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Impact of m-payments on purchase intention and customer satisfaction : perceived flow as mediator

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Abstract:

This study aims to observe the impact of m-payments on purchase intention and customer satisfaction by considering perceived flow as a mediator in the online shopping context of China. A theoretical stimulus-organism-response (S-O-R) framework was used in this study to explain the effect of m-payments on customer satisfaction and purchase intention. Primary data were collected by online questionnaires from 350 valid respondents, who purchased a product online via M-Payments system. The partial least square path modeling approach was used to test the structural model and measurements. This study showed that m-payments have an enormous impact on customer satisfaction and purchase intention. The findings of this study also showed that m-payments influence perceived flow, which, in turn, influences online shoppers' satisfaction and purchase intention. Findings of this study are practically significant for both marketers and customers. Because of usability, emotion, and security of m-payments system, marketers should accept m-payment as an easy payment tool that will lead to more profitability for organizations. Not only that but also customers can learn their behavior regarding online and mobile payment in the online shopping context. This study has significant implications in the field of online marketing, retailing and consumer behavior.

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Keywords: m-payment, perceived flow, customer satisfaction, purchase intention , china.

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Introduction

Mobile payment (m-payment) helps users to employ their mobile devices to conduct payment, transfer money and check balances. M-payment has freed customers from spatial and sequential constraints and provided great handiness to customers. This may encourage m-payment usage (Zhou, 2014) though, m-payment also associates with massive uncertainty and risk (Chandra et al., 2010). Mobile payment is a payment process that uses mobile devices to authorize, initiate and confirm a money transaction (Au and Kauffman, 2008; Dahlberg et al., 2015; Fan et al., 2018), has led to a disrupting revolt in our modern society and a deep economic and social impact on digital payment ecosystems. The technology of m-payment originated and introduced in the USA. In the modern age, m-payment has also developed echoingly in China. Nevertheless, the adoption rate of m-payment in the USA appears to be much lower than that in China (Fan et al., 2018). With high saturation in many countries, m-payment not only brings users convenience, but also help to make returns for companies and improves overall financial service standards of a country (Zhou, 2013; Phonthanukitithaworn et al., 2016). In 2016, the Financial Times, Britain, published that the size of third-party payment platforms in China, including WeChat and Alipay payment, was 50 times more than the American m-payment market. In addition, in 2017, statista.com also showed than, the value of transactions of m-payment amounts was 55 billion dollars in the USA and 138 billion dollars in China (the maximum in the world and almost triple of that in the USA). So we selected China as our research context and past research cannot identify the impact of m-payments on customer satisfaction and purchase intention that was the important gap of our study.

The past several years observed that the popularity of m-commerce applications including m-payment, such as online to offline (O2O) consumption, m-shopping (mobile shopping), mobile travel service, etc was increasing swiftly. The opulence of m-commerce deeply relies on the users acceptance of mobile payment (m-payment), conducted via mobile terminals, e.g. a personal digital assistant (PDA) or mobile phone (Yang et al., 2015). Presently, the vast potential market for m-payment has attracted various users and service providers in China to suggest m-payment services (Yang et al., 2015; Zhou, 2014) and m-payment can be considered as a vital online marketing tools (Hossain and Rahman, 2017). Also internet usages in Mobile device has been developing speedily in the world (Zhou, 2014). According to China Internet Network Information Center (CNNIC), In 2017 the number of mobile internet customers in China has exceeded 510 million, which was 80 percent of total internet population (637 million) in China (CNNIC, 2017). For the huge opportunities of mobile users market, various service providers have released a range of mobile services, such as mobile payment, mobile search, mobile instant messaging, and mobile games. As a crucial application of mobile business, m-payment has received significant attention from endeavors (Zhou, 2014). Such as Alipay, which is the largest internet payment service provider in China, has introduced its mobile payment service to users and Tencent, the biggest instant messaging organization in China, has also introduced WeChat payment system that can be used via mobile devices (Zhou, 2014). On the other hand, Telecommunication service providers for example ChinaMobile have introduced mobile payment products, that enable customers to buy cinema tickets and pay public bus fees through mobile phones (Zhou, 2014; Yang et al., 2015). Those organizations have recognized the mobile payment market opportunity and tried to gain advantages in the extreme competition. Many prior researches have noted that the new user acquiring cost is five times than retaining an existing customer (Reichheld and

