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Measuring E-Commerce Service Quality for the Adoption of Online Shopping during COVID-19: Applying Unified Theory and Use of Technology Model (UTAUT) Model Approach

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Abstract. With the increasing cases of COVID-19 and unexpected lockdowns, technology acceptance, especially internet-based online shopping becomes an important issue in today's business world. Since Information technology is pervasive and has enormous potential, therefore this study identifies antecedents of online shopping adoption by utilizing Unified theory and use of technology model and electronic service quality to observe the influence of these two variables on buyers' intention to adopt internet shopping. The data was collected from the customers using products of the Fast-moving Consumer goods (FMCG) industry. The data collection period was one month beginning in April 2021. The data was analysed using mainly two approaches confirmatory factor analysis and structural equation modelling using Lisrel 8.80. The findings of this study revealed that the integrated UTAUT model is highly significant and influences the buyer's intention to adopt internet shopping for their daily needs.

1. Introduction

The advent of Covid-19 and the growing importance of information technology have transformed online shopping with the increase in different online platforms over the last decade (Aboobucker and Bao, 2018). Internet shopping allows comparing products online, accessing the products anytime and anywhere, comparing the prices of different products, accessing information about the products, etc. (Aboobucker and Bao, 2018; During COVID-19, internet-based shopping has emerged as the most profitable e-commerce tool . FMCG organizations have set up their official websites as the customers are internet savvy and cannot access the stores during the COVID-19 restrictions. It also reduces operational costs and improves market share. Shopping based on the internet is helpful for many FMCG companies to offer services to individualized customers and improve Service Delivery (Boateng *et al.*, 2016).

The organizations that provide services are changing their method of operation towards IT-based media in order to compete in a fiercely competitive market. In addition to this, it aids them in cost reduction and the development of value-added services for their clients. Web-based are one of several instances in various industries. These systems, which operate on the automation concept, are offered by many Fast-moving Consumer goods (FMCG) companies. It was anticipated that by including these service systems, service providers would be able to increase customer happiness, financial performance, and service quality. Researchers argued that information technology-based services can help and improve service quality by making services more convenient, offering a variety of new services, and should be useful in gathering information about service performance. Ultimately, this information can be used by management to improve its services.

Performance expectation for Internet shopping context is described as the "level of use that an individual will make of the fact that through the use of online shopping, a customer can obtain more benefits and complete the perceived tasks more easily." Expectancy The user's expectations for comfort and convenience are covered by this component. According to authors like Zhou, Lu, and Wang (2010), utilizing the internet is simple and doesn't take much work, thus there's a good likelihood that people will start using it for shopping. The link between social influence and behavioral intention is hotly contested. These variables of service quality are included in this research.

Since it is now widely believed that information technology is inseparable from the service sector, it is important to comprehend how customers see IT-based services and how they evaluate service quality in relation to customer satisfaction. The most crucial thing that businesses want to comprehend is how customers perceive the quality of the services they receive because they are the ones who really utilise the information technology.

There are many studies on the adoption of technology, but researchers are hesitant to discuss customer perceptions in the context of customer satisfaction for IT-based services. The literature also makes clear that service providers need to be aware of the factors that clients take into account when using their services, how these considerations affect clients' intentions when using IT-based services, and how these perceptions influence clients' intentions regarding service quality. A thorough knowledge of these ideas would enable managers to create future services that are more centred around their clients.

A conceptual model has been developed based on these research constructs after significant research constructs were identified from the most recent literature in the field. The variables and their items influence how customers perceive IT-based services, service quality, and customer satisfaction. The proposed model was evaluated after data was gathered from a sample of various online customers. Through the use of Lisrel 8.80 and structural equation modelling (SEM), analysis of the acquired data was carried out.

The following is a breakdown of this paper's structure:

In the beginning, recent and pertinent literature was read, and research gaps were found. Based on these research gaps, several significant research constructs were found, and an overall conceptual model of the research was also constructed. Then, with reference to measurement and the structural model, the research methodology and the structural equation modelling findings were presented and debated. The report ends with a brief discussion of the findings' management implications.

