

Explaining consumer satisfaction of services: The role of innovativeness and emotion in an electronic mediated environment



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ABSTRACT

The services section has started to dominate economic activity in many industrialized economies since the last decade. The growth of services in Electronic Mediated Environment (EME) has changed the manner in which firms and consumers interact. Drawing on such theoretical foundations as trust, risk perceptions, trying, emotion, and satisfaction, this study proposes an integrative research model to investigate the relationships among these constructs in the EME context. We collected data from 415 consumers and found that consumer innovativeness and emotion are significant antecedents of trust, risk perception of service, perceived benefits, and service quality. These important factors will influence consumer satisfaction in EME. This empirical investigation breaks a new ground for future studies to understand and gauge the influence of innovativeness and emotion in emerging IT artifacts such as EME services.

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1. Introduction

The service sector has become quantitatively the most essential sector in the world economy over the last decade. It now leads economic activities in a wide variety of industrialized economies. According to CIA World Factbook [14], the service industry accounted for 76.8% and 73.1% of the U.S. and European Union gross domestic product in 2011, respectively. Concurrently, there are more service companies on the list of Future 500 companies than before. Given the precipitously growing rate of the service section, technologically empowered advancements of information technology (IT) and the ever developing Internet are constantly galvanizing today's organizations to more effectively and efficiently coordinate with their constituents via the value-added electronic services (e-services) conduit. Furthermore, the mushrooming growth of e-commerce reflects the increasingly paramount role of IT in e-services while IT spurs the influx of e-service economy across the Internet. It is apparent that Information Systems (IS) plays a crucial role in EME because contemporary organizations have to leverage IT to improve business performance and assist the communication and service delivery amid various value-chain constituents.

Consumers play a focal role in the paradigmatic change from the exchange of goods towards a service-centered model of exchange as found in both IS and marketing literature [73]. In this study, the conceptual definition of services in EME is based on Dai and Salam [19] and thereafter refers to the "services being facilitated by IT where the consumer interacts with a proper user interface including web site, mobile phone, social media, virtual world environment, tablets, etc., so as to gain a consumption experience and desired benefits for another individual or the individual itself (self-service)" ([19], pg. 1). This definition denotes three important characteristics of the services in EME. First, it includes all types of electronic media; second, the core offering of IT based self-service must be considered by service providers to deliver the benefits that consumers seek [18,23]; third, it adds consumption experience dimension to the existing definition of e-service which highlights consumers' co-creation role in service consumption [73]. In the course of service consumption, the role of consumers becomes so significant that they are the co-producers engaged in defining, modeling, and integrating the service per se. Thus, in terms of conceptual consideration, the interactions between service providers and consumers need to be constructed from episodic experiences [8]. Departing from this conceptual definition in the context of EME, we conjecture that it is imperative that additional investigations about consumers' trust and their risk perceptions in the open and mobile EME arena be further explored. Since it has been reported that service quality and benefits can help consumers make a positive and satisfactory decision, we postulate that, besides the positive or neutral aspects of EME, consumer satisfaction with

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EME services is influenced by trust and risk perceptions. Furthermore, it is vital for organizations that need to develop a continuing satisfactory exchange relationship in EME to recognize and understand consumers' personal cognitive and emotional preferences. Since consumers may have different preferences or perceptions towards the EME, we believe that it is crucial that the service exchange process should shed further light on factors such as personal innovativeness and emotion.

Personal innovativeness with IT (PIIT) is a well-established stable IT-specific individual trait [2] and has been claimed as a concept having immediate relevance to consumer behavior and the acceptance of different information technologies. Given diverse features and functions of new technology, identifying a stable and invariant individual characteristic that has a persistent effect on the acceptance decision across multiple technologies is of substantial value for the successful implementation of IS [78]. We think it is worthwhile to engage personal innovativeness in study of services in EME.

Despite the success made, human-technology interaction research has recently been criticized for its exclusive concentration on cognitive-based approaches [6] to study the instrumental nature of technology. Cognitive models do not capture all antecedents of behaviors, without accounting for human factors, emotional factors, and social factors. Emotional reactions from individual users triggered by technological artifacts can influence their relationship to IT use and can have long-lasting effects on judgment, decision making, and behaviors [45]. Given the complexity associated with new IT usage, emotion-based models of IT use are needed to complement cognitive-based approaches by understanding the impact of emotions on IT use [46].

IS scholars have investigated the antecedents of online service quality [59], trust [21], perceived benefits [72] and perceived risks [51,60]. However, there is no comprehensive model integrating these constructs with innovation and emotion theories and their subsequent impacts on customer outcome variables such as satisfaction. Moreover, though comparable to services delivered offline, EME services usher many distinctive characteristics that prior service quality studies have not addressed [64]. As a result, traditional knowledge on service management is not readily applicable to the strategies needed in EMEs [48].

Drawing on such theoretical foundations as trust, risk perceptions, trying, emotion, and satisfaction, this study proposes an integrative research model to investigate the relationships among these constructs in the EME context. In essence, the model incorporates innovativeness and emotion into the risk vs. benefit valence model. Beyond extant studies that have largely emphasized on the relationships between behavioral intention and trust and risk perceptions, this study extends this line of research by including the potential influence of innovativeness and emotion on consumers' trust and risk perceptions vis-à-vis their satisfaction with the EME services where uncertainty and unforeseeable risk are in existence.

