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Role of E-service Quality (E-SQ) on Customers' Online Buying Intention: An Extended theory of Planned Behavior

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ABSTRACT With rapid growth in the field of communication, technology, and higher internet penetration, extensive usage of electronic services has become inevitable. Therefore, electronic services (e-services) have become very popular and one of the key determinants contributing toward e-business success. Consequently, it becomes essential to measure and evaluate customers' perceived E-Service Quality, which affects their purchase intention to buy online. Therefore, the current study examines the effect of customers' perceived E-SQ on their online purchase intention, as an extension of the Theory of Planned Behavior. The study included 449 samples of online buyers from Rajasthan state of India. To test reliability and validate the constructs of the measurement model, Confirmatory Factor Analysis was used using SPSS 24.0 and AMOS 24.0 software. Further, Structural Equation Modelling was used to validate and test empirically the causal relations between the constructs of the measurement model. The results revealed that judgments related to online websites have a strong positive relationship with the key features of E-SQ (e.g., reliability, responsiveness, personalisation, convenience, trust, ease of navigation, and ease of navigation). Further, in addition to this, results also indicate that Theory of Planned Behavior (TPB) can completely predict and explain the determinants of E-SQ, influencing customers' online purchase intention. Therefore, this study helps in providing scale measurement of online purchase websites to identify their E-SQ strengths and weaknesses, which can help them improve upon their weaknesses and try serving their customers better in the electronic marketplace.

INDEX TERMS Electronic Service Quality (E-SQ), Online buying, Purchase Intention (PI), Theory of Planned Behavior (TPB).

I. INTRODUCTION:

The arrival of the COVID-19 pandemic has resulted in social distancing and repetitive lockdown. This has forcefully encouraged the individuals to buy online [1]. As per NASSCOM, even after many challenges and troubles faced by individuals, resulting out from COVID-19, E-commerce market of India has secured a third potion in the highest online market of 140 million, after China and the US in 2020., which continue to grow at 5%, with sales of US$ 56.6 billion by 2021 [2]. Despite slow economic development during pandemic, e-commerce market has experienced an exponential growth and brought digital transformation in trade and online buying [3]. Online buying is the major mode of e-commerce, where consumers place orders and receive their parcels at their doorsteps from anywhere around the globe [4].

Owing to digital advancements and rapid changes in customers' lifestyle, their buying habits are altering their virtual buying experiences in e-marketplace. This has affected and encouraged e-businesses to gain consumers' satisfaction and their loyalty in a virtual marketplace. Consequently, business organizations have been forced to adapt to a new normal by providing new digital solutions.

Various studies have confirmed the presence of a relationship between service quality and customer satisfaction [5]. Moreover, marketers have realized that the success or failure of the businesses depends on their E-SQ [6], [7]. Therefore, E-SQ become a tool for e-tailors to serve and attract their customers in e-market place [8]. Hence, it is evident to give additional importance to E-SQ provided to the customers [7], [6], [8], [9], [10]. Thus, E-SQ has been considered a significant determining factor to success or failure of online retailers [11] and plays a major factor aiming toward the business growth and playing as a tool to gain over the competition in the rapidly expanding

service industry [12]. Further, it has become the most relevant research area because of its high influence on firms' financial performance [13], [14]. Internet purchase intention is a major predictor of real purchase in the future and depends on consumers' assessment of the quality of the website, presented information, and product [15], [16]. Therefore, internet marketers have increasingly been encouraged to discover different elements of customers' online PI to serve them well and increase their revenue. [17] stated that a favorable behavioral intention is the result of positive perceived service quality.

Despite a rapid increase in internet penetration and online buying around the globe, customers in developing countries still feel hesitated and are reluctant to buy online due to several factors i.e.,as privacy [18], lack of trust [19], education [20], perceived quality [21], and perceived risk [22], etc. Additionally, consumers also face many issues related to technology access, digital payment infrastructure, cultural barriers, etc. Despite many challenges, consumers are still motivated to buy online due of comfort and convenience [23], discounts, and coupons [24], time saving [25], information access [26], etc. This has led to a major shift in their purchase behavior and e-commerce infrastructure, especially during the COVID-19 pandemic [27].

Therefore, there is a strong need to study customers' perception toward E-SQ and its impact on their online PI, which is a strong predictor of their online purchase behavior, and to develop a comprehensive theoretical model of e-SQ and online purchase intention, especially for small or medium cities in developing countries like India. Prior studies have shown that online service quality significantly affect customers' purchase decision, customers' loyalty, and their satisfaction [28]. Based on the available literature on E-SQ, its determinants, customer satisfaction, online PI, loyalty, and their behavior, many researchers have done plenty of research work separately in the different parts of the globe, but very less specialized work has been done in this domain collectively (taking all factors together), especially in India so far. Thus, this study focused on studying customers' perceptions toward E-SQ determinants and their impact on their online PI in medium and small cities of Rajasthan state in India, using an extension of TPB. The output of the study will help the e-tailors determine the weaknesses and strengths of their E-SQ infrastructure and assist them to improve upon their online products and service offerings.

II. LITERATURE REVIEW

Resulting from the growth of internet users and technological expansion, e-commerce has started being considered a key application of computers and technology [29]. E-commerce is completely transforming businesses, products, services, and operations using the internet [30]. It further offers an open virtual platform where information and products are exchanged between customers and suppliers [31].

