The Moderating Role of Perceived Effectiveness of Provider Recommendations on Consumers' Satisfaction, Trust, and Online Repurchase Intention

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Abstract. Despite the importance of online provider recommendations in e-commerce transactions, there is still little understanding about how provider recommendations impacts on customer retention. Addressing this gap, this study introduces a key construct, perceived effectiveness of provider recommendations (PEPRs) to investigate the differential moderating effects of PEPRs on the relationships between satisfaction, trust and repeat purchase intention. The research models are designed based on a research model and an online survey is conducted with 130 respondents. We draw conclusions that (1) PEPRs negatively moderate the relationship between satisfaction with vendor and trust in vendor and (2) PEPRs positively moderate the relationship between trust in vendor and repurchase intention. These findings are important theoretical contributions to know that first-hand experience can be to some extent replaced by supplementary information. In addition, we give some managerial countermeasures towards the new situation.

Keywords: Provider recommendations · Satisfaction · Trust · Online repurchase intention

1 Introduction

As e-commerce institutional mechanisms have been improved and more mature trust within vendors and consumers has been generated, online retailing has become more prosperous and competitive [20]. In this circumstance, how to retain existing consumers to make repeated purchases is considered to be an important concern for online firms [15].

Prior studies have long acknowledged that trust is a key factor for online repurchase [27, 31]. To meet for the requirement of trusting beliefs, a large number of online vendors offer provider recommendations (PRs) to promote their transaction intentions and purchasing behaviors. Despite the effects of provider recommendations on initial online purchase intention having already been examined, there is still little understanding about how they affect consumers satisfaction, trust and especially repurchase intention.

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PRs are divided into content-based filtering recommendations and collaborative-filtering recommendations in which they are based on explicit interests of the users or past buying behaviors of the affinity groups to extract recommendations for a specific buyer [24, 29]. For instance, regardless of whether the customer logs in, Amazon.com can track their browsing histories through using cookies and automatically provide personalized recommendation service as they move around the web. In order to analyze these two objects, we introduce a construct - the perceived effectiveness of provider recommendations (PEPRs). They are referred to as online shoppers' perceptions that provider recommendations provided is a sense of identification and agreement with an accurate and reliable information regarding to the transaction history of vendors and online experience with similar preferences [26].

2 Research Model and Hypotheses Development

In this Section, we present a research model to explore the influence of PEPRs on the relationship between satisfaction, trust and online repurchase as shown in Fig. 1.

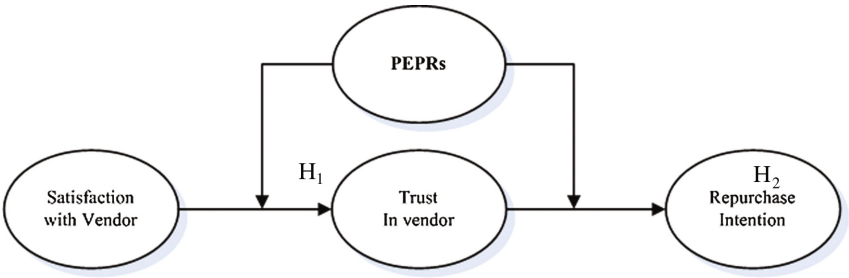

Fig. 1. Research model

2.1 The Moderating Role of PEPRs Between Satisfaction and Trust

Although extant researches support that successful, satisfying transactions will increase online customers' confidence they have in vendors toward future exchanges in online context [19], they tend to rely on other details instead of specific experience [6]. Satisfaction with vendor seems to be not enough for forming their trust perception. Those customers who use the internet have a special approach to making assessment towards sellers' trustworthiness: they mainly concern about the top sources of information - online ratings and reviews [8]. Provider recommendations provide more comprehensive details that compensate for their lack of experiential knowledge. In addition, a broad concept of online repurchase intention is online buyers' repeat intention for buying a products or services (same, similar or different) from a web-based store (same, similar or different) [5], which indicates that people will have largely dependence on collecting second-hand information. Therefore, perceived effectiveness of provider recommendations serves to migrate the role of customer's satisfaction inherent in the process of trust transfer. This is a negatively moderating role

of PEPRs on the impact of his or her satisfaction with vendor on trust in vendor. Thus, it is proposed that:

H1: Perceived effectiveness of provider recommendations (PEPRs) negatively moderates the satisfaction - trust relationship in repurchase situation.