Schefter, 2000). Many Service providers have implemented great resources and effort for acquiring new customers (Yang et al., 2015; Zhou, 2014). If they fail to retain existing customer, they are unable to recover costs and make profits (Zhou, 2014). Consequently, it is very critical to retain customers and assist their continuance usage. Due to the low switching cost, customers can effortlessly switch from one service provider to alternative service providers(Zhou, 2014). So m-payment service providers are trying to keep existing customers and also trying to attract new customers

literature review

The technology acceptance model (TAM) (Davis, 1989) is most commonly used to forecast the intentions of customer behavior to accept or adopt m-payment system(Wu el al.,2017). Perceived usefulness indicates customers' cognitive assessment of the dominance of m-payment (Wu el al.,2017). According to TAM, perceived usefulness is a crucial variable for assessing users acceptance and continuance intention of m-payments services (Schierz et al., 2010; Susanto et al., 2016). As online payment tools the concept of m-payments in Wu et al., 2017's framework has been adapted in this study, where m-payments as the product or project to be evaluated. In Wu et al., 2017's framework, Usefulness indicates the degree to accomplish customer's intended purpose. It is calculated by the product's functionality and usability (Lu and Yeung, 1998). Functionality, or utility of product or services, refers to a product's ability to perform tasks in the scrupulous way it was produced to – "Does it do what users need?" (Nielsen, 2012). Functionality of product's is habitually referred to as the "ease-of-use and joy-of-use" of the product (Wechsun, 2014, p. 44). Both functionality and usability are imperative; they complement each other and, together, they establish whether the product is useful.

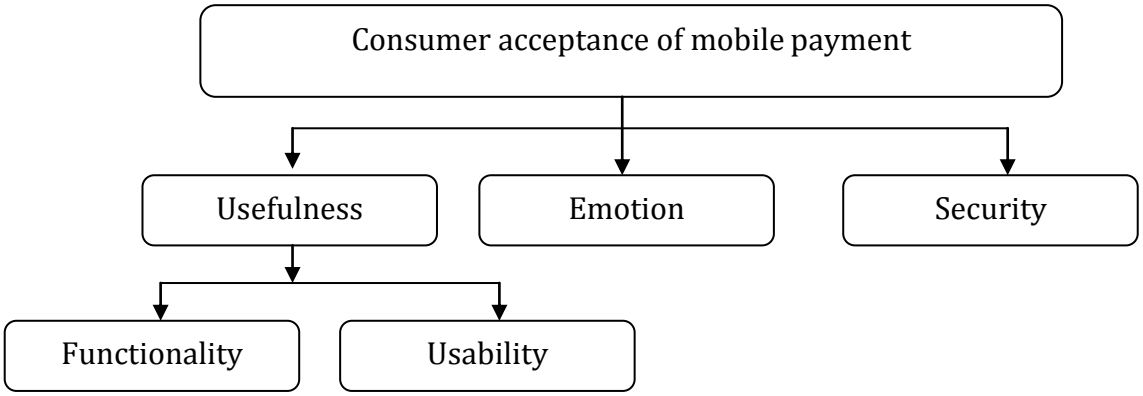

Figure: 2.
Source: Adapted from Wu et al., (2017)

Affect heuristic (Slovic et al., 2007) indicated, when users have positive emotional experience for using a technology, users are more probable to rate that technology as having little risk, and pay less awareness to its drawbacks (Finucane et al., 2000). Hong and Tam (2006) noted that positive emotion of users exerts indirect effects on behavior intention to accept technology such as m-payment via perceived usefulness. Wu et al. 2017, noted that consumer's positive emotion radically decreases users perception regarding risk and positively associated with perceived usefulness in m-payment. Usually, security is a set of