The remainder of this article is organized as follows. We first present a theoretical basis that associates factors including trust, risk perceptions, emotion, innovativeness, emotion, service quality, and benefit perception with consumer satisfaction. Next we present the research framework and propose our hypotheses. This is followed by research methodology that discusses the scientific method and data analysis techniques utilized to validate and test the research model. The following section presents the data results. The article concludes with implications for theory and practice and presents directions for future research.

2. Theoretical development

2.1. Theory of trying & personal innovativeness

Marketing literature suggests that the performance of service use could be thwarted by either internal or external barriers. According to the Theory of Trying (TOT) [4], in the process of trying to perform a behavior, an individual's intention signals a decisive mind while trying is referred to as a general term combining cognitive, motivational, and volitional elements. The TOT can serve as a theoretical foundation to

understand the relationship between user's goal-oriented intention and goal-directed behaviors. The IS literature suggests that trying to innovate with IT artifacts has already been acknowledged as a volitional post-adoption measure in studying IT adoption [3].

Furthermore, the TOT theory established a conceptual underpinning for the inception of personal innovativeness in consumer behavior research. In the IS context, innovative individuals are always willing to try out new information technologies, are early adopters of information technology innovations, and can be the change agents in new technological services diffusion [2].

2.2. Innovativeness and service quality

Consumer innovativeness can provide insight to how consumers perceive new products and services and their subsequent behaviors [74]. In particular, innovativeness predicts consumer innovative tendencies to adopt various technological innovations. For instance, innovativeness predicts consumer adoption of Internet shopping [15] and affects consumers' evaluation and triggers their decision-making for service adoption [38]. Grönroos [31] defined service quality as "the outcome of an evaluation process, where the consumer compares his expectations with the service he perceives he has received" (pg. 37). In the context of EME which is technologically innovative, consumers are provided with a virtual experience. In essence, the literature supports that greater service quality is a result of websites with a more innovative layout and visually acceptance interface [77]. Therefore, we propose the following hypothesis:

Hypothesis 1. Consumer innovativeness is positively related to consumers' perceived service quality in EME.

2.3. Innovativeness and perceived benefits

The relationship between innovativeness and perceived benefit or satisfaction has been suggested in recent service literature. Consumers seek satisfaction and new ways to co-solve their problems through innovative services [54] and greater service innovativeness requires more intensive interaction between the service provider and customers for effective service delivery ([69], pg. 5). Moreover, effective service delivery leads to improved consumer perception of innovative service benefit [9]. As such, we propose:

Hypothesis 2. Consumer innovativeness is positively related to consumers' perceived benefits of services in EME.

2.4. Innovativeness and trust

According to innovation diffusion theory [66], innovative people react differently in their adoption behavior towards a creative idea or new practice. Innovative individuals are more likely to act jointly to meet the expectations of the service provider instead of worrying about its vulnerabilities. Numerous empirical studies supported significantly positive association between consumer innovativeness and their behavior intention and trust [24,49,72]. Consumers who trust an innovation or a new technology feel that they have more control over their behavior and shows low emotional resistance towards it [28]. Thus, based on these arguments, we expect:

Hypothesis 3. Consumer innovativeness is positively related to consumers' perceived trust of services in EME.

2.5. Innovativeness and perceived risks

In the IS domain, consumers' innovativeness is an important construct in technology adoption and diffusion. In addition to the benefits for the consumers, potential undesirable consequences of an innovation service adoption decision posit some risks such as a high potential of

losing money or personal information [33]. Extant studies do not have a distinct assertion on the relationship between consumer innovativeness and consumers' perceived risks. It has also been found that risks adversely affect consumer adoption decisions on a new technological artifact [41,51]. However, Hirunyawipada and Paswan [33] suggested that innovative consumers may alleviate the potential perceived risks by searching for additional information. Therefore, we propose:

Hypothesis 4. Innovativeness is positively related to consumers' perceived risks of services in EME.

2.6. Theory of emotion

In behavioral science, emotion is an essential construct for comprehending consumer preference in the consumption of products or services. The Affect Infusion Model (AIM) provides a suitable theoretical aspect to understand how a person's information process and judgment ability can be predisposed by his affective state [25]. Defined as "the experience of feeling or emotion" [37], consumers' affect status plays an important role in their evaluation and responses to complicated situations. Pleasant experience and satisfying outcomes such as fantasies, feelings, and fun are emotion-related factors determining consumption experiences [67].

In the existing empirical studies, the domain of emotion is divided into positive and negative emotions which are independent to each other. The positive effects include contentment, happiness, love, and pride whereas the negative effects consist of anger, fear, sadness, and shame. In EME, perception of the overall service quality of a self-service technology is closely related to the favorable emotion of using it [18]. In this study, we used emotion instead of playfulness because emotion focuses on consumers' valenced affective reaction to services, not the intrinsic enjoyment from actual engagement in the activities [52].