2.2 The Moderating Role of PEPRs Between Trust and Online Repurchase

Trust is a core factor of both initial purchase or repeat purchase because it can reduce worries of uncertainties and promote transaction success [14, 29]. When trustees fulfill trusters' expectation through their ability, credibility and benevolence, customers will be retained [3]. E-commerce platforms create a secure environment to assure trusting party's requirements of integrity by applying feedback mechanisms (e.g. PRs) [16], which boosts customers' trusting beliefs to form repurchase intentions. Previous studies also revealed that there are other factors at play in the relationship between trust in vendor and repurchase intention. Reference [18] demonstrated that consumers' trusting beliefs are more significantly influence their online purchase intentions when using online recommendation agents as an assistant tool for making purchase decision. At the same time, researchers have suggested that trust can be replenished by consumer's perception of information technology (e.g. recommendation system) within online environment [28]. Thus, we imply that perceived effectiveness of provider recommendations are essentially a leveraged play on trust - repurchase relationship. It is proposed that:

H2: Perceived effectiveness of provider recommendations (PEPRs) positively moderates the trust - repurchase intention relationship.

3 Research Method

We used all constructs from validated scales in the extant literature. To validate the instrument [29], we followed the guidelines on validation proposed by [30], and took the recommendations proposed by [23]. The adapted items contained words and sentences are adjusted to improve subjects' understanding [25]. This study measured them with 7-point Likert scales (1 = "strongly disagree"; 7 = "strongly agree"). A number of control variables incorporated into the research models to ensure the empirical results.

Data was collected by using online survey through a top research institution (sojump.com) in China. A total of 326 questionnaires distributed, 300 were returned for a response rate of 92.02 %. Then, we examine all surveys and dropped some surveys of same or contradictory answers, which resulted in 130 usable responses.

The PLS-SEM algorithm was used to estimate the path coefficients and other model parameters (e.g. internal consistency reliability, discriminant validity and so on) [22]. Path significance was determined by bootstrap technique. As a rule, 5000 bootstrapping samples contained 130 cases are recommended [12]. Moderating effects were modeled using the product indicator approach [7]. The method involves multiplying each (mean-centered) indicator of the predictors with each (mean-centered) indicator of the moderator variables.

4 Data Analysis and Results

To access the reliability (internal consistency reliability and indicator reliability), we examine composite reliability scores for every constructs and the indicator's outer loading [2, 6]. All composite reliabilities in Table 3, ranging from 0.87 to 0.94, are above the cutoff value of 0.70. Each indicator's loading on its respective factor exceed 0.70 (Table 2). These results are considered as good reliability. Convergent validity assessment builds on average variance extracted (AVE) values as the evaluation criterion that should be met the threshold value (> 0.50) [13]. Table 1 shows that the AVE of each construct are well above 0.50, satisfying this requirement, which demonstrate high levels of convergent validity. Discriminant validity is assessed by confirming (1) outer loadings, (2) cross loadings and (3) the relationship between inter-construct correlations and the square root of AVEs [6, 11]. First, items' outer laodings on their corresponding constructs (in Table 2) are greater than their cross loadings on any other constructs. Second, the square of AVEs of each construct are larger than their correlations among other constructs (as shown in Table 1). Therefore, these test results report adequate discriminant validity.

Table 1. Internal consistency reliability, correlations and the square root of AVE among constructs.

	ICR[a]	EX	FV	PEPRs	SP	SV	RI	TV	VR	WQ
Expertise (EX)	0.87	**0.79**[b]								
Familiarity with vendor (FV)	0.94	0.43	**0.91**							
PEPRs	0.92	0.42	0.51	**0.89**						
Satisfaction with online purchasing (SP)	0.88	0.52	0.54	0.53	**0.84**					
Satisfaction with vendor (SV)	0.89	0.46	0.56	0.55	0.59	**0.86**				
Repurchase intention (RI)	0.88	0.48	0.66	0.54	0.58	0.78	**0.84**			
Trust in vendor (TV)	0.91	0.60	0.53	0.62	0.70	0.76	0.67	**0.85**		
Vendor's reputation (VR)	0.94	0.45	0.65	0.53	0.52	0.74	0.75	0.70	**0.91**	
Website quality (WQ)	0.91	0.49	0.43	0.55	0.50	0.71	0.62	0.68	0.71	**0.82**

Note: [a] ICR is internal consistency reliabilities; [b] diagonal elements are the square roots of AVE.

