .81</td>
<td>Nanoreological</td>
<td>Adopted</td>
<td>Efficiency(5), system availability(4), fulltimen(7), privacy(5)</td>
<td>Perceived value, Loyalty intention</td>
</tr>
<tr>
<td>7</td>
<td>Khandpur and Bellurkonda (2014)</td>
<td>India</td>
<td>Online shopping</td>
<td>160 respondents, Age: 35-55% Gender: 45% females (Random sampling)</td>
<td>Online survey through emailed, questionnaire (5-point scale)</td>
<td>Ranges from .506 to .922</td>
<td>Predictive</td>
<td>Adopted</td>
<td>Efficiency(5), system availability(4), fulltimen(7), privacy(5)</td>
<td>Perceived value, Customer satisfaction, Satisfaction</td>
</tr>
<tr>
<td>8</td>
<td>Ves et al. (2014)</td>
<td>Greece</td>
<td>Online shopping</td>
<td>74 respondents, Age: 35, 46.3% Gender: 45.6% females (Convenience sampling)</td>
<td>Online administration of questionnaire (no information about anchors of scale)</td>
<td>Ranges from .74 to .94</td>
<td>Predictive</td>
<td>Adopted</td>
<td>Efficiency(5), system availability(4), fulltimen(7), privacy(5)</td>
<td>e-bility, e-satisfaction</td>
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<td>9</td>
<td>Sah et al. (2015)</td>
<td>USA</td>
<td>Sports websites</td>
<td>409 respondents, Age: Mean age 25 years Gender: 47% females (Convenience sampling)</td>
<td>E-mail invitation with embedded URL link to the website hosting the survey (5-point scale)</td>
<td>Ranges from .88 to .95</td>
<td>Content, Convergent, Discriminant Nanorelogical</td>
<td>Adopted</td>
<td>Ease of use(4), functionality(4), privacy(4), reliability(4), interaction(4)</td>
<td>Satisfaction</td>
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<td>10</td>
<td>Lisak et al. (2015)</td>
<td>Spain</td>
<td>Airlines tickets</td>
<td>617 respondents, Age: 35 + 58% Gender: 46% females (Random sampling)</td>
<td>Online survey via airline’s website</td>
<td>Ranges from .924 to .929</td>
<td>Content, Discriminant Nanorelogical</td>
<td>Adopted</td>
<td>Efficiency(6), system availability(4), fulltimen(8), privacy(9), hedonism(5)</td>
<td>Perceived value, Loyalty</td>
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<tr>
<td>11</td>
<td>Rao and Rao (2013)</td>
<td>India</td>
<td>Airline and more tickets</td>
<td>1,510 respondents, no demographic information reported (Convenience sampling)</td>
<td>Off-line administration of questionnaire (5-point scale)</td>
<td>Ranges from 0.830 to 0.997</td>
<td>Discriminant, Nanorelogical</td>
<td>Adopted</td>
<td>Efficiency(5), system availability(4), fulltimen(7), privacy(5)</td>
<td>Perceived value, Loyalty intentions</td>
</tr>
<tr>
<td>12</td>
<td>Anil et al. (2012)</td>
<td>Malaysia</td>
<td>Online banking</td>
<td>265 respondents, no demographic information reported, (Random sampling)</td>
<td>No information regarding survey administration No information about anchors of scale</td>
<td>Ranges from .781 to .912</td>
<td>Content</td>
<td>Adopted</td>
<td>Efficiency(5), effectiveness(4), contact(4), website aesthetic and guide(4), privacy(5)</td>
<td>N/A</td>
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<tr>
<td>13</td>
<td>Bernardo et al. (2012)</td>
<td>Spain</td>
<td>Online travel agency</td>
<td>1,912 respondents, Age: 35 + 55% Gender: 50% females (Convenience sampling)</td>
<td>Questionnaire filled through Telephonic Survey (7-point scale)</td>
<td>Ranges from 0.90 to 0.90</td>
<td>Convergent, Discriminant Nanorelogical</td>
<td>Adopted</td>
<td>Efficiency(5), system availability(4), fulltimen(8), privacy(9), hedonic quality(5)</td>
<td>Satisfaction, Loyalty</td>
</tr>
<tr>
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<td>Validity</td>
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<td>Dimensions considered for study/Item</td>
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<tr>
<td>15</td>
<td>Kurt and Atakan (2012)</td>
<td>Turkey</td>
<td>Importance of E-Qual quality attributes for online shoppers (No specific website)</td>
<td>262 respondents Age: &lt;34: 40% Gender: 57.5% female (snowball sampling)</td>