2.7. Emotion and service quality

In EME, consumers' emotion is closely related to their valenced affective reaction to their perception of services. The literature suggests that emotion is a critical element influencing consumers' evaluation of the service. For hedonic consumers, an enjoyable and rewarding experience is an important component of the buying process [68]. As such, we presume that consumers conceive enjoyment if they perceive higher quality of online services in EME. Therefore, we posit:

Hypothesis 5. Positive emotion is positively related to consumers' perceived service quality in EME.

2.8. Emotion and perceived benefits

According to Holbrook [35], consumption value or experience related to a product or service is achieved through situation-specific comparison of one object with another, leading to consumers' subjective hierarchical preferences or perceived benefit. Hedonic benefits are reflected in people's affective IS experience such as enjoyment, playfulness, and curiosity [1]. In the context of online services, service usage provides customers with emotional experiences, which are enjoyable and fun "for the sheer sake of doing it" ([16], p. 4). Intrinsic enjoyment experience during website usage can have a positive influence on a consumer's web usage over time [55] and can influence the intention to return [44]. If consumers perceive the service enjoyable and exciting to use, their assessment of its hedonic benefits is high. The greater a customer's perceived opportunity to gain hedonic benefits from an EME service, the higher their degree of satisfaction with the service. Therefore, we propose:

Hypothesis 6. Positive emotion is positively related to consumers' perceived benefits of the services in EME.

2.9. Emotion and trust

IS literature suggested that lack of trust is the primary factor hindering many people from shopping online [34]. Many vendors' websites focus primarily on improving customers' trust [13] because of the difficulties in information verification and business control in the EME environment [28]. Online technologies, which are able to streamline service performance by automating manual processes that are less responsive and more error-prone, may appeal to consumers [76]. Attractive and friendly interface design can bring favorable consumer experience, emotion, and perception of services in EME [17,19]. Consumers' trust of an online service provider will also lead their consequent actions to the particular service provider [27]. Thus, we proposed:

Hypothesis 7. Positive emotion is positively related to consumers' trust of the services in EME.

2.10. Emotion and perceived risks

The effect of emotion on cognitive responses has been explored by a variety of theoretical perspectives. The impact of emotion on risk-taking and decision-making situations has been analyzed and validated in marketing and consumer behavior literature [40]. Moreover, the transient mood of decision makers can influence their risk-taking tendencies [80]. A person in positive emotion is more risk averse than the one in a neutral mood [39] and consumers with a positive emotion have the motivation to prolong their positive feelings and prevent the potential risks leading to unpleasant state of mind [80]. Reversely, consumers with a negative emotion tend to be more willing to take a risk [65]. Therefore, we conjecture that consumers who have positive emotion would tend to retain their emotion and circumvent any unpredicted loss. As a result, they will be more concerned of risk. As such, we posit:

Hypothesis 8. Positive emotion is positively related to consumers' perceived risks of the services in EME.

2.11. Antecedents of satisfaction

The literature indicates that service satisfaction refers to consumers' overall evaluation and emotional response to the post-purchase consumption experience [57]. Consumers' satisfactory experience can influence their future purchase behavior, and satisfaction is dependent on customers' idiosyncratic perception and assessment of service performance [30]. Therefore, an EME service provider that can meet or exceed consumers' expectations is more likely to entice and gain satisfied customers. In the following sections, we articulate the relationships between trust, risk perceptions, perceived benefits, and service quality in a bid to explicate consumer assessment and experiences leading to satisfaction with particular service providers.

2.12. Service quality, perceived benefits, and consumer satisfaction

Over the past few decades, service quality has received increased attention from scholars [23,70]. The growing recognition and strategic importance of service quality have been driven by the acknowledgment that high service quality results in positive behavioral intentions as well as greater market share and profitability [48,64]. Since service quality is the outcome of customers' comparison of their expectations and perception of a service encounter, enhancing and establishing customer value and satisfying customer needs have been used by organizations as an important strategy to improve service quality and differentiate their service offerings from offers by their peers.

The literature further supports that, in an online environment, factors such as the use of color, graphic layout, and quality photographs may trigger a desirable consumption experience [52]. In addition, it

has been found that the cognitive appraisal of certain online service can be positively impacted by website quality [22]. Therefore, we propose:

Hypothesis 9. Service quality is positively related to consumers' satisfaction of the services in EME.

2.13. Perceived benefits, trust, perceived risks, and consumer satisfaction

The congruence of extant empirical studies indicates that consumers' value evaluation predicts their satisfaction and continued use of the service [43]. The benefit–risk valence model [61] provides a theoretical foundation to explain consumers' buying behavior. On one hand, consumers enjoy the benefit of convenience and an extended exchange of information in fitting their personal service needs in EME. On the other hand, since an e-vendor provides no guarantee for their products or services [29], consumers need to evaluate the risks of potential losses or social uncertainty associated with an online provider. As demonstrated in IS literature, risk perception derived from high possibility of losses associated with online services can significantly affect consumers' buying behavior and their participation in online exchange [60]. Therefore, in EME service, consumers' satisfactory experience can be influenced by their perceived benefits and perceived risks. In particular, consumers' satisfaction is found to be the outcome of their perception of benefits received [32] and more cognitively-oriented value appraisal precedes affectively oriented satisfaction [47]. Therefore, we propose the following hypothesis:

Hypothesis 10. Perceived benefits are positively related to consumers' satisfaction of the services in EME.