Results of research model are shown in Fig. 2. The model explains 73.38 percent of variation in returning customers' trust in vendor and accounts for 56.47 percent of variation in repurchase intention. As hypothesized, exposed PEPRs negatively moderate the relationship between satisfaction with vendor and trust in vendor (H1: β = -0.204, t = 3.581, p = 0.000, two-tailed) and exposed PEPRs positively moderate the relationship between trust in vendor and repurchase intention (H2: β = 0.393, t = 2.805, p = 0.005, two-tailed). Figure 3 further illustrate these two moderating effects. At high levels of PEPRs, trust in vendor increases slowly when satisfaction with vendor increases and repurchase intention increases rapidly as trust in vendor

Table 2. Item loadings and cross loadings

Construct	Items	EX	FV	PEPRs	SP	SV	RI	TV	VR	WQ
Expertise (EX)	EX1	0.78	0.19	0.31	0.26	0.24	0.28	0.37	0.23	0.36
	EX2	0.87	0.35	0.33	0.42	0.36	0.40	0.46	0.33	0.35
	EX3	0.78	0.48	0.26	0.57	0.38	0.42	0.46	0.32	0.25
	EX4	0.74	0.29	0.45	0.36	0.43	0.39	0.58	0.52	0.59
Familiarity with vendor (FV)	FV1	0.35	0.90	0.41	0.50	0.52	0.64	0.49	0.57	0.38
	FV2	0.45	0.94	0.49	0.48	0.51	0.59	0.51	0.63	0.40
	FV3	0.38	0.90	0.49	0.51	0.50	0.57	0.45	0.58	0.40
PEPRs	PEPRs1	0.33	0.46	0.88	0.47	0.49	0.49	0.49	0.46	0.48
	PEPRs2	0.38	0.39	0.90	0.44	0.47	0.46	0.54	0.42	0.46
	PEPRs3	0.42	0.50	0.89	0.51	0.52	0.51	0.62	0.54	0.53
Satisfaction with Online purchasing (SP)	SP1	0.51	0.46	0.54	0.88	0.56	0.52	0.67	0.46	0.47
	SP2	0.43	0.45	0.41	0.88	0.55	0.49	0.60	0.43	0.41
	SP3	0.36	0.47	0.38	0.76	0.34	0.44	0.46	0.41	0.38
Satisfaction with vendor (SV)	SV1	0.37	0.45	0.49	0.56	0.88	0.65	0.68	0.64	0.66
	SV2	0.39	0.56	0.46	0.49	0.84	0.69	0.60	0.62	0.50
	SV3	0.41	0.45	0.47	0.45	0.85	0.67	0.67	0.63	0.65
Repurchase Intention (RI)	RI1	0.42	0.47	0.45	0.38	0.58	0.79	0.55	0.62	0.58
	RI3	0.47	0.61	0.53	0.54	0.72	0.91	0.63	0.67	0.54
	RI5	0.31	0.58	0.38	0.53	0.66	0.83	0.49	0.60	0.45
Trust in vendor (TV)	TV1	0.53	0.42	0.57	0.59	0.61	0.52	0.82	0.50	0.59
	TV2	0.46	0.45	0.53	0.60	0.72	0.60	0.90	0.68	0.63
	TV3	0.45	0.46	0.48	0.55	0.74	0.55	0.86	0.63	0.59
	TV4	0.61	0.47	0.52	0.63	0.51	0.60	0.80	0.54	0.50
Vendor's reputation (VR)	VR1	0.38	0.57	0.45	0.41	0.68	0.67	0.56	0.88	0.56
	VR2	0.41	0.59	0.51	0.50	0.67	0.70	0.70	0.92	0.68
	VR3	0.44	0.62	0.50	0.49	0.68	0.69	0.64	0.94	0.68
Website quality (WQ)	WQ1	0.44	0.22	0.50	0.35	0.58	0.45	0.55	0.55	0.82
	WQ2	0.48	0.35	0.43	0.44	0.57	0.49	0.55	0.56	0.84
	WQ3	0.39	0.22	0.43	0.32	0.56	0.41	0.52	0.57	0.85
	WQ4	0.40	0.46	0.42	0.42	0.56	0.56	0.56	0.57	0.78
	WQ5	0.30	0.46	0.47	0.50	0.63	0.61	0.60	0.62	0.79