A. E-SQ

According to [32], service quality is the extent to which the service perception of an individual meets and/or exceeds the expectations. Further, it is the distinction between customers' expectations and their service perception" [33]. Given today's technological advancement, *E-service*s have become a developing and emerging area. E-SQ is the degree to which a website enables effective buying, and product and service delivery" [34]. [35] described E-SQ as acts, efforts, or performance, which is facilitated by information technology (mobile devices, web etc.). Electronic services have become popular and are one of the significant factors influencing e-business success. Customers' perceived service quality plays a major role in the development of their trust in online purchases [36], [37]. Most of the e-tailors develop trust and long-term relations with them by ensuring a high quality of e-services [38]. The customers' perception of E-SQ affects their acceptance toward online purchase [39]. Therefore, monitoring and evaluating E-SQ has become very essential in the virtual world. Many studies have been conducted on measuring E-SQ in various industries i.e., m-banking, online buying . [40], [41], [42]. Therefore, it is essential to evaluate and measure E-SQ for controlling and improving online retailor performances [43]. [44] found that dozens of website features were identified on the basis of an individual's perception and further classified into 11 E-SQ dimensions: Responsiveness, Reliability, Flexibility, Access, Price Knowledge, Ease of Navigation, Security/Privacy, Assurance/Trust, Efficiency, Customisation / Personalisation, and Site Aesthetics. Table 1 shows the service quality measurement perceived by the customers.

TABLE 1. Summary of Perceived Service Quality Measurement [45]

Dimension	Traditional Service Quality Measurement	Literature Review (Mainly Focused on MIS & Electronic Commerce)
Responsiveness	Provide prompt service Timeliness of service	Delivery speed (Dabolkar 1996; Ledingham, 1984; Maiser 1985)

	Confirm transaction immediately Reasonably waiting time	Information download waiting time (Dellaert and Kahn 1999) Email responses (Griffith and Kramplf 1998; Wilcox 1999) Prompt responses (Griffith and Kramplf 1998; Lohse and Spiller 1998)
Personalisation	Assure the customer of problem resolution Recognizing the individual customer	Recognition of loyal customers (Lohse and Spiller 1998) Customised homepage (Luedi 1997) Feedback (Luedi 1997) Enjoyment (Dabolkar1996; Langeard et. al. 1981)
Trust	Confidentiality Company reputation Trustworthiness	Confidence (Yang, Peterson, and Huang 2001) Store name (Grewal et. at. 1998)
Reliability	Perform the service accurately Perform the service right at the first time Accuracy in billing Keep records correctly	Reliability service (Dabolkar 1996) Order fulfilment (Ward 1997) Accurate records and billing (June and Cai 2001)
Accessibility / Convenience	Ease of contact Easy to access representatives	Easy to remember URL (Lohse and spiller 1998) Server shutdown, connection (Doherty, Ellis-Chandwick, and Hart 1999) Convenience (Jarvenpaa and Todd 1997) Product information, FAQ's policies (Lohse and spiller 1998)
Ease of use		Ease to use (Dabolkar 1996; Lohse and spiller 1998) User friendliness (Baty and Lee1995) Effective user interfaces, navigation, display (Spiller and Lohse 1997) Store layout, page length, easy and short check out process, domain name (Lohse and spiller 1998) Perceived Web image (Grewal et. al. 1998)
Security & Privacy	Financial Security Personal Safety	Risk & Security (Grover, Hall, and Rosenberg 1998; Jarvenappa and Todd 1997) Privacy of personal information (Balfour, Farquhar, and Langmann 1998)

B. ONLINE PI

Current internet buyers may stop buying online and switch to other modes of purchase if their preferred online purchase benefits are not fulfilled by their existing online shopping experiences. Thus, to better understand the risks and benefits associated with online purchase, it is essential to examine customers' intention to buy online with the aim of predicting future online shopping behavior. The purchase intention can be defined as "an individual's mental state reflecting their decision to purchase a product or service in the coming future"[46]. In the environment of online shopping, this can be the judgment to use the internet as a new shopping channel [46]. Several past studies have focused on studying customers' purchase and repurchase behavior and intentions [47], [48], [49], [43]. Online PI is a key element of evaluating online customer behavior [50]. Online purchase strongly influences the actual buying intention in e-retail environment [51]. [52] witnessed online purchase intention to be a more suitable measure of intention, to evaluate online customer behavior. When consumer holds high-level of intention to buy online, they tend to buy online [53]. Some of the social psychology theories, such as the TRA [54], and TPB [55] believe that a person's real behavior can be perfectly anticipated by their intention toward a particular behavior. Online PI is a dependent variable, which is subject to be affected by some other independent variables such as Attitude, Perceived Usefulness, Prior Online Shopping Experience, Perceived Risks, Perceived Ease of Use, etc.

Aiming to see the association between customers' attitude, belief, and behavioral intention during online purchase, only three theories are frequently used : The theory of planned Behavior (TPB), Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM).

- **TAM:** TAM is frequently used to study technical adoption toward a job [56]. This model was developed after the modification in TRA. The key elements in the Technology Acceptance Model are perceived usefulness and perceived ease of use, which are used to predict an individual's acceptance of information system technology. Many studies have been conducted using TAM i.e., students' intentions toward virtual reality learning [57], teachers' attitudes toward technology usage [58], [59], [60], students' e-portfolio acceptance [61], handheld devices' adoption and e-commerce websites [62]; and in the field of entertainment [63] .
- **TRA:** TRA includes a person's attitude and perceived pressure of subjective norms (SN) as two major elements, which determine their intention.

- **TPB:** TPB is a model, developed to predict the varieties of behavior and to explain the human behavior [55]. TPB is an extension of TRA. TPB is considered amongst the most effective theories in predicting and explaining individual's behavior, which has focused on showing the wider varieties in individual behavior [64]. Several studies used TPB to study the intention i.e., students' mobile learning adoption [65] and teachers' use of educational technology [66]; internet banking adoption [67]; intention toward health [68]. TPB has been used in many studies of internet purchasing behavior [69], [70], [71], [72], [73], [74], [75], [76], etc. Moreover, empirical research has shown the compatibility of this model in studying consumer's behavior within the context of online shopping [77], [78]. The TPB model is shown below (figure 1).