Besides the benefit–risk valence model, the trust–risk model has generally been utilized in literature to reveal consumers' behavior in an exchange relationship with business vendors in ambiguous environments where risks might exist [41,51]. A consumer's trust belief, which can be developed through interaction with e-vendors in EME, is one of the critical determinants of consumer's acceptance of online purchases [29,51]. Moreover, consumers' perceived risks have drawn increasing attention in IS and consumer behavior research. Perceived risk refers to consumer expectation of a high potential for loss associated with the release of personal information to the firm [20] and the threat of security and potential loss can become greater with the advancement of mobile devices and wireless applications since malicious hackers may intercept anywhere in the free and open air [49]. Recent IS studies indicated that new risks specific to mobile technology use create potential challenges for novices regarding consumer satisfaction and the subsequent actions [42]. Therefore, in situations where potential risks exist, consumer (trusting/risk taking) behavior can be affected by his trust [51].

The absence of face-to-face assurance from the transaction exacerbates the risk of online transactions [41] and the primary focus of the customer's trust falls on the EME of the specific services [13]. Prior

studies indicated that trust is a paramount determinant of customer satisfaction [27] because of the complexity and unpredictability of on-line transactions and interactions, resulting in potential insincere and unpredictable behaviors [29]. When a consumer is confident about an online service provider's capabilities to fulfill the transaction obligations, he is more likely to consider certain service satisfactory towards his expectations. Therefore, we propose:

Hypothesis 11. Trust is positively related to consumer satisfaction of the services in EME.

Based upon the above arguments from Risks–Benefits Valence model and the Trust–Risks model, we believe that online consumers will perceive more risks than the traditional consumers in a brick-and-mortar environment. This is due to the special characteristics of EME: [1] services in EME are intangible and [2] service providers in EME lack the ability to prove service performance. Consumers' idiosyncratic assessment of the perceived risk is an important antecedent of their overall satisfaction with e-vendors [7]. The evaluation process consists of potential risk factors vis-à-vis service delivery such as service failure and interruption which typically result in low satisfaction. Therefore, we propose:

Hypothesis 12. Perceived risks are negatively related to consumer satisfaction of the services in EME.

Fig. 1 illustrates the research model of incorporating innovativeness and emotion in developing consumer's satisfaction in EME. Accounting for consumers' innovativeness and emotion as pivotal constructs to explain consumer satisfaction of services in EME, the research model maintains that consumers' innovativeness and emotion influence their evaluation of service quality, perceived benefits, trust, and perceived risks, while greater service quality perceptions, higher perceived benefits, high degree of trust, and low degree of perceived risks lead to greater consumer satisfactions.

3. Research method

3.1. Measurement development

A survey instrument was developed based on prior research. All items were adapted from extant studies with five-point Likert-type scales (1 refers to Strongly Disagree and 5 indicates Strongly Agree) (see Appendix A).

3.2. Survey administration

To ensure content validity, the survey instrument was initially examined by five senior scholars who have a doctoral degree in IS. Potential wording errors were remedied based on their recommendations. To further refine the instrument, a pilot study using 90 students from a US

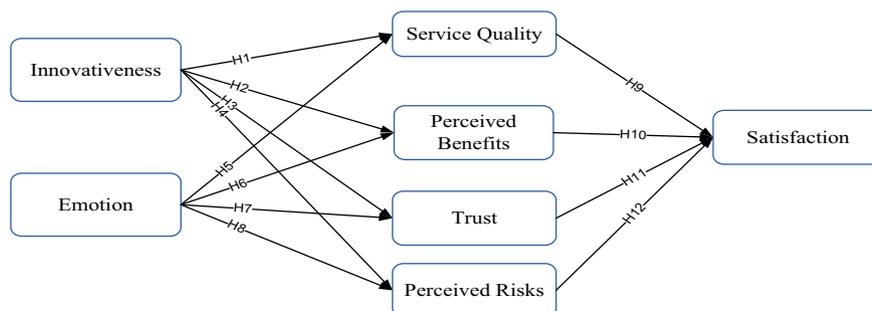


Fig. 1. Research framework.

Table 1
Descriptive statistics of respondents characteristics (N = 415).

Measure	Value	Frequency	Percentage
Gender	Male	196	47.2%
	Female	219	52.8%
Age	18–25	314	75.7%
	26–35	51	12.3%
	36–55	46	11.1%
	>55	4	1.0%
	Education	High school	204
	Some college	120	28.9%
	Bachelors	73	17.6%
	Masters	16	3.9%
	Ph.D.	2	0.5%
Income level	<12,000 rmb	214	51.6%
	12,000 rmb–36,000 rmb	80	21.4%
	36,000 rmb–60,000 rmb	13	3.5%
	60,000 rmb–96,000 rmb	14	3.7%
	>96,000 rmb	19	5.1%

business school was deployed. Then, the questionnaire was translated into Chinese by the authors and proofread by several Chinese IS scholars who received advanced training in English speaking countries. After back-translated to ensure minimum language discrepancy, the Chinese questionnaire was then pilot tested with 90 Chinese native speakers. The finalized survey questionnaires were randomly distributed in 10 organizations in a Chinese metropolitan city. 415 out of 600 useable responses were obtained for our final data analysis. Detailed descriptive statistics about the respondents are shown in Table 1.