programs and procedures to authenticate the source of information and pledge privacy and the integrity of the information (Tsiakis and Sthephanides, 2005). With considers to m-payment, security can be classified into three areas. Those are systems security, transaction security, and legal. This is because m-payment can only be measured as confidential when all phases of the transaction process are capable to satisfy users' needs and customer's security expectations (Baddeley, 2004). In the context of internet, security indicates to the user's perception regarding payment mechanisms and means for information storing and transmission (Lim et al., 2006). That indicates to the aspects of technical and ensure integrity, authentication, confidentiality and non-recognition of associations. On this field, digital signature, encryption, and hash/ checksum algorithm are the main three basic security means used which ensure authentication, confidentiality and integrity (Flavian and Guinaliu, 2006). Sathye (1999) noted that security to be a noteworthy obstacle to usage of online banking, which affects the use of e-payment systems. There is a important association between consumers' perception and security toward e-payment system (Teoh et al., 2013).

Flow indicates a holistic feeling that user sense when they operate with total involvement (Csikszentmihalyi and Csikszentmihalyi, 1988). Hoffman and Novak (1996) indicated flow as a circumstances that is described by: a unspoiled responses sequence that facilitated by a loss of self-consciousness, intrinsic enjoyment, machine interactivity, and self-reinforcement. Flow can be described as a situation of finest psychological experience (Novak et al., 2000), or the most enjoyable occurrence possible when a user is unconsciously engaged in an activity because they become so engrossed that they lose their sense (Chung and Tan 2004; Hsu et al., 2012). Flow experiences usually come from a variety of activities, such as hobbies, writing, work, ritual activities, sports, artistic performances, shopping. In other words, the experience of concentration, curiosity, and enjoyment in an activity describes the experience of flow (Moon and Kim 2001). furthermore, also flow has been investigated in the context of information technology and has been considered as providing useful insights into consumer behavior (Novak et al. 2000; Hsu and Lu 2004; Ali, 2016). Past studies have indicated that satisfaction helps to create customer loyalty (Anderson and Srinivasan 2003), causes repurchase intention (Kim 2010), enhances positive word of mouth (WOM) recommendations (Bhattacherjee 2001), and increase company market share and profitability (Reichheld and Schefter 2000). Oliver (1997, p. 13) showed that satisfaction, is the "consumer's fulfilment response", and he further defined satisfaction as "the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with a consumer's prior feelings about the consumer experience". Anderson and Srinivasan (2003, p. 125) noted that "satisfaction may be best understood as an ongoing evaluation of the surprise inherent in a product acquisition and/or consumption experience." Cheung and Lee, 2005 noted that satisfaction is one of the momentous consumer outcomes in business-to-consumer online environments. Evanschitzky et al. (2004) suggested that in recent times, satisfaction can be considered as a construct has acquired amplified importance. Specifically, satisfaction is not only the major driver of consumers' online shopping continuance intention (Bhattacherjee, 2001; Lin and Ding, 2005), but also the key to building and keeping a loyal base of long-term customers (Evanschitzky et al., 2004). Along with customer satisfaction, also important to understand customers' purchase intention, since customers' behavior can usually be predicted by their intention. Zeithaml et al. (1996) indicated that purchase intention is one dimension of behavioral intention. To examine consumers' behavioral patterns, purchase intention has been used to predict actual behavior

(Ajzen and Fishbein, 1980) and the link has been empirically investigated in the hospitality and tourism businesses (Ajzen and Driver, 1992; Buttle and Bok, 1996). As Boulding et al. (1993) noted, the behavioral dimensions evaluated in the literature are actual purchase/repeat purchase behavior or purchase/repeat purchase intentions This study focuses on purchase intention as the crucial outcome variable.

Conceptual framework

This research implemented stimulus-organism-response (S-O-R) framework, that is displayed in figure- 1 (Eroglu et al., 2001; Hsu et al., 2012; Rosario-Raymundo, 2017). According to S-O-R framework, a stimulus is considered as an impact that can affect in the internal state of the users. The organism indicated the processes and considered as a mediator of relationship between the stimulus and response. The response signifies the final effect, such as consumer satisfaction and purchase intention or approach/avoidance behavior regarding specific product or service. Wu et al., 2017 noted that, in the smart shopping context, the usages number of m-payments is growing rapidly, because of the usefulness, emotion and security of m-payments. The stimulus is the usefulness, emotion and security of m-payments, as it affects the internal state of the customer. Additionally, Webster et al. (1993) described in their study that the perceived flow is a psychological state, which fluctuates with situational contexts and may be influenced by an individual's interaction with a situation (Ali, 2016). Accordingly, this study posits that the usefulness, emotion and security of m-payment (stimulus) positively influences customers' perceived flow (organism), which in turn may affect customers' satisfaction and purchase intention towards online shopping (response).