2. Literature review and research

For each research variable thorough literature review was conducted, the latest insights and measures were identified, and based on them, the research scales were developed. All the research constructs were adapted strictly from the literature, and the description and definitions were presented with the studies in which they were used previously. The details of the extant literature review with respect to each research construct are given as under:

2.1. Performance expectancy

Performance expectancy for Internet shopping context is defined as the "degree where an individual will use that by the use of internet shopping a customer can get more benefits and attain the perceived tasks more conveniently". and many other researchers also give proof of performance expectancy for the adoption of internet shopping based on internet technology (Abu-Shanab, Pearson, and Setterstrom, 2010; Khalil, Sutanonpaiboon, and Mastor, 2010). In light of the above studies following hypothesis is proposed:

H1. Performance expectancy influences user shopping online adoption

2.2. Effort expectancy

This component refers to user expectations of convenience and ease. Authors like Zhou, Lu, and Wang (2010) demonstrated that using the internet is easy to use and does not require much effort, and there is a high chance that they will adopt an internet-based medium the shopping. Many studies state a remarkable direct relationship connecting effort expectancy and interaction with the user to accept shopping on the internet (Chaouali, Yahia, and Souiden, 2016). Therefore, hypothesis was framed as

H2. Effort expectancy will influence user intention to adopt online shopping

2.3. Social influence

Social influence also affects behavioral intention, and the relationship is widely debated. It is referred to as a medium of shopping. Previous studies showed significant results regarding this relationship (Chaouali, Yahia, and Souiden, 2016) Therefore, it is hypothesized as follows:

H4. The social influence will influence user intention to adopt online shopping

2.4. Electronic service quality in online shopping

E-service quality is referred to as the quality of services that are offered using the internet through websites. The scary was introduced for e-service quality adapted from the conventional SERVQUAL scale developed by Parasuraman, Zeithaml, and Malhotra (2005). Parasuraman, Zeithaml, and Malhotra (2005) advocate that e-service quality covers the entire process from purchase to refunds and Returns. The research also states that the measures are significant during online shopping. These constructs are being adopted by following the footsteps of many previous researchers such as Parasuraman, Zeithaml, and Malhotra (2005).

2.4.1. Assurance

The environment of online shopping is different, where a guarantee is the main concern for the customer. Many studies have identified that customers want Assurance. Researchers also agreed that customer assurance should be guaranteed and suggested that service providers should protect the interest of customers in case of any theft or fraud. These arguments are under the control of Ben-Mansour (2016), Therefore, Assurance is hypothesized as follows:

H6. Assurance will influence user intention to adopt online shopping

2.4.2. Reliability

Reliability in an online context refers to the extent to which online website availability ensures that customer should receive a product at the time promised by the retailer. According to many researchers, the customer is also aware of the features with full accuracy (Blut *et al.,* 2015)

H7. Reliability will influence user intention to adopt online shopping

2.4.3. Customer service

In the case of online shopping, especially in the context of FMCG products, many researchers have stated that customers expect they should be able to complete the transaction in the minimum possible time correctly, queries should be answered promptly using the internet-based channel for online shopping (Blut *et al.,* 2015; Parasuraman, Zeithaml, and Malhotra, 2005; Zeithaml, 2002). In light of the literature, customer service is hypothesized as follows:

H10. Customer service will influence user intention to adopt online shopping

2.4.4. Website Design

Online shopping is primarily based on the interface created by the website designer (Blut *et al.,* 2015) The attractiveness of the website quality and the information about products influence customers for online shopping say website plays an important role in behavior in online shopping. Therefore, it is hypothesized as follows:

H11. Website design will influence user intention to adopt online shopping

3.   Research Methods

3.1. Scale development

The research instrument was divided into two parts, the first section includes the demographic profile of respondents, and the second part consists of latent constructs items. The questions related to demography comprising age, gender, and occupation of the respondents were asked initially. Further questions related to research constructs include eight latent constructs, five-point Likert scale was used from strongly agree (1) to disagree (5).

3.2. Data collection

In this research quantitative research method was used by following the footsteps of the responses should be 5 times or 10 times the items used in the questionnaire. Therefore, in this study, 24 items were used.

3.3. Sample profile

The respondents were mostly females (n= 253, 77.85 per cent), while the remaining (n= 72, 22.15 per cent) were males. The majority of them (n= 303, 93.2 per cent) range in the age of 20-40 years. Most of the responses have a graduation-level qualification (n= 250, 76.9 per cent) and were employed (n= 280, 86.15 per cent) and unemployed (n= 45, 13.85 per cent).

4.   Data Analysis

The relationships were assessed using SEM following the footsteps of Hair *et al.,* (2014). SEM, Lisrel 8.80 was used. The measurement model for, i.e. Measures of UTAUT model and measures of e-service quality as independent variable and intention to adopt

(BI) as the dependent variable. Unidimensionality, reliability, and validity were also ensured.