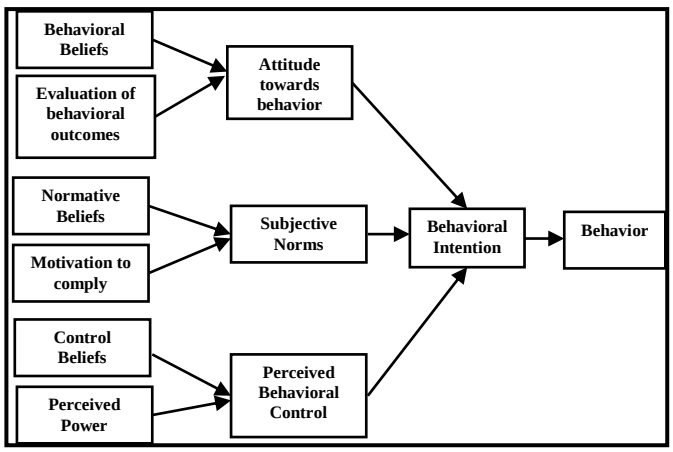

FIGURE 1. Theory of Planned Behavior [79]

According to [80] in TPB, attitudinal constructs were a direct determinant of behavioral intention. *Attitude* is "a psychological shift which is conveyed by the evaluation of a specific object some level of agreement or disagreement." Further, subjective norm refers to 'the perceived social pressure to perform or not to perform the behavior or a person's perception of others who are important, will favor or condemn her or his performing the given behavior [55]. PBC refers to "an individual's perception of the easiness or trouble in performing a particular behavior of interest," which is expected to reflect past experiences, controlled resources (e.g., time, money, cooperation, skills) and opportunities [55]. PBC examines how one evaluates the degree of struggle or ease in performing a behavior.

TPB predicts customers' behavior better than TRA [78]. Both TPB and TAM have been developed from TRA, these theories share inferences with each other, therefore, PBC in TAM is like PEOS in TAM [78]. Further, TPB explains complete human behavior, whereas TAM exclusively focuses on the usage of technology innovations [81]. Therefore, TPB explains complete behavioral intentions better than TAM and TRA and combination of these three would not significantly increase the explanatory power [82]. TAM is more suitable for studies related to technology adoption and usage whereas, TPB considers the social influence on technology adoption and use [83], which needs much attention for studying online purchase behavior. Therefore, the most useful and influential model is TPB, which explores human behavior combining non-volitional and volitional perspectives and explains behavioral intention using organization, individuals, and society [84], [85], [86]. Therefore, current study used TPB to predict the online purchase intention over other theories.

Further, much research work has been done in TPB, but only few studies could include this theory to study online PI, and very less specialized work has been done in this domain in India, including no research in Rajasthan state so far. Lastly, a combination of three aspects, i.e., E-SQ, PI, and online shopping has not been taken together in previous research.

C. E-SERVICE QUALITY AND ONLINE PI

An individual's purchase decision is largely affected by service quality in e-commerce using the internet [87]. [17] stated that a favourable behavioral intention is the outcome of positive perceived service quality. Additionally, according to [88], customers' previous online purchase experiences directly affect their online PI. Prior studies have shown that online service quality significantly affects customers' purchase decision, customers' loyalty, and their satisfaction [28].

III. RESEARCH FRAMEWORK AND HYPOTHESES

The various constructs were combined in a theoretical framework, based on previous work done in this field. The framework facilitates the development of research hypotheses, which examine the interrelationship among research constructs. This study aims to develop and test a theoretical framework that examines the effect of various E-SQ dimensions on customers' online PI based on similar literature and theories (Figure 2).

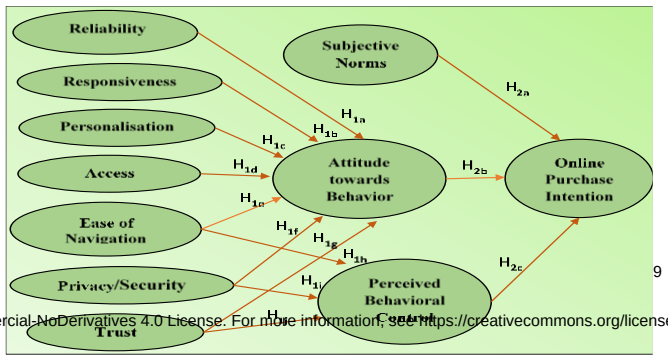

FIGURE 2. Theoretical Model of the Study

Based on the theoretical model, following hypotheses were formed to describe the various dimensions of E-SQ and its effect on customers' online PI.

A. E-SQ AND TPB

TPB is widely used in several sectors related to technology and internet-based behavior. [89] studied the clipping online coupon behavior using the model through structural equation modelling. [41] studied students' intention toward using podcasting as a tool to learn in college courses using this model. [90] examined the model to study the factors affecting the decision of the students to choose an online course despite face-to-face course. It further examined the impact of various E-SQ dimensions on three determinants of online PI (Perceived Behavioral Control (PBC), Attitude, and Subjective Norms) using TPB.

H_1: Dimensions of E-SQ have a significant positive impact on the determinants of online PI using TPB.

1) ATTITUDE

The attitude has always played a role as a key element of a person's behavioral intention in much customer research e.g. [91]. According to [92], customers' overall beliefs and attitudes concerning online purchases positively affect their purchase, which positively affects their PI in the online shopping environment. Further, the perception toward risk and security features has also revealed to have a major effect on the attitude toward using online financial services [86]. Trust also motivates customers' purchasing behavior and positively affects their attitude toward online purchases [93], [94]. Further, privacy and security also have a huge effect on customers' attitude toward using e- financial services [95]. Delay in downloading, which is the time taken by a website to open a page, negatively affects the attitude toward obtaining information and intention toward using a system [96]. Therefore, the following hypothesis can be formed.

H_{1a}: Reliability has a positive significant effect on attitude toward behavior in online shopping.

H_{1b}: Responsiveness has a positive significant effect on attitude toward behavior in online shopping.

H_{1c}: Personalisation has a positive significant effect on attitude toward behavior in online shopping.

H_{1d}: Ease of access has a positive significant effect on attitude toward behavior in online shopping.

H_{1e}: Ease of navigation has a positive significant effect on attitude toward behavior in online shopping.