Nonresponse bias was assessed with two sets of tests: different demographic groups in comparing gender, age, education and principal constructs cross different demographic groups. The results from both sets of tests showed no significant differences between the group means in each comparison ($p < 0.05$). Therefore, the results reported here are based on the statistical analysis of the combined data from both student sample and non-student samples as suggested.

3.3. Research model assessment and data analysis

Data analysis was conducted using SmartPLS 2.0 for both the measurement model and the structural model. PLS was chosen because the statistical technique uses a component based approach to estimation and places minimal restrictions on measurement scales, sample size, and residual distributions [12]. PLS also does not assume a multivariate normal distribution and interval scales [73]. To evaluate the appropriateness of PLS for our data analysis, we performed Shapiro–Wilk test to check the normality of all measurement items and found that they all significantly depart from normal distribution.

3.4. Testing measurement model

Tables 2, 3 and 4 present the measurement model results, including information about reliability, validity, correlations, and factor loadings. All constructs in the revised instrument showed high reliabilities (composite reliability > 0.80) [12]. The average variance extracted (AVE) was greater than .70 in all cases and greater than the square of the correlations, thus suggesting discriminant validity. The pattern of loadings

Table 2
Inter-construct correlation matrix for principal construct.

	Mean	Standard deviation	1	2	3	4	5	6	7
1. Perceived innovativeness	3.35	1.47	1.00						
2. Emotion	3.36	1.16	0.35	1.00					
3. Perceived service quality	3.33	1.18	0.35	0.45	1.00				
4. Perceived benefits	3.25	1.18	0.36	0.41	0.43	1.00			
5. Trust	3.28	1.23	0.37	0.54	0.55	0.54	1.00		
6. Perceived risks	3.31	1.14	0.32	0.40	0.38	0.38	0.53	1.00	
7. Satisfaction	3.22	1.19	0.34	0.38	0.39	0.50	0.44	0.48	1.00

Table 3
Reliability and average variance extracted for principal construct.

	Composite reliability	AVE
Perceived innovativeness	0.82	0.78
Emotion	0.82	0.70
Perceived service quality	0.82	0.73
Perceived benefits	0.83	0.70
Trust	0.83	0.70
Perceived risks	0.83	0.75
Satisfaction	0.81	0.72

and cross-loadings supported internal consistency and discriminant validity [26].

As with other cross-sectional studies measuring all variables through the same survey over the same set of subjects, our study might be susceptible to common method variable (CMV) bias. To examine the potential CMV bias, we followed the extant literature guidance via two methods. Firstly, several reverse-coded survey items were used to reduce potential acquiescence problems [29]. Secondly, the result of Harman’s one-factor test showed almost equal variance for each of the principal constructs, suggesting that CMV should not be a significant source of variance biasing the results of our study [63].

3.5. Testing the structural model

In a PLS structural model, paths are considered as standardized beta weights in a regression analysis [11]. Fig. 2 presents estimates of the standardized PLS path coefficients for the structural model. Item loadings of each construct are shown for a clear exposition. 36.2% of the variance in consumer satisfaction can be explained by the proposed structural model.

The results demonstrated that perceived innovativeness has significantly impact on perceived benefits ($\beta = 0.25, p < 0.01$), trust ($\beta = 0.21, p < 0.01$), and perceived risks ($\beta = 0.21, p < 0.05$) respectively. The perceived innovativeness shows moderate impact on service quality ($\beta = 0.22, p < 0.1$). Thus, the data analysis results provide support for H1, H2, H3, and H4.

The results also show the emotion construct plays significant influential role on service quality ($\beta = 0.37, p < 0.01$), perceived benefits ($\beta = 0.33, p < 0.01$), trust ($\beta = 0.46, p < 0.01$), and perceived risks ($\beta = 0.33, p < 0.01$) respectively. Therefore, H5, H6, H7, and H8 are supported.

As important antecedents of satisfaction, consumers’ perceived benefits ($\beta = 0.32, p < 0.01$) and perceived risks ($\beta = 0.28, p < 0.01$) are significantly associated with consumer satisfaction. However, we proposed that perceived risks have a negative influence on consumers’ satisfaction. The results of this study reveal a positive association between perceived risks and satisfaction. We also could not find statistical support for the relationship between service quality and satisfaction, as the influence in the structural model is not significant ($\beta = 0.12, p > 0.05$). The result does not confirm the influence of trust on consumer satisfaction ($\beta = 0.06, p > 0.05$). These results support H10 and H12, but not H9 and H11. Table 5 summarizes the hypotheses and their corresponding tests.

Table 4
Factor loadings for the measurement model.