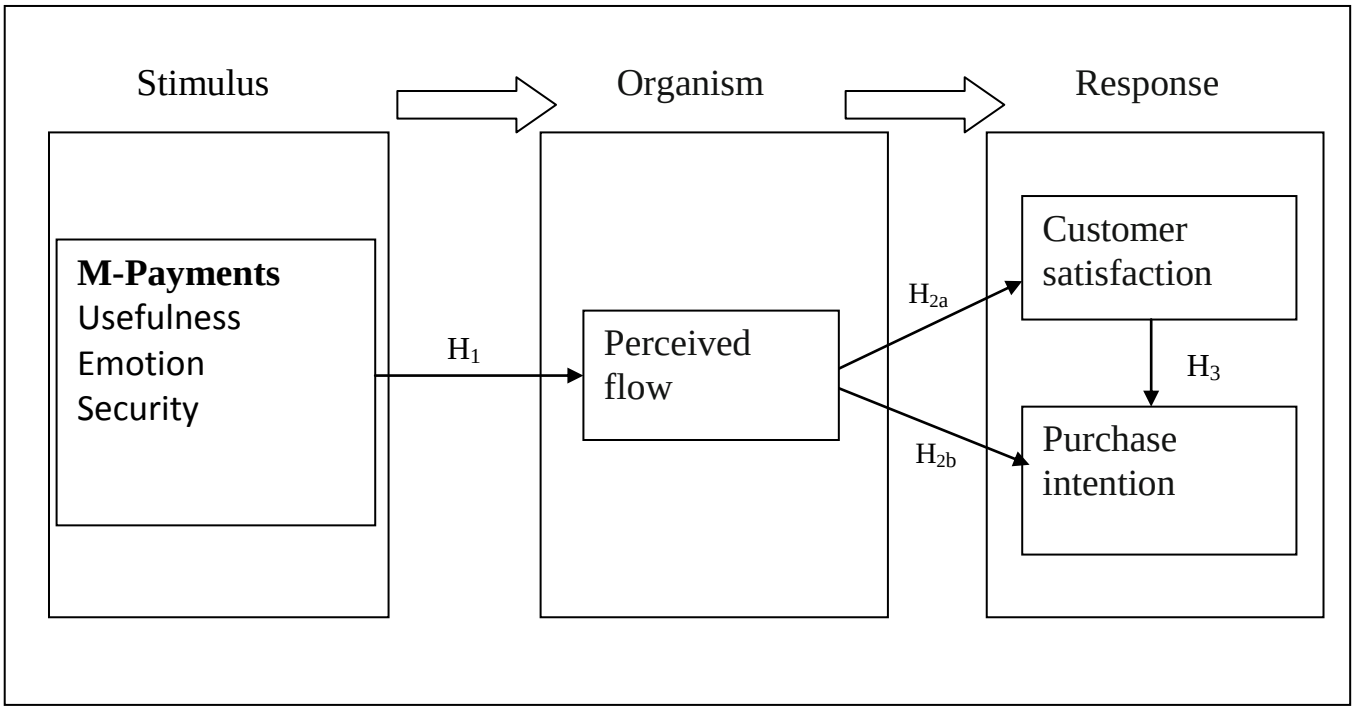

Figure 1.
Source: Adapted from Rosario-Raymundo (2017)