H_{1f}: Privacy/Security has a positive significant effect on attitudes toward behavior in online shopping.

H_{1g}: Trust has a positive significant effect on attitude toward behavior in online shopping.

2) Perceived Behavioral Control (PBC)

[97] found the relationship between trust and PBC and confirmed that trust decreases social uncertainty, leading to all unanticipated possibilities. Trust reduces the efforts to liberally leading to all possibilities [98]. Further, navigability can be defined as the natural sequence of web pages, consistency of navigation protocols, and well-organized layout [99]. A suitable navigational system simplifies sales and traffic on a website by enhancing the availability of information [100]. Information security and privacy concerns always make customers skeptical about their online purchases [101]. Customers often overcome the psychological barriers to purchase online when they believe that online vendors protect their personal details.

H_{1h}: Ease of navigation has a positive significant impact on PBC toward online shopping.

H_{1i}: Privacy/Security had a significant positive impact on PBC toward online shopping.

H_{1j}: Trust has a significant positive impact on PBC toward online shopping.

B. TPB AND ONLINE PI

Numerous studies have used TPB to study online customer behavior [102], [89], [103], [104], [105], [106]. Further, [107] established that online shopping intention is a function of subjective norm, attitude, and behavioral control.

H_2: The determinants of TPB have a significant positive effect on customers' online PI.

1) SUBJECTIVE NORMS

The literature proposes that subjective norms and behavior tend to have positive relation which has further been proved empirically that subjective norms influence behavioral intention [108]. Further, [107] nominated three different groups, which influence online shopping: friends, media, and family. Thus, this is expected from customers to purchase online, to be perceived by those three referent groups as an innovative person. According to [109] subjective norms may impact the behavioral intention secondarily through attitude. [102] established subjective norms as a significant predictor to use online brokerage services. Therefore, in relation to e-commerce, there seems to be a positive correlation between online PI and subjective norms.

H_{2a}: Subjective Norm has a significant positive impact on customers' online PI.

2) ATTITUDE TOWARDS BEHAVIOR

[101] found online shopping as a function of PI, and PI was found to be a function of attitude. Attitudes have been influencing behavioral intentions for long [110]. A positive attitude toward online purchases is expected to encourage customers to search information, make buying decisions, and conduct online transactions [111].

H_{2b}: Attitude toward behavior has a significant positive impact on customers' online PI.

3) PERCEIVED BEHAVIORAL CONTROL (PBC)

For successful completion of an online transaction or a purchase, abilities, and resources for using the internet to purchase are required. PBC not only positively impact online PI, but also drives the customers' final behavior with intention positively. This was supported by [112], [113].

H_{2c}: PBC has a positive significant effect on customers' online PI.

IV. RESEARCH METHODOLOGY

A. INSTRUMENT

This study assesses the impact of various E-SQ dimensions on customers' online PI. The E-SQ dimensions proposed by [35] were taken into consideration, which were further modified and validated by [114] based on the Indian scenario, that too in medium and small cities of India. Thus, the study focused on analyzing the impact of different dimensions of E-SQ, validated by [114] on customer's online PI using TPB. The scales to measure constructs of the study, were adopted by previous studies in a similar field. Further, every construct was measured on five pointers Likert scale ranging from strongly disagree (=1) to strongly agree (=5). The constructs used in the study, were modified determinants of E-SQ (responsiveness, reliability, ease of navigation, personalization, privacy/security access, and trust/assurance) and determinants of online PI (perceived behavioral control, subjective norms, attitude). The study included well-accepted instruments e.g. responsiveness (E-RecS-QUAL, *[115]*, reliability [116], [117],[118],[119], *personalization ((*E-S-QUAL) *[115], privacy/security ((E-S-QUAL) [115], access [119]*, trust/assurance [120]; [117], ease of navigation [121], attitude [122], subjective norms [123], [122], Perceived behavioral Control [123], and online PI [122].

B. DATA COLLECTION AND SAMPLE DESIGN

With the aim of serving the objective of the study, data collection was carried out from March-Sep 2021 with the help of 800 self-administered questionnaires, which were shared in the form of survey links with frequent online buyers of the different cities of Rajasthan state of India. The sample method used for the study was snowball sample, as the respondents were approached on a referral basis. Initially, the respondents were selected at convenience basis and later they were asked to provide the references of frequent buyers in the population, and further these references were also asked to provide more references to be part of the survey. After screening of the collected data, inappropriate responses were removed and 449 responses were found to be valid for analysis with a response rate of 56.1 percent. The decision on sample size was made using the rule of thumb i.e., per representing variable with 10 observations to set the lower limit of sufficient size of the sample [124]. The minimum sample size was found to be 370 (37 paths leading to dependent variables in the path diagram). Further, the minimum sample size required for analysis using SEM is 200 [125], [126]. Therefore, the selected sample size meets the requirement of minimum sample size and is acceptable.

To measure the questionnaire items' reliability, a pilot study was conducted on 40 respondents, who were randomly selected from the target population. Table 2 shows the Cronbach's alpha values for each construct, to assess the internal consistency among the constructs. The table 2 output shows that Cronbach's alpha values for all constructs were found be to be more than the threshold i.e., .70 [127], which indicates that all constructs were reliable and can further be used in the study.

TABLE 2. Reliability Output (Cronbach Alpha).

Constructs	Cronbach's Alpha
Reliability	0.861
Responsiveness	0.850
Personalization	0.806
Ease of Access	0.984
Ease of Navigation	0.889
Privacy/Security	0.763
Trust	0.870
Subjective Norms	0.873
Attitude Towards Behavior	0.902
Perceived Behavioral Control	0.909
Online PI	0.914

1) SAMPLE DEMOGRAPHICS

The respondents' demographics were categorized into many variables as age, income, gender, occupation,

education level, internet usage buying frequency . Table 3 shows the respondents' demographic section.

TABLE 3. Respondents' Demographic Section.