<td>Online survey through emailed questionnaire (5 point scale)</td>
<td>N/A (ANOVA technique)</td>
<td>N/A</td>
<td>Adopted</td>
<td>Efficiency(8), satisfaction(4), fulliform(7), privacy(3)</td>
<td>N/A</td>
</tr>
<tr>
<td>16</td>
<td>Liang (2012)</td>
<td>Taiwan</td>
<td>Online gaming industry</td>
<td>415 respondents Age: &lt;20: 99.5% Gender: 34% female (Convenience sampling)</td>
<td>Both online and offline method used for questionnaire administration (7 point scale)</td>
<td>N/A</td>
<td>Predictor construct</td>
<td>Adopted</td>
<td>Efficiency(8), system availability(4), fulliform(7), privacy(3)</td>
<td>Satisfaction value, Loyalty intentions</td>
</tr>
<tr>
<td>17</td>
<td>Marimon et al. (2012)</td>
<td>Spain</td>
<td>E-banking</td>
<td>131 respondents Age: &lt;25: 25.2% Gender: 75.5% females (Convenience sampling)</td>
<td>E-mail containing hyperlink to questionnaire (5 point scale)</td>
<td>Ranges from 0.619 to 0.904</td>
<td>Convergent, Discriminant, Normative</td>
<td>Adopted</td>
<td>Efficiency(8), system availability(4), fulliform(7), privacy(3)</td>
<td>Perceived value</td>
</tr>
<tr>
<td>18</td>
<td>Pearson et al. (2012)</td>
<td>USA</td>
<td>Online retail shopping</td>
<td>158 respondents Undergraduate students Gender: 38% females (Convenience sampling)</td>
<td>Offline administration of questionnaire (5 point scale)</td>
<td>Ranges from 0.800 to 0.909</td>
<td>Convergent, Discriminant, Normative</td>
<td>Adopted</td>
<td>Efficiency(8), system availability(4), fulliform(7), privacy(3)</td>
<td>Perceived value, Loyalty intentions</td>
</tr>
<tr>
<td>19</td>
<td>Ruig et al. (2012)</td>
<td>UK</td>
<td>Online grocery shopping</td>
<td>401 respondents Age: &lt;40: 45% Gender: 50.7% females (Random sampling)</td>
<td>Web-based questionnaire (7 point scale)</td>
<td>Ranges from 0.830 to 0.96</td>
<td>Convergent, Discriminant, Normative</td>
<td>Adopted</td>
<td>Efficiency(8), system availability(4), fulliform(7), privacy(3)</td>
<td>Customer satisfaction</td>
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<tr>
<td>20</td>
<td>Samburu S. et al. (2012)</td>
<td>Greece</td>
<td>Online retailing</td>
<td>227 respondents Age: &lt;34: 75.6% Gender: 41% females (Convenience sampling)</td>
<td>Offline Questionnaire (5 point scale)</td>
<td>Ranges from 0.66 to 0.92</td>
<td>Predictive Construct, Normative</td>
<td>Adopted</td>
<td>Efficiency(8), system availability(4), fulliform(7), privacy(3)</td>
<td>Overall quality, Perceived value, Loyalty</td>
</tr>
<tr>
<td>21</td>
<td>Vazrocheh et al. (2012)</td>
<td>Iran</td>
<td>Online banking</td>
<td>312 respondents no demographic information reported; no information regarding sampling</td>
<td>No information reported regarding survey administration (no information about anchors of scale)</td>
<td>Ranges from 0.735 to 0.810</td>
<td>Content</td>
<td>Adapted</td>
<td>Efficient and reliable sources(4), security/trust(3), site aesthetic (2), responsiveness/ contact (3), fulliform (4), privacy (3)</td>
<td>N/A</td>
</tr>
<tr>
<td>22</td>
<td>Yaya et al. (2011)</td>
<td>Spain</td>
<td>Online banking</td>
<td>428 respondents Age: &lt;34: 66.7% Gender: approx. 50% females (Random sampling)</td>
<td>E-mail invitation with embedded URL link to the website hosting the survey (5 point scale)</td>
<td>Ranges from 0.697 to 0.905</td>
<td>Convergent, Discriminant, Normative</td>
<td>Adopted</td>
<td>Efficiency(8), system availability(4), fulliform(7), privacy(3)</td>
<td>Satisfaction, Loyalty</td>
</tr>
<tr>
<td>23</td>
<td>Akrab et al. (2010)</td>
<td>Turkey</td>
<td>Online banking</td>
<td>2017 respondents Age: &lt;40: 70.2% Gender: 70% females (Convenience sampling)</td>
<td>Online questionnaire through e-mail (5 point scale)</td>
<td>Ranges from 0.83 to 0.87</td>
<td>Content, Correspondent, Normative</td>
<td>Adopted</td>
<td>Efficiency(8), system availability(4), fulliform(7), privacy(3)</td>
<td>Perceived Value, Behavioral loyalty</td>
</tr>
<tr>