Hypothesis Development

Flow, usefulness, emotion and security

Flow has established attention in information systems research. Jung et al. (2009) noted that comfortable validity affects flow of mobile TV users'. Kim et al. (2013) integrated flow and TAM (technology acceptance model) to examine user adoption for online games. The m-payment has a significant effect on users' flow experience, which in turn, determines their loyalty. Additionally, without efficient system quality, provision of service quality is difficult which then diminishes online customer shopping experiences including flow (Rosario-Raymundo, 2017). Flow experiences usually come from a variety of activities, such as hobbies, writing, work, ritual activities, sports, artistic performances, shopping. In other words, the experience of concentration, curiosity, and enjoyment in an activity describes the experience of flow (Moon and Kim 2001). furthermore, also flow has been investigated in the context of information technology and has been considered as providing useful insights into consumer behavior (Novak et al. 2000; Hsu and Lu 2004; Ali, 2016). Thus, this study believes that positive perceptions of the usefulness, emotion and security of m-payments can delivered to the customers and help to engage their flow experience and enable customers to immerse themselves in their m-payment process. In the online context, positive perceptions of these three attributes (i.e. the usefulness, emotion and security of m-payments) must be delivered to or shared with the consumer by the marketer, to enable the consumers to be engaged and immersed with a m-payment system to achieve greater flow experience. The hypotheses thus are developed as follows:

H_{1a}: In the online shopping context, the usefulness of m-payments has a positive effect on perceived flow.

H_{1b}: In the online shopping context, the emotion of m-payments has a positive effect on perceived flow.

H_{1c}: In the online shopping context, the security of m-payments has a positive effect on perceived flow.

Perceived flow and customer satisfaction and purchase intention

Several prior studies have also indicated a strong association between online perceived flow and consequent online behaviors of customers (Chen et al., 1999; O'Cass and Carlson, 2010). Cyr et al. (2005) suggested that customers who feel positive perceived flow while shopping would be likely to consider return visits to the website or purchasing from it in the future. Past studies have indicated that satisfaction helps to create customer loyalty (Anderson and Srinivasan 2003), causes repurchase intention (Kim 2010), enhances positive word of mouth (WOM) recommendations (Bhattacherjee 2001), and increase company market share and profitability (Reichheld and Schefter 2000). Oliver (1997, p. 13) showed that satisfaction, is the "consumer's fulfilment response", and he further defined satisfaction as "the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with a consumer's prior feelings about the consumer experience". Anderson and Srinivasan (2003, p. 125) noted that "satisfaction may be best understood as an ongoing evaluation of the surprise inherent in a product acquisition and/or consumption experience." Cheung and Lee, 2005 noted that satisfaction is one of the momentous consumer outcomes in business-to-consumer online environments.

Based on the above discussion, hypotheses are made as follows:

H_{2a}: In the online shopping context, perceived flow positively affects customer satisfaction.
H_{2b}: In the online shopping context, perceived flow positively affects purchase intention.

Customer satisfaction and purchase intention

There is some observed confirmation for a positive association between customer satisfaction and purchase intention. Restated, in the online environment, If customers have received a satisfactory service from services provider are likely to show positive behavioral intention (Zeithaml et al., 1996), leading to increased future purchase intention. Yen and Gwinner (2003) indicated in a study that overall satisfaction of customer with internet self-service technologies (SST) has a positive impact on postive intentions, particularly on willingness to continue purchasing from the same service provider. Based on the foregoing discussion, the following hypothesis is raised:

H_3: In the online shopping context, customer satisfaction is positively associated with purchase intention.

Research methodology

Primary data were collected by online survery during January-February 2018 and targeted participants were Chinese consumers who had usage experience of WeChat, alipay and any other M-payment systems. M-payment were measured by using three dimensions such as usefulness, emotion and security, with four items for each (Wu et al., 2017; Wang et al., 2015). Three items of perceived flow was adapted from past researches (Novak et al., 2003; Hsu et al., 2012), while satisfaction and purchase intentions were also customized using three items each (Chen and Barnes, 2007; Ali, 2016). A quantitative research method was adopted to empirically test the proposed model (Figure 1) and associated hypotheses. Table 1 showed the respondents' demographic profile. A five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5) (Ali, 2016), was used for all the questions. Prior to the main data collection, a pre-test (N = 20) and pilot test (N = 45) were conducted. Based on the pre-test and pilot-test results, a few modifications were made to the original statements used in the questionnaire. Online link of the survey has been sent to a total of 2,500 potential respondents and also repeatedly shared on various social sites, such as WeChat, Imo, for encouraging more responses. From both those sources, a total of 350 respondents were retained and used for data analysis because they had enough experience on m-payment. Among the 350 respondents, 44.86% were male and 55.14 % were female, the most common age for the respondents was 26 to 35; the most common education level was Graduate school or above; most respondents were used 2 m-payment software in their mobile and the most common occupation was not currently employed. Once finalized, the data set was subjected to a nonresponse bias analysis using wave analysis (Ali, 2016).