Construct	Item loading
<i>Perceived innovativeness</i>	
Innova1	
Innova2	0.68(***)
Innova3	0.85(***)
Innova4	0.80(***)
<i>Emotion</i>	
Emotion1	0.62(***)
Emotion2	0.72(***)
Emotion3	0.80(***)
Emotion4	0.70(***)
Emotion5	0.61(***)
<i>Service quality</i>	
ServQual1	0.72(***)
ServQual2	0.75(***)
ServQual3	0.76(***)
ServQual4	0.67(***)
<i>Perceived benefits</i>	
Benefit1	0.66(***)
Benefit2	0.75(***)
Benefit3	0.75(***)
Benefit4	0.64(***)
Benefit5	0.68(***)
<i>Trust</i>	
TBeneve1	0.61(***)
TBeneve2	
TBeneve3	0.62(***)
TCompe1	0.61(***)
TCompe2	0.65(***)
TCompe3	0.67(***)
TIntegrit1	0.69(***)
TIntegrit2	0.69(***)
TIntegrit3	0.64(***)
<i>Perceived Risks</i>	
Risk1	0.71(***)
Risk2	0.76(***)
Risk3	0.78(***)
Risk4	0.73(***)
<i>Satisfaction</i>	
Satisfa1	0.69(***)
Satisfa2	0.79(***)
Satisfa3	0.77(***)
Satisfa4	0.64(***)

N = 415.
*** Significant at $p < 0.01$.

3.6. Post-hoc analyses

From a model assessment perspective, we conducted post-hoc analyses on multiple models. Firstly, we removed perceived benefits from our model and kept other constructs. This revised model did not provide

strong explanatory power. The links between innovativeness and trust, innovativeness and perceived risks, emotion and perceived risks, service quality and satisfaction, and trust and satisfaction were not statistically significant. The R-square of our major dependent variable ‘satisfaction’ dropped from 36.2% to 29.3%. Secondly, we removed perceived risks and kept other constructs in the original model. Six links in this reduced model were not significant after running PLS tests. These associations were ‘innovativeness and perceived benefits’, ‘innovativeness and trust’, ‘emotion and perceived benefits’, ‘service quality and perceived benefits’, ‘service quality and satisfaction’, and ‘trust and satisfaction’. The R-square of our major dependent variable ‘satisfaction’ dropped from 36.2% to 30.3%. Thirdly, we removed both perceived benefits and perceived risks from our original model. The reduced model did not support the association between innovativeness and trust. The R-square of our major dependent variable ‘satisfaction’ dropped from 36.2% to 22.5%. Based on the post-hoc analyses on revised models, we believe that our original model holds the strongest explanatory power on consumer satisfaction in EME.

4. Discussion

This study presents several key findings related to the proposed integrative framework. Both innovativeness and emotion can significantly influence service quality, trust, perceived benefits, and perceived risks. The proposed framework in this study showed that consumer overall satisfaction of services in EME can be explained by the interrelationship between perceived risks, perceived benefits, innovativeness and emotion in intriguing. Service quality and trust showed no significant impact on consumer satisfaction.

4.1. Theoretical implications

Our research extends the current human-technology interaction research by introducing service into the EME context. The advance of services in EME provides IS scholars with a great opportunity to refine IS usage research in a service setting. Rai and Sambamurthy [64] commented that “the growth of self-service and multichannel environments raises questions about how service interfaces should be designed to manage the total customer experience.” In extant IS usage literature, while the TAM-oriented research has mainly focused on IS usage as a tool in organizational settings for job performance and task achievement, studies have not systematically accounted for IS users as a customer who uses services in EME to pursue a satisfactory experience. Therefore, studies of this stream are not precisely designed to explain the role of digital artifacts in the context of services in EME which are highly established and widely accepted and used [50].

This study is also a response to the call for including individual traits and affective characteristics such as emotion in IS research. Although constructs such as purchase intention, positive attitudes, trust, satisfaction and perceived risk as well as information quality, system quality

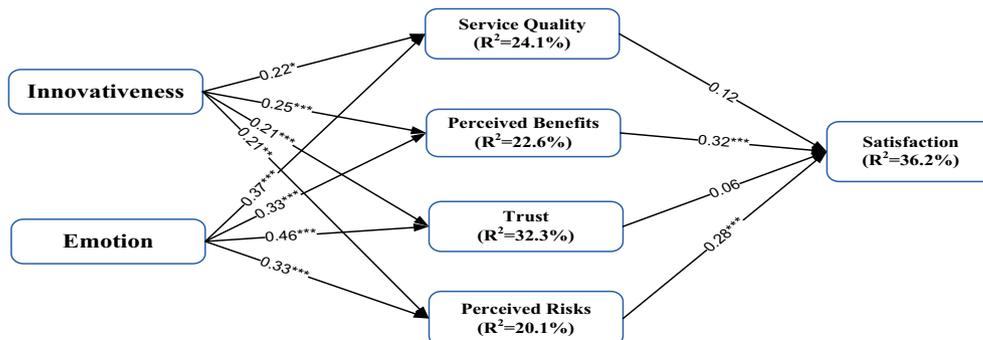


Fig. 2. PLS results for structural model. N = 415, ***Significant at $p < 0.01$, **Significant at $p < 0.05$, and *Significant at $p < 0.1$.