4.1. Assessment of Measurement Model

As the first step, the measurement model was evaluated and initiated with the assessment of unidimensionality, construct reliability, and convergent validity of the research constructs (Chan *et al.*, 2022). In this research, construct reliability was estimated by the use of composite reliability and Cronbach's alpha. The composite reliability and Alpha values should be later than 0.7 for the assessment of the reliability of the scale. The values of composite reliability and Cronbach's Alpha values are given in Table 2; for the assessment of unidimensionality, it is agreed that the standard loading of each item should be greater than 0.3 (Long *et al.*, 2022). The construct reliability was assessed by the use of t values as suggested by Many researchers *t* value should be greater than 1.96 for each scale. All the values were found to be in acceptable ranges.

4.2. Structural Model

The structural model was estimated for each of the constructs, i.e. Measures of the UTAUT model and measures of e-service quality as an independent variable and intention to adopt (BI) as a dependent variable. lists the constructs and retained items after scale purification, which were included in the structural models.

5. Estimation of the Structural Models

The structural model with, i.e. Measures of the UTAUT model and measures of e-service quality as independent variables and intention to adopt (BI) as a dependent variable. The direct impact of measures of UTAUT and e-Service Quality on intention to adopt (BI) was examined (Refer Figure 1).

Results show that the direct effect of PE on BI was insignificant (-0.46), the direct effect of EE on BI was significant (1.02), the direct effect of SI on BI was insignificant (-0.32), the direct effect of AS on BI was significant (0.66), the direct effect of RL on BI was significant (0.44) the direct effect of WD on BI was insignificant (-1.08), the direct effect of CS on BI was significant (0.41).

The causal relationships from independent variables to internet-based shopping were significant, and these findings are in line with. Similarly, the influence of effort expectancy on online shopping behavior is also pointed out. Social influence also influenced the intention to adopt online shopping, as observed by and Venkatesh *et al.* (2011). The results regarding e-service quality constructs and their influence on internet base shopping fall in order with Parasuraman, Zeithaml, and Malhotra (2005), and. However, the relationships of performance expectancy, social influence from the measures of the UTAUT model, and website design from the measures of e-service quality were found to be insignificant in influencing online shopping customers. The reasons for these findings are discussed in the conclusion.
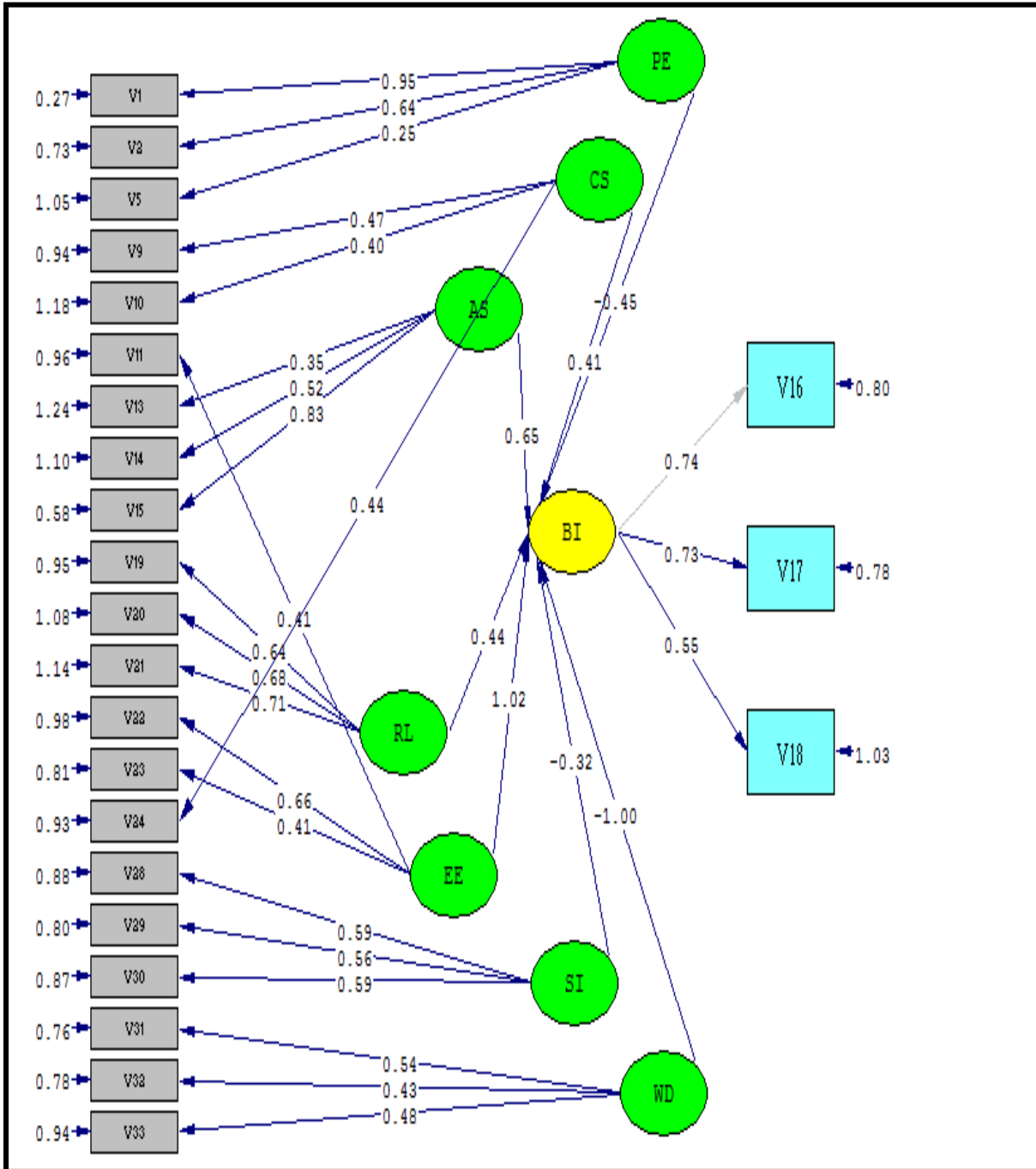
Figure 1 Showing path values of Independent and Dependent variables