increases. But the contrary is the case at low levels of PEPRs. Additionally, the main effects of PEPRs (PEPRs → trust; PEPRs → repurchase intention) are not significant ($\beta_1 = 0.117$, $t_1 = 1.544$; $\beta_2 = 0.120$, $t_2 = 1.247$). Nevertheless, satisfaction with vendor has a positive influence on trust in vendor ($\beta = 0.272$, $t = 2.801$, $p = 0.005$, two-tailed). Trust in vendor is also positively effected repurchase intention ($\beta = 0.444$, $t = 3.300$, $p = 0.001$, two-tailed). Moreover, two control variables, vendor's reputation ($\beta = 0.203$, $t = 2.051$, $p = 0.041$, two-tailed) and satisfaction with online purchasing ($\beta = 0.292$, $t = 4.154$, $p = 0.000$, two-tailed), have a significant influence on trust in vendor. Only one control variable, that is website quality, is found to be significant affecting repurchase intention ($\beta = 0.356$, $t = 3.361$, $p = 0.001$, two-tailed).

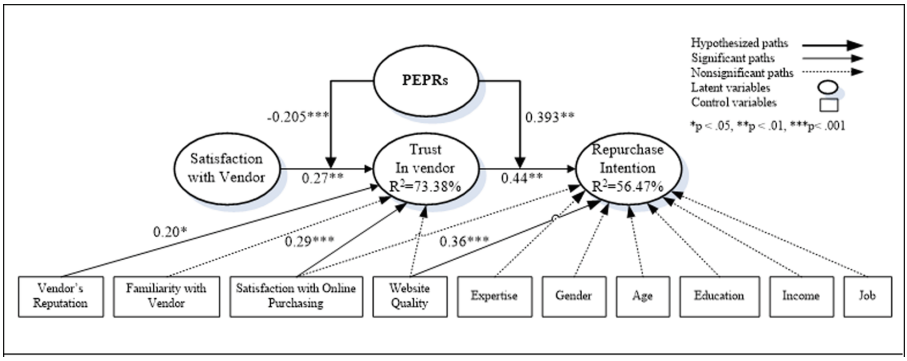

Fig. 2. Research model

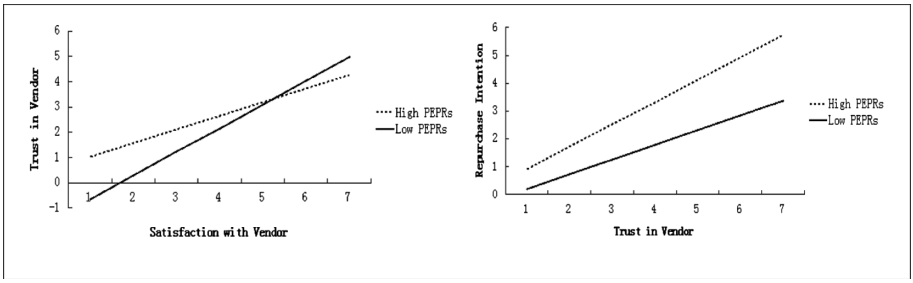

Fig. 3. The moderating effect of PEPRs

In order to evaluate whether the moderating effects of PEPRs have a substantive impact on endogenous variables (i.e. trust in vendor and repurchase intention), the change in R^2, f^2 effect size and F-test are examined [1, 4, 9]. When interaction term with PEPRs are added into Model 3, R^2 of trust in vendor increased by 2.08 % (F Change = 10.08, p = 0.002) and f^2 effect size is 0.10 that indicates a medium effect. Respectively, R^2 of repurchase intention increased by 7.1 % from Model 2 to Model 3 (F Change = 18.91, p = 0.000), indicating a medium effect (f^2 effect size = 0.12). Thus, the addition of interaction effects of PEPRs improved the explanatory power of the Model 3, which verifies the significance of moderating effects.