Table 5
Summary of hypothesis tests and results.

Hypothesis	Hypothesized path	Path coefficient	T-statistic	Support?
<i>Hypothesis 1</i>	Perceived innovativeness → Service quality	0.22	1.91	Yes
<i>Hypothesis 2</i>	Perceived innovativeness → Perceived benefits	0.25	2.06	yes
<i>Hypothesis 3</i>	Perceived innovativeness → Trust	0.21	2.20	Yes
<i>Hypothesis 4</i>	Perceived innovativeness → Perceived risks	0.21	1.97	Yes
<i>Hypothesis 5</i>	Emotion → Service quality	0.37	4.19	Yes
<i>Hypothesis 6</i>	Emotion → Perceived benefits	0.33	3.00	Yes
<i>Hypothesis 7</i>	Emotion → Trust	0.46	5.57	Yes
<i>Hypothesis 8</i>	Emotion → Perceived risks	0.33	3.06	Yes
<i>Hypothesis 9</i>	Service quality → Satisfaction	0.12	0.81	No
<i>Hypothesis 10</i>	Perceived benefits → Satisfaction	0.32	1.99	Yes
<i>Hypothesis 11</i>	Trust → Satisfaction	0.06	0.36	No
<i>Hypothesis 12</i>	Perceived risks → Satisfaction	0.28	2.02	Yes

and service quality have been used to investigate consumer satisfaction with online service [10,75], none of the extant studies have considered innovativeness and emotion perceptions. We filled this void in the literature by integrating innovativeness and emotion in the proposed research model and empirically validated their impacts on consumer satisfaction.

Interestingly, the result on perceived risk has unexpected positive correlations with constructs such as satisfaction, emotion, and innovativeness. This could be attributed to the sample used in the study where 75.7% of the subjects were between 18 and 25 and over 78% of them had only high school or some college education in China. These people are the savviest EME users yet without too much buying power or disposable income, and this particular context also lacks networks where personal information can be tracked for malicious purpose. Therefore, the general risks related to EME such as losing money or leaking personal information are not as a big threat to the users as in the west. Our data indicate that consumers are more likely to trade their risk concerns for the convenience and the enjoyment of shopping online. Given that online consumers are usually lack of time to shop offline and EME provides a convenient platform for searching for specific goods and services, transparent pricing comparison, and attractive shipping and return procedures, consumers are more willing to sacrifice their risks concerns. This is reflected in the positive correlations between emotion and perceived risk and innovativeness and perceived risk. As such, the fun and pleasant experience of using the EME service may stimulate more risk prone behavior.

Furthermore, this study presents a series of empirical evidence to validate measurements for the evaluation of key constructs of consumer perceptions of EME service such as service quality, perceived benefits, perceived risks, and trust. The proposed integrated model provides a comprehensive and solidified foundation for future research to analyze personal innovativeness and emotion in a variety of IT artifacts so that advanced knowledge can be accrued. We also suggest that future relevant studies consider potential factors such as privacy concerns, vendor reputation, ease of use, and usefulness versus consumers' perceived risks and trust.

4.2. Managerial implications

The growth of services in EME has created new opportunities for companies and their marketers to research consumers. According to the literature, long-term competitive advantage can be attributed to reliable customer experienced triggered by satisfaction and trust [81]. With the rapid advancement of technological infrastructure, online consumers are empowered with extensive sources of information to become more confident in using EME services. To cultivate more enjoyable and satisfactory experiences, multimedia technologies have been used to engage consumers and virtual communities that are usually adopted to facilitate effective and trustworthy platforms for both consumers and service providers. However, it is important for e-service

providers to recognize the various drivers and obstacles to consumer satisfaction. The findings from this research provide valuable insights for managers involved in the development of marketing strategies and programs.

This study highlights the importance of innovativeness for overall consumer evaluation vis-à-vis consumers' satisfactory experience of a service in EME. Innovative service content or service delivery mode that meets or exceeds consumer expectations, conveys greater benefit perceptions and confidence, could bring favorable consumption experience and more frequent use of the services, and therefore, differentiating from competitors in today's competitive market.

The findings also point to the importance of personal innovativeness for companies introducing new products. Innovative individuals always look for stimulations, uniqueness, novelty, and are independent towards others' opinion. In the context of services in EME, it means that they are willing to try new services or explore new functions of existing services, without well-established references. They are also likely to act as change agents and opinion leaders advocating the adoption of the new services in EME. As suggested by Ho and Wu [36], innovative consumers are the best choice for new service trials since they will not be easily discouraged by the perceived risks associated with new services, share the experience of their personally used services, influence their friends, and attract the attention of more consumers to the new services. Therefore, if marketers can identify and satisfy the needs of innovative consumers, they will be able to more accurately predict acceptability of their new services and save time and cost in marketing.

The findings on the role of consumer's emotion highlight the importance of emotional impact when providing services in EME. Studies indicated that consumers' positive and enjoyable emotion can be triggered by attractive service interface [22], positive cues [62], and friendly and reliable design [82] while service providers need to be trained to recognize various emotional expressions [53].