Table 1 Showing Factor loadings, Cronbach's Alpha, and Construct reliability

Scale	Cronbach's Alpha	Constructs Reliability (CR)	Factor loadings range
PE	.764	0.7	0.71-0.95
CS	.831	0.7	0.61-0.87
AS	.748	0.7	0.61-0.89
RL	.832	0.6	0.51-0.71
EE	.878	0.7	0.45-0.67
SI	.789	0.8	0.56-0.76
WD	.876	0.6	0.57-0.78
BI	.765	0.6	0.67-0.89

6. Conclusions

This study concludes that all the measures are valid and have a significant impact on online shopping users. Findings of the structural model reveal that all the measures of the UTAUT model and e-service quality measures significantly impact internet users' intention to adopt online shopping. However, the relationships of performance expectancy, social influence from the measures of the UTAUT model, and website design from the measures of e-service quality were found to be insignificant in influencing online shopping customers. This can be attributed to the fact that for many FMCG companies, this is a phase of transformation during COVID-19, and they did not develop their websites to cater to a huge volume of online customers, the demand of whom was unexpected during lockdowns. The negative relationships between performance expectancy and online shopping users' intention can be due to the high load of customers, due to which there is an issue of efficiency and performance on the part of FMCG retailers. As it is also included that social influence does not play any role in influencing online shopping customers, this can be attributed to the fact that during COVID-19, social influence was decreasing as people were not able to communicate and socialize much due to restrictions due to COVID-19 lockdowns. The study can be e extended to other sectors also.

7. Limitations

As every research has some limitations, this study also has some limitations besides its contribution to service quality and information technology. It is very important to highlight those limitations so that future research can be free from those limitations and errors.

1. A small sample size was used in the investigation. As a result, the study's tiny sample size could have presented issues. Results could have been more broadly applicable if there had been a larger sample size.

2. The majority of the study's surveys were sent. Since the personal interview approach had not been used, the response rate was not as great as it could have been.

3. Even though the research might have included all BIs, only Indian UBIs were chosen for the study due to time and geographic constraints.

4. The opinions of the key informants, in this case Senior Managers, served as the foundation for the study. Studies that rely on a single source, however, may have concerns with common technique bias. One can see the study's absence of a multi-respondent design as a limitation. This claim was nevertheless supported by the researcher's investigation of common procedure bias, which revealed that it had no impact on the study's conclusions.

5. The study is prone to the drawbacks of this type of research due to its cross-sectional design. The independent and dependent variables are only measured once in the research. Longitudinal research may be used in future studies.

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