DEMOGRAPHICS		No. of Respondents	% of Respondents
GENDER	Male	260	57.9
	Female	189	42.1
	TOTAL	**449**	**100**
AGE (Years)	Less than 20	68	15.1
	20–30	130	28.9
	30–40	134	29.8
	40–50	94	20.9
	More than 50	23	5.1
	TOTAL	**449**	**100**
EDUCATION	Senior secondary or below	46	10.2
	Undergraduate	99	22.04
	Graduate	116	25.8
	Masters or above	188	41.8
	TOTAL	**449**	**100**
OCCUPATION	Student	107	23.8
	Serviceman	145	32.2
	Businessman	103	22.9
	Professional	54	12.02
	Homemaker	32	7.1
	Others	8	1.7
	TOTAL	**449**	**100**
MONTHLY INCOME (Rs.)	Less than 25,000	110	24.4
	25,000-50,000	134	29.8
	50,000-75,000	125	27.8
	75,000-1,00,000	35	7.7
	More than 1,00,000	45	10
	TOTAL	**449**	**100**
INTERNET USAGES (PER DAY)	Less than one hour	37	8.2
	1–2 h	85	18.9
	2–3 h	110	24.4
	3–4 h	121	26.9
	More than 4 h	96	21.3
	TOTAL	**449**	**100**
FREQUENCY TO BUY ONLINE	Once a week	65	14.4
	At least once a month	93	20.7
	Once in 2–4 months	96	21.3
	Once a year	79	17.5
	According to the need	116	25.8
	TOTAL	**449**	**100**

The table output reveals that most of the respondents were males (57.9% of the total) with 42.1% of females. Further, the most dominating group of age was 20-30 years, tailed by 30-40 years, 40-50 years and so on. Additionally, almost 42% of the respondents were post graduate and above followed by Graduate (26%), Undergraduate (22%) and so on. Majority of the respondents were reported to be servicemen, businessman, and student. Most of the respondents reported to earn between Rs.25000-75000 per month. Further, maximum respondents were in habit of using internet for more than 4 hours in a day. Lastly, most of them reported to buy online according to their needs followed by buying once in 2-4 months, once a month and so on.

V. RESULTS

A. MEASUREMENT MODEL ASSESMENT

It becomes essential to confirm that each measurement item is of latent constructs, before testing a hypothetical model under structural equation modelling [128]. CFA aims at simplifying numerous related measures into limited representative factors [129]. Validity assessment is done using goodness-of-fit, which shows the model's ability to reproduce variables' covariance and correlation [127]. It included assessing constructs' reliability, goodness of fit test, and construct validity measurement, using Cronbach's alpha and CFA, respectively.

1) CONFIRMATORY FACTOR ANALYSIS (CFA)

This study used CFA to evaluate the discriminant and convergent validity of model constructs. The convergent validity assessment is done by examining AVE's (Average Variance Explained) for every construct. The AVE's score should exceed the.50 Threshold, indicating that the construct causes the maximum variance. Whereas discriminant validity confirms the differences between each construct and the other constructs and each question item is loaded on suitable construct [130]. Further, discriminant validity can be measured based on the comparison of the AVE score of each construct with maximum shared variance (MSV) between constructs. If the AVE of a construct is more than the MSV value with other constructs, discriminant validity is ensured. Maximum shared variance (MSV) is the maximum amount of variation that a variable could explain in another variable. To assess measurement

model validity, CFA was used to test the model fit and to calculate AVE, Composite Reliability (CR,) and MSV.

2) MEASUREMENT MODEL FIT INDICES

The fit indices of the model were recorded using overall model fit indicators (CFI, IFI, GFI, NFI, TLI, and RMSEA). After using modification indices and removing items having factor loading less than 0.4, and drawing covariance between error terms, modified fit indices were obtained. The final output is shown in table 4 given below along with the overall measurement model exhibited in figure 3. Furthermore, table 5 depicts the shared variance between the latent variables.

TABLE 4. CR, AVE, and MSV

Constructs	Cronbach 's Alpha	CR	AVE	MSV
Reliability (R)	0.820	0.813	0.565	0.445
Responsiveness (RES)	0.752	0.775	0.535	0.372
Personalisation (PER)	0.776	0.775	0.534	0.401
Ease of Access (ACC)	0.979	0.979	0.959	0.246
Ease of Navigation (NV)	0.809	0.810	0.587	0.501
Privacy/Security (PR)	0.736	0.776	0.545	0.296
Trust (T)	0.770	0.749	0.599	0.442
Subjective Norms (SN)	0.763	0.784	0.576	0.226
Attitude	0.852	0.863	0.611	0.408
Perceived Behavioral Control (PBC)	0.859	0.860	0.672	0.296
Intention	0.894	0.895	0.810	0.226

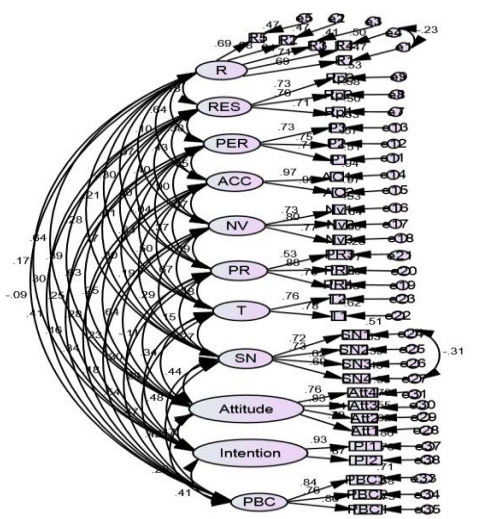

FIGURE 3. Overall Final Measurement Model

TABLE 5. FORNELL-LARCKER SCALE

	Attitude	SN	PBC	RES	PER	ACC	NV	PR	T	R	Intention
Attitude	**0.782**										
SN	0.438	**0.690**									
PBC	0.245	0.424	**0.820**								
RES	0.391	0.165	0.405	**0.731**							
PER	0.633	0.304	0.160	0.377	**0.731**						
ACC	0.255	0.189	0.336	0.431	0.349	**0.979**					
NV	0.639	0.287	0.179	0.403	0.895	0.370	**0.766**				
PR	0.110	0.150	0.544	0.404	0.040	0.373	0.085	**0.738**			
T	0.344	0.271	0.468	0.610	0.629	0.496	0.665	0.478	**0.774**		
R	0.636	0.282	0.090	0.176	0.642	0.100	0.667	0.297	0.210	**0.682**	
Int	0.466	0.475	0.406	0.298	0.248	0.283	0.231	0.303	0.275	0.170	**0.900**

TABLE 6. Measurement Model Fit Output.