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<tr>
<td>24</td>
<td>Connolly et al. (2010)</td>
<td>Ireland</td>
<td>Government website</td>
<td>6121 respondents Age: 40-59; 32.8% females (Random sampling)</td>
<td>E-mail containing hyperlink to questionnaire (5-point scale)</td>
<td>Ranges from 0.74 to 0.90</td>
<td>Convergent</td>
<td>Adopted</td>
<td>Efficiency(6), ease of competion(3), system availability(4), privacy(2), context(3)</td>
<td>Perceived value</td>
</tr>
<tr>
<td>25</td>
<td>Moinman et al. (2010)</td>
<td>Spain</td>
<td>Online supermarket</td>
<td>131 respondents Age: 34-38.8% Gender: 75.1% females (Random sampling)</td>
<td>Online survey through specially designed Web page (5-point scale)</td>
<td>Ranges from 0.75 to 0.887</td>
<td>Convergent</td>
<td>Adopted</td>
<td>Efficiency(6), system availability(4), fulfillment(7), privacy(5)</td>
<td>Perceived Value</td>
</tr>
<tr>
<td>26</td>
<td>Fark et al. (2010)</td>
<td>Germany</td>
<td>Online retailing and Internet portal site</td>
<td>966 respondents of online retail site; 538 respondents of internet portal site; Mean age for Online Retail: 34.8 years; Mean age for Internet portal site: 35 years Gender: 45% females for online retail site; 52% females for internet portal site (Random sampling)</td>
<td>Online Questionnaire based on the portal site (5-point scale)</td>
<td>Ranges from 0.59 to 0.74</td>
<td>Convergent</td>
<td>Adopted</td>
<td>Efficiency(6), system availability(3), fulfillment(7), privacy(5), website design(3), enjoymen(5), image (2)</td>
<td>Satisfaction</td>
</tr>
<tr>
<td>27</td>
<td>Kim and Kim (2010)</td>
<td>USA</td>
<td>Apparel website</td>
<td>361 respondents (175 from USA; 186 from Korea); Age &lt;25 = 100% (USA and Korea); Gender: 69.7% Females(USA); 70.4% Females (Convenience sampling)</td>
<td>Online survey administered in USA and offline administered in South Korea (7-point scale)</td>
<td>Ranges from 0.50 to 0.96</td>
<td>Discordant</td>
<td>Adopted</td>
<td>Efficiency(4), system availability(2), fulfillment(3), Privacy(3), Responsiveness(3), Contact(2)</td>
<td>Overall e-service quality, E-satisfaction</td>
</tr>
<tr>
<td>28</td>
<td>Sheng and Liu (2010)</td>
<td>China</td>
<td>Online shopping</td>
<td>164 respondents Age: no information provided Gender: 43.9% females (Convenience sampling)</td>
<td>Online questionnaire through e-mail (5-point scale)</td>
<td>Ranges from 0.35 to 0.59</td>
<td>Convergent</td>
<td>Adopted</td>
<td>Efficiency(5), system availability(6), fulfillment(6), privacy(3)</td>
<td>Satisfaction Loyalty</td>
</tr>
<tr>
<td>29</td>
<td>Saha et al. (2010)</td>
<td>Sweden</td>
<td>Government e-service delivery</td>
<td>425 respondents Demographic profile not reported (Systematic sampling)</td>
<td>Online survey using web based questionnaire (no information about authors of study)</td>
<td>Ranges from 0.50 to 0.90</td>
<td>Discordant</td>
<td>Adopted</td>
<td>Efficiency(5), system availability(6), fulfillment(7), privacy(3), web satisfaction(2), context(3)</td>
<td>Actual usage of service, Citizen satisfaction</td>
</tr>
<tr>
<td>30</td>
<td>Chiu et al. (2009)</td>
<td>Taiwan</td>
<td>Online auction sites</td>
<td>221 respondents Age: 35-50; 94.5% females (Convenience sampling)</td>
<td>E-mail invitation with embedded URL link to the website holding the survey (5-point scale)</td>
<td>Ranges from 0.86 to 0.94</td>
<td>Fuze, Convergent</td>
<td>Adopted</td>
<td>Efficiency(10), system availability(4), fulfillment(7), privacy(5), context(3), comparison(3), contact(2)</td>
<td>Overall satisfaction</td>
</tr>
<tr>
<td>31</td>
<td>Hosking and Westen (2009)</td>
<td>Australia</td>
<td>Online banking</td>
<td>200 respondents Age: 40-44; 44% females (Convenience sampling)</td>
<td>Online administration of questions to (5-point scale)</td>
<td>Ranges from 0.80 to 0.96</td>
<td>Discordant</td>
<td>Adopted</td>
<td>Only 2 dimensions (efficiency and availability) used Personal needs (3), Site organization (4), User friendliness (4), efficiency of website (6)</td>