5 Discussion

5.1 Summary and Discussion of Results

How perceived effectiveness of provider recommendations (PEPRs) influence the casual link (satisfaction → trust → repurchase intention) have been put forward. We answer these questions by correspondingly verifying the moderating effects of PEPRs on the relationship between satisfaction and trust or the relationship between trust and repurchase intention.

Provider recommendations have different effects on the relationship between satisfaction, trust and repurchase intention. As hypothesized, PEPRs negatively moderates the satisfaction - trust relationship yet only PEPRs positively moderate the trust - repurchase intention relationship. These findings confirmed that not only PRs are the other source of trust production but also the impact of trust on repeat purchase intention have limitation under the specifying boundary condition. We hope that the research findings will be helpful to future studies and online vendors' operation.

5.2 Research and Practical Implication

This study range not only involves satisfaction and trust but also expands into repeat online purchase. In order to fully understand provider recommendations, we develop a new constructs, PEPRs. Additionally, we find that high level PEPRs can migrate the effect of satisfaction with vendor on trust in vendor. This finding reveals previous transaction experiences may not be the most important source of trust production. Higher perception of PEPRs positively moderate the relationship between trust and repurchase intention. It demonstrates that trusting beliefs transforming into repeat purchase intention will be limited in online trading environment. E-commerce platforms should perfect provider recommendations. They need make full use of back-end data to understand customers' preferences, buying habits. Then, they can accordingly segment and position customers. For the returning customers, their prior transaction experiences are not the only resource to produce trusting beliefs. Hence, online vendors ought to anticipate the strategic shift in expensive trust building toward sufficient information sources. Combining with the assessment of their customers' perceptions of PEPRs, they are able to design effective marketing strategies.

5.3 Limitations and Future Research Directions

As with any research, some potential limitations should be further studied in the future research. First, this study needs to be extend to more general areas that can be any e-commerce platforms or a wider range of individuals. Because a larger sample size will improve our statistical power to predict the significance of effects. Second, although a number of control variables are added into research model, we think that controlling for priority allocation of information in website would be helpful to validate the moderating role of PEPRs. Since some websites display provider recommendations prominently and some are the opposite, these features may not be equally effective influencing perceived effectiveness of PEPRs. Third, we only focus on repurchase intention and ignore investigating online repurchase behavior. Thus, an additional dependent variable, repeated purchase behavior, can be explored to enhance our model's persuasiveness.

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Appendix A

Table 3. Appendix A

Variables	Trust in vendor			Repurchase intention		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Control variables						
Vendor's reputation	0.30**	0.18	0.20*	–	–	–
Familiarity with vendor	−0.03	−0.06	−0.02	–	–	–
Satisfaction with online purchasing	0.37***	0.31***	0.29***	0.23	0.16	0.10
Website quality	0.21*	0.11	0.09	0.37***	0.29**	0.36***
Expertise	–	–	–	0.11	0.06	0.04
Gender	–	–	–	0.03	0.00	0.02
Age	–	–	–	0.03	0.01	0.01
Education	–	–	–	0.06	0.05	0.08
Income	–	–	–	-0.06	-0.05	-0.03
Job	–	–	–	0.03	0.01	0.06
PEPRs	0.17	0.15	0.12	0.18	0.13	0.12
Direct effects						
Satisfaction with vendor		0.32**	0.27**			
Trust in vendor					0.25*	0.44**
Interaction effects						
Satisfaction with vendor × PEPRs			-0.20***			
Trust in vendor × PEPRs						0.40**
R^2	69.23 %	72.75 %	74.83 %	52.02 %	53.80 %	60.18 %
R^2 Change	–	3.52 %	2.08 %	–	1.78 %	7.10 %
Model F	55.80***	54.73***	51.81***	14.46***	13.86***	16.21***
Model F Change	–	15.89***	10.08**	–	4.58*	18.91***
Effect Size (f^2)	–	0.13	0.10	–	0.04	0.12

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