Fit Indices	χ^2	DF	CMIN/DF	CFI	GFI	IFI	TLI	RMSEA
Measured Value	805.98	470	1.715	0.958	0.907	0.958	0.949	0.040

The measurement model outputs were found to be suitable and acceptable, as shown by the output of validity and model fit. The fit indices meet the acceptance criterion for the output. Initially, convergent validity assessment was done by high factor loadings and (AVE). Additionally, to test the construct reliability, composite reliability values were more than recommended 0.70 [131]. The value of CR for the constructs ranged between 0.749 and 0.979 that ensures that every factor was measured well by the constructs under the measurement model. Finally, the AVE values of each construct were determined to be between 0.534 and 0.959. This is more than the accepted 0.50 thresholds [132] indicating more than 50% of the variance and resulting in satisfying convergent validity. Furthermore, to assess discriminant validity, AVE scores were compared with MSV. The results showed that the AVE values for each construct were higher than the MSV values, which is evidence of greater validity between each construct to the others [127].

Lastly, the fit indices (shown in table 6 above) indicated that the overall chi-square value was 805.98 with degree of freedom (df) = 470, and CMIN/Df = 1.715. Additionally, Goodness of fit index (GFI), comparative fit indices (CFI), incremental fit indices (IFI), and Tucker-Lewis index (TLI) were recorded as 0.907, 0.958, 0.958, and 0.949, respectively. The model fulfilled all the fit threshold limits

i.e., each fit index threshold should be more than 0.9 for an acceptable and a good model fit [127], [129]. The root-mean square error of approximation (RMSEA) was 0.040, which is less than 0.05 and suggests a close model fit [133]. Therefore, it is concluded that the measurement model fits well with the data and confirms no validity issues in the measurement model.

B. STRUCTURAL MODEL FIT AND HYPOTHESES TESTING

For structural model assessment and examining the hypothetical relationships between the model constructs in the structural model, SPSS AMOS Software version 23.0, was used to assess the complex path models and overall model fit. The overall model assessment consists of two stages i.e., overall model fit and significance of hypothesized relationships.

1) STRUCTURAL Model ASSESMENT

The final structural model was given on the basis of the measurement model. To test the structural model, three endogenous (dependent) factors and eight exogenous (independent) factors were employed. The final structural model included 13 paths drawn, to test the causal association between the constructs. Every path indicates the model hypothesis, which is to be tested empirically. To test the overall structural model fit, this stage of SEM measured parameter estimates and measurement model fit indices. The output for model fit indices is shown in table 7.

TABLE 7. Model Fit Indices Output Summary

Fit Indices	χ^2	DF	CMIN/DF	CFI	IFI	TLI	RMSEA
Measured Value	976.649	489	1.997	0.938	0.939	0.939	0.047

The chi square value (χ^2 = 976.649 with Df = 489), CMIN/Df = 1.997), which is significant (p= .000). The other fit index values for CFI, IFI, TLI, RMSEA were found to be .938, .939, .939, and .047, respectively. Since the fit indices are greater than .90, ensures a good fit of the model to the data.

2) HYPOTHESES TEST

SEM was used to test the hypotheses using estimated path coefficient (β) values with critical ratio (C.R equivalent to t-value), and p-values. The standard decision rules (β≤1 and p-value ≤ .05) was used to decide the significance of the path coefficient. The output is shown below in table7.

2.1) HYPOTHESES TESTING FOR DETERMINANTS OF ONLINE PI

This section investigated the effect of different E-SQ dimensions on the determinants of online PI using TPB. The output summary is shown in table given below 8.

TABLE 8. Summary for Hypotheses Tests for Individual Parameter.

Hypothesis	Paths	SEM Output			Results
		Standardized β	C.R. (t value)	P value	
H_{1a}	R (Reliability)→Attitude	0.315	3.468	< 0.01	Supported
H_{1b}	RES (Responsiveness) →Attitude	0.237	3.110	<0.05	Supported
H_{1c}	PER (Personalisation) →Attitude	0.243	1.378	> 0.05	Not Supported
H_{1d}	ACC(Access) →Attitude	.048	0.885	> 0.05	Not Supported
H_{1e}	NV (Ease of Navigation) →Attitude	0.953	2.818	< 0.01	Supported
H_{1f}	PR (Privacy/Security) →Attitude	0.729	2.724	< 0.01	Supported
H_{1g}	T (Trust) →Attitude	1.220	2.964	< 0.01	Supported
H_{1h}	NV (Ease of Navigation) → Perceived Behavioral Control	1.239	2.405	< 0.05	Supported
H_{1i}	PR (Privacy/Security) →Perceived Behavioral Control	1.713	3.243	< 0.01	Supported
H_{1j}	T(Trust) →Perceived Behavioral Control	1.532	2.107	< 0.05	Supported

2.2) HYPOTHESES TESTING FOR TPB

This section examined the applicability of TPB in determining customers' online PI. The output summary is shown below in table 9. Furthermore, figure 4 shows the structural path coefficients of the structural model.

TABLE 9. Summary for Hypotheses Tests for Individual Parameter.