<td>Satisfaction</td>
</tr>
</tbody>
</table>
### Application of E-S-QUAL: Assessment of Studies Across the Globe

<table>
<thead>
<tr>
<th>S. No.</th>
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<th>Adoption/Adapted</th>
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</thead>
<tbody>
<tr>
<td>32</td>
<td>Sahadevan Purani (2008)</td>
<td>India</td>
<td>Job portal site</td>
<td>350 respondents (111 males, 199 females, age 27 years; gender: 25% females, convenience sampling)</td>
<td>Both online and off-line method using survey (5-point scale)</td>
<td>Ranges from 1.242 to 0.681</td>
<td>Convergent, Discriminant Validity</td>
<td>Adapted</td>
<td>Efficiency, satisfaction, intention to stay, trust</td>
<td>Satisfaction</td>
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<tr>
<td>33</td>
<td>Ingle &amp; Consely (2007)</td>
<td>Ireland</td>
<td>Online portal site</td>
<td>361 respondents (Demographic profile not reported, random sampling)</td>
<td>Online survey through vendor's website (5-point scale)</td>
<td>Not Reported</td>
<td>Not Reported</td>
<td>Adapted</td>
<td>Efficiency, system availability, reliability, privacy, trust</td>
<td>Consumer trust, perceived value, loyalty, satisfaction</td>
</tr>
<tr>
<td>34</td>
<td>Yang &amp; Tsai (2007)</td>
<td>Taiwan</td>
<td>Online shopping</td>
<td>276 respondents (Age: 21 to 56 years, gender: 79.2% males, convenience sampling)</td>
<td>No information reported regarding administration of survey (7-point scale)</td>
<td>Ranges from 0.560 to 0.941</td>
<td>Convergent, Discriminant Validity</td>
<td>Adapted</td>
<td>Efficiency, system availability, reliability, privacy, trust, dimensions of service quality</td>
<td>Overall satisfaction</td>
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<tr>
<td>35</td>
<td>Shabtai (2007)</td>
<td>South Africa</td>
<td>Online shopping</td>
<td>Marketing firms selling mainly books, CDs, DVDs, gifts</td>
<td>1409 respondents (Age: &lt; 39 years: 59.4% females, convenience sampling)</td>
<td>Online questionnaire received from the website with 5-point rating</td>
<td>Ranges from 0.708 to 0.909</td>
<td>Convergent Predictive Validity</td>
<td>Adapted</td>
<td>Efficiency, system availability, reliability, privacy, trust, dimensions of service quality</td>
</tr>
<tr>
<td>36</td>
<td>Kim et al. (2006)</td>
<td>USA</td>
<td>Women’s apparel websites</td>
<td>111 retail website Demographic profile: N/A (random sampling)</td>
<td>(No Survey) Content Analysis of the websites</td>
<td>N/A</td>
<td>N/A</td>
<td>Adapted</td>
<td>Efficiency, system availability, reliability, privacy, trust, dimensions of service quality</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Demographic profile: Some variations were identified across the respondents profile which are selected by the researchers for their respective studies. Some studies (Pearson et al. 2012, Rao and Rao 2013, Suh et al. 2013) have taken college students as their subjects which may cause the variations in the results in spite of using same E-S-QUAL scale for measuring service quality. 30 % of the studies reviewed are found to be gender biased (table 1), either they have taken maximum male respondents (Sahadevan Purani 2008, Liang 2012, Pearson et al. 2012) or there were dominance of female respondents (Chio et al. 2009, Akinci et al. 2010, Kim and Kim 2010, Marimon et al. 2012). Most of the studies (Chio et al. 2009, Yaya 2011, Santouridis 2012, Liang 2012, Llach et al. 2013, Barrera et al. 2014) have chosen maximum young respondents (table 1) for analyzing the perceived service quality. Kim and Kim (2010) have conducted survey taking age group up to 28 years of age. With the growing number of older people using internet for searching the information, reading emails and shopping online, the selection of demographic profile for future studies needs attention (Fernandes and Paschoarelli 2014). Hence diverse sample profile is recommended for future studies.