5. Limitations and future research

There are some inevitable limitations that need to be noted. First, we only focused on Chinese consumers' personal perceived risks. Recent studies such as Zheng et al. [79] have investigated ten dimensions of online consumers' risk perceptions and found out that non-personal perceived risks are considered more serious by Chinese online shoppers compared with personal perceived risks. In addition, lack of education might be another reason to explain Chinese consumers' low risk perceptions. The first law on e-commerce in China, Electronic Signature Law, was implemented on April 1, 2005 to protect transaction security. However, Chinese individual privacy law is still incomplete. This requires both government and business practitioners to make concerted efforts to assure the customers' private information to be effectively protected in online activities. In addition, the validity of our results is largely dependent on the surveyed subjects' sampling. In this study, all the

surveyed subjects were solicited from a Chinese city, so it is possible that their lifestyles and nature are homogeneous despite their ethnical differences in China. While the result of our study is useful for companies seeking to acquire and retain customers in Chinese EME marketplace, generalization to population in other countries should be cautious. A similar study in a different cultural context may yield interesting and different results, so future studies are encouraged to replicate the theoretical framework and extend our research findings by incorporating cultural dimensions and use samples from different countries.

Second, since personal innovativeness varies by personality and environmental influences [71] and emotions are contextual and can be contagious in groups [5], we hope this study will serve as a starting point to entice more scholarly work to examine whether there are moderating effects over our proposed research model. Social and other contextual influences such as group norms, peer reactions, and organizational cultural could be added to further improve the rigor of the current study, so we called for future studies in this respect to extend our research findings to overcome the limitations identified.

Finally, we only included general positive emotion in the study as it is closely related to consumer satisfaction with services in EME. However, some specific emotions may deem more important for certain IT use. For example, anxiety has been the most studied deterrence emotion and enjoyment and playfulness are found to be closely related to

perceived ease of use and use intention. Future studies should examine a wider range of emotions (i.e., both positive and negative) and their influences on user satisfaction, adoption, use and adaptation of new technologies and services so that a more comprehensive inventory of IT-related user emotions could be developed and analyzed respective to their relationship with IT use.

6. Conclusions

Integrating insights from service marketing and IS service research, this study argued and empirically illustrated that (I) the interactive dynamics of the internal attributes of services in EME exist among consumers' innovativeness, emotion, perceived service quality, perceived benefits, trust, and perceived risks; and (II) customers' satisfactory experience of using certain services in EME is primarily determined by the assessments of service quality, perceived benefits, consumers' trust, and perceived risks, which services in EME create and deliver for the customers. The research also highlight the role of consumer innovativeness and emotions as significant antecedents of perceived risk, trust, service quality, and perceived benefits, which ultimately lead to consumer satisfaction of services in EME. The proposed research model breaks ground for future studies to further empirically analyze and gauge the roles of innovativeness and emotion in EME as well as other IT artifacts.

Appendix A

Appendix of survey items.

Notes: Anchors for these scales are: 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree (Neutral); 4 = Agree; 5 = Strongly Agree.

Construct	Item wording	Literature sources
Personal innovativeness	If I heard about a new technology, I would look for ways to experiment with it. Among my peers, I am usually the first to try out new technologies. In general, I am hesitant to try out new technologies (R). I like to experiment with new technologies.	[2]
Emotion	Using the service is exciting. The process of using this service was pleasant. This service makes me happy. I have fun in using this service. I found using this service to be enjoyable.	[17,75]
Service quality	On the whole, the service content offered on this service provider's website is highly effective in supporting me to perform my transactions. Generally, I am pleased with the service content offered on this service provider's website to support me in performing transactions. Generally, the service functionalities are delivered in a professional manner in this service provider's website. Overall, the service functionalities are delivered efficiently via this service provider's website.	[23,70]
Perceived benefits	The prices I pay for service from this service provider represent a very good deal. The time I spend in order to use this service from this Service provider's site is highly reasonable. The effort involved in using this service at this Service provider's site is worthwhile. The service consumption experience at this Service provider's site is excellent. I found significant value by using service from this provider.	[42,47,52]
Trust	<i>Trust-competence</i> This service provider has the expertise to understand my needs and preferences. This service provider has the good knowledge about the service/product I bought from this website. This service provider considers my needs and all important attributes about the service/product I bought from this website. <i>Trust-benevolence</i> I feel that this service provider puts my interest first. I feel that this service provider is benevolent. This service provider wants to understand my need and preference. <i>Trust-integrity</i> This service provider provides unbiased service/product recommendations. This service provider is honest.	[28],
Perceived risks	I consider this service provider to be of integrity. In general, it would be risky to give my personal information to online companies. There would be high potential for loss associated with giving my personal information to online firms. There would be too much uncertainty associated with giving my personal information to online companies. Providing online firms with my personal information would involve many unexpected problems.	[41,51]
Satisfaction	Overall, I am satisfied with this service provider. I did the right thing when I decided to use this service provider. I am very pleased with making purchases from this service provider. I regret doing business with this service provider (R).	[57]

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