Hypothesis	Paths	SEM Output			Results
		Standardized β	C.R. (t value)	P value	
H_{2a}	Subjective Norms → Online PI	0.287	5.399	< .01	Supported
H_{2b}	Attitude → Online PI	0.309	6.229	< .01	Supported
H_{2c}	PBC→ Online PI	0.266	5.414	< .01	Supported

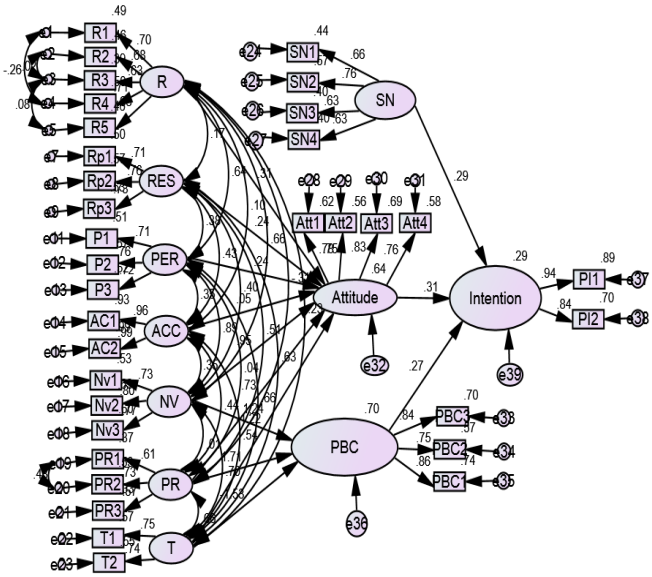

FIGURE 4. Path Coefficients for Hypotheses Testing

The hypothesis results based on the above output tables (8 & 9) and figure 4 reveal that 11 of 13 hypotheses were supported and the remaining 2 were not supported using empirical data. Table 8 output depicts that reliability, responsiveness, ease of navigation, trust and privacy/security significantly influence online buying. In contrast, personalization and access have a positive but not significant impact on attitudes toward buying online. Further, ease of navigation, privacy/security, and trust have positively impacted PBC toward online buying. Additionally, table 9 reveals that online PI is positively and significantly affected by SN, attitude, and PBC using TPB.

VI. DISCUSSION

This study aimed at contributing to the existing knowledge or literature on E-SQ, using a proposed theoretical model to explore the relationship between online PI and E-SQ, using TPB. The findings demonstrated that reliability in online purchases show a significant positive effect on customers' attitude toward behavior (H_{1a}). The output specified that if customers believe that online shopping ensures well-timed delivery of the products, quality and quantity as promised, presents facts about the products accurately, then they seem to have a positive opinion on online purchase, which results in a positive attitude toward their behavior in the online purchase environment. These findings are consistent with some prior studies conducted by [134], [135], [136]. Secondly, responsiveness in online purchases also has a positive and significant effect on customers' attitudes toward behavior (H_{1b}). The findings suggest that if customers' queries and enquiries are handled well by the online vendors, they have a positive attitude toward online purchase. Additionally, customers also showed a strong need for convenient product return policies, easy tracking of product delivery status, etc. These findings agree with some past studies of [137], [138], [139]. Third, level of personalization in online purchases proved to have a positive, but not significant, effect on determining their attitude toward online purchase behavior (H_{1c}). This study proposed that if the online shopping websites provide personal attention by solving customers' personal queries and providing personal assistance in searching for any products online, then it affects customers' attitude positively, but has no significant effect on their attitude toward online purchase behavior. This study conformed to many earlier studies by [140], [141], [142], [143], [144], [145]. Further, the ease of access in online purchase also positively influences (not significantly) customers' attitude toward onlsssine purchase behavior (H_{1d}). This suggests that customers always prefer to reduce their shopping time because of their busy schedule and lack of time availability, which is consistent with past studies [146], [147], [148]. Additionally, ease of navigation in online purchase positively and significantly influences customers' attitude toward online purchase behavior (H_{1e}). The findings suggest that if online shopping websites are simple to use, provide direction for searching products, and help in performing the transactions quickly, then this leads the customers to have a positive attitude toward online purchase. This result was supported by some prior studies by [96], [149], [150], [151], [137]. Further, privacy/security features in online shopping developed a significant positive attitude toward online purchase behavior (H_{1f}). The findings revealed that if online shopping websites ensure the safety of customers' personal and financial information (payment safety, not misusing their personal information, debit/credit card safety), customers tend to have a positive attitude toward online purchase. These findings were consistent with many past studies by [152], [141], [153], [154], [155]. Additionally, trust in online purchases positively affects attitudes toward such purchases (H_{1g}). The findings suggest that if customers are provided with the online product guarantees and correct information about the products, they tend to develop their trust in online buying, which leads to the development of a positive attitude toward their online purchase behavior. The findings are supported by some past studies which indicated the positive significant effect of trust features on customers' online buying decisions [93], [94], [156], [157].

The study proposed that the ease of navigation also positively influences PBC toward online purchase (H_{1h}). The more it is easier to navigate around the website, the more customers' perceived control becomes toward purchasing online. These findings were found to be in line with the results supported by [100]. Further, the findings suggest that the level of privacy/security has a strong positive effect on customers' PBC toward online purchase (H_{1i}), which was found to be similar to past studies [158], [159]. Additionally, customers' trust has a positive significant impact on their perceived control, which was supported by past studies [98], [160], [161].

The study further used TPB to justify the needs for the study and examined the relevance of TPB to determine

customers' online PI (H_{2}). The findings suggested that customers' subjective norms have a strong positive effect on their online PI (H_{2a}) i.e., a person's decision to buy online is largely affected by the opinion of their friends, relatives, colleagues . The study also examined the positive and significant role of customers' attitude in determining their intention to buy online (H_{2b}). The findings confirm the positive significant role of attitude in determining customers' online PI i.e., if customers perceive online shopping to be beneficial for them and have a positive opinion about it, they seem to have a positive attitude toward it, which leads to their positive intention to buy online. Lastly, the findings further indicate that customers' PBC positively affects their intention to buy online (H_{2c}), which means that if customers have the required knowledge and resources to purchase online, their intention to buy becomes positive. Therefore, the finding was found to be similar to that of TPB [55].

VII. IMPLICATIONS FOR RESEARCH AND PRACTICE

The study offers both practical and theoretical implications and their contribution to this subject of knowledge.

A. THEORITICAL IMPLICATIONS OF THE STUDY

This study presents the motivation, which is applicable in the Indian scenario. Many prior studies were conducted in the same area but in western countries. However, very few of them were conducted to discover the relation between E-SQ and customers' online PI. Moreover, the study examined the online PI using TPB in the context of online service quality, which has never been explored much and is a new phenomenon. It further strengthens the application of TPB by determining the predictors of the purchase intention in electronic marketplace, having identified the factors affecting predictors of online purchase intention i.e., subjective norms, PBC, and attitude in context of small and medium cities of India. It further offers insights on the possible factors affecting purchase intention in virtual platform using TPB and give possible suggestions for e-tailors, policy makers, designers etc., to design their service offerings according to the customers' requirements.

B. PRACTICAL IMPLICATIONS OF THE STUDY

Due to increased competition in e-commerce in India also, the consumers play a vital role in producing the services they get [161]. As a result, continuous evaluation of the services becomes necessary for e-service providers to provide their services as per the changing needs of the customers. The study focused on gaining a better understanding of customers' perception toward various E-SQ dimensions. The current study suggests the key determinants of online purchase intention, which will help e-tailors to deliver high level of SQ to their customers in e-marketplace. It further provides the recent advancements in technology, website features, product design, security etc. and the customers' perception towards them, to assist e-tailors to serve their customers better and enhance their e-satisfaction level. It revels that if e-tailors, in present times, focus more on product's usages, features, detailed information, colors, designs, price, physical dimensions, etc. and makes shopping websites easy to use by navigation menu, search options, clean pages etc. they tend to enhance customers' intention to buy online, leading to their increased satisfaction level. Additionally, the features e.g., accurate product information, promised quality, timely delivery, transaction security and privacy, effective return policies, grievance handling etc. largely affect the customers' intention to buy online. Therefore, the study suggests that e-tailors should design better infrastructure for e-business and should also measure customers' perception towards it. Secondly, they should focus more on the features like ease of navigation, transaction security, responsiveness, reliability etc., especially when targeting to the small cities of country, considering the different socio cultural, technological, educational background. Since the study confirmed that significant role of e-service quality dimensions on customers' online purchase intention, the policy makers or e-tailors should ensure the presence of these features in their product and service offerings on electronic market. Further, it is suggested that e-service providers should focus more on bringing innovation in their service offerings by their capabilities to create, integrate, transfer, assemble and leverage knowledge to gain competitive advantage [162],[163], [164]. Finally, the output of the study should also be informed to all stakeholders for effective decision making in relation to online purchase, which supports the implementation of E-SQ in other similar context.

VIII. Limitations AND FUTURE RESEARCH

The study focused on online shoppers of Rajasthan, state of India only. Therefore, the results are difficult to generalize with different cultural, demographic, and other variables across the other states of the country. Further, E-SQ instruments discuss quality dimensions in the complete e-marketplace, whereas the study is confined to online buying only, because of time and other practical constraints.

Further, the study also leaves the scope for future research, which may include additional relevant E-SQ dimensions e.g., website design, access, assurance, product price, payment methods etc. and their impact in measuring customers' online PI. Similarly, the study is limited to only Business-to-Customer (B-to-C) industry. It is recommended that further research can include the other categories of e-commerce (e.g., Business-to-Business, Government-to-Government, and Business-to-Employee) to confirm the influence of E-SQ. Since the individuals differ in certain characteristics or attributes across the different geographical regions. This leaves the scope for future studies which may study customers' purchase intention across the different nations and different socio cultural,

economic, and technological environments. Additionally, because of time and cost constraints, the research included a one-time study only. However, for the aim of studying customers' online PI, a long-term longitudinal study would be more significant for studying customers' PI for a prolonged period. However, the study is focused on online purchase and individual customers solely. The future research can be conducted in other service industries such as online stock trading, e-service portal, tourism, e-retailing, online food delivery, e-health applications, etc. Future studies can also explore the relationship between E-SQ and online purchase behavior, using some more behavioral theories (e.g., TAM, TRA etc.).

IX. CONCLUSION

The purpose of the study contributes to the existing body of knowledge by critically examining the different E-SQ dimensions and their effect on the customers' online PI using "TPB". To serve the purpose of the study, extensive literature was reviewed to identify and finalize the key determinants of E-SQ in similar context of the study. Secondly, a new theoretical model was developed through the extension of TPB using E-SQ dimensions. Which was validated and tested using Structural Equation Modelling approach.

The findings indicated that judgements related to online websites have a positive significant relationship with the key features of E-SQ (e.g., Responsiveness, reliability, personalisation, convenience, trust, ease of navigation, and ease of navigation). Additionally, the research findings observed a strong positive and significant effect of E-SQ dimensions (responsiveness, reliability, trust, ease of navigation, and privacy/security) on customers' attitude toward online purchase behavior. However, access and personalization features in online purchases were not found to significantly affect customers' attitude toward online purchase behavior. Similarly, online purchase features (e.g., product quality and quantity, timely delivery, correct presentation of the products, website efficiency to perform online transaction quickly, ease of access, security, and privacy etc.) develop a positive attitude toward online purchase among all online shoppers. Whereas some features (e.g., receiving personal mails from e-retailors, time saving, responses over the queries etc.) were not found to impact customers' attitude toward purchasing online. Additionally, the study also examined the significant positive impact of predictors of TPB (subjective norms, attitude, and perceived behavioral control) in determining customers' online PI. This study confirmed the applicability of TPB in the context of an online purchase environment. Finally, the study suggested that customers have a higher inclination to buy products online if they perceive or find the online purchase process beneficial to them. To enhance the level of e-business to cope up with the changing trends throughout the world, the government should focus more on infrastructure development and draw up rules and regulations to support and facilitate the new emerging technological market especially in underdeveloped and developing nations, which will benefit the nation in the long run.

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