Table: 1- Demographic profile of respondent

Variables	Number	Percentage (%)
Gender		
Male	157	44.86
Female	193	55.14
Age		
18-25	122	34.85
26-35	135	38.57
36-45	85	24.29
above 45	8	2.29

Education level		
High school or below	42	12
College	98	28
Graduate school or above	210	60
Occupation		
Public servant	85	24.28
Business	66	18.86
Not currently employed (e.g. student, retired, housewife)	199	56.86
Length of internet experience		
1-3 Years	143	40.86
4-6 Years	101	28.85
6-8 Years	63	18
Above 8 years	43	12.29
Number of m-payment software currently used by user		
1	40	11.44
2	250	71.42
above 2	60	17.14
Hours spent on the internet in a week		
0-3	28	8
4-8	49	14
9-12	101	28.86
Above 12	172	49.14

Measurement items

Table: 2 Factor loading, Composite reliability and Average variance extracted.

Variables	Factor loadings	Composite reliability (CR)	Average variance extracted (AVE)
Usefulness		0.72	0.61
Very easy to use	0.82		
Easily connect with shopping site	0.72		
Effective for online purchasing	0.76		
User-centered design from the user perspective	0.77		
Emotion		0.85	0.72
is funny	0.83		
is enjoyable	0.75		
is pleasant	0.74		
is exciting	0.77		
Security		0.83	0.79
Privacy policy relating to customers' personal data	0.74		

Information of secured online payments system	0.67		
Information of third-party recognition	0.69		
payment transaction will be secure	0.72		
Perceived flow	0.85	0.75	
I felt totally captivated while using the m-payments system	0.73		
Time seemed to pass very quickly while using the m-payment	0.72		
Nothing seemed to matter to me while using the m-payment	0.75		
Customer satisfaction	0.82		
I was very satisfied while using the m-payments system	0.68		
I have a positive attitude toward m-payments for shopping	0.74		
My interaction with the m-payments system was very satisfying	0.81		
Purchase intention	0.87	0.69	
It is likely that I will transact with m-payments system in the near future.	0.78		
Given the chance, I intend to use m-payments system during shopping	0.74		
Given the chance, I predict that I shall use m-payments system in the near future.	0.82		

Convergent validity was tested for research model. That was examined through factor loadings, composite reliability (CR) and average variance extracted (AVE) (Hair et al., 2013; Ali, 2016). With the minority exceptions, all loadings of items exceeded the minimum recommended value of 0.7 as presented in Table 2 (Hair et al., 2013). AVE reflects the overall amount of variance in the indicators accounted for by the latent construct, also exceeded the minimum recommended value of 0.5 (Hair et al., 2013; Ali, 2016).

Table: 3 Squared intercorrelation among the constructs

		1	2	3	4	5	6
1	Usefulness	0.75					
2	Emotion	0.02	0.72				
3	Security	0.03	0.21	0.79			
4	Perceived flow	0.33	0.22	0.20	0.82		
5	Customer satisfaction	0.31	0.23	0.04	0.23	0.79	
6	Purchase intention	0.05	0.02	0.04	0.03	0.04	0.81

All correlations are significant at the 0.01 level

Table: 4 Direct, indirect and total effects—estimates

	Usefulness	Emotion	Security	Perceived flow	Customer satisfaction
Direct effects					
Perceived flow	0.273	0.170	0.345	-	-
Customer satisfaction	-	-	-	0.214	-
Purchase intention	-	-	-	0.113	0.226
Indirect effects					
Perceived flow	0.021	0.024	0.100	0.037	-
Customer satisfaction	0.027	0.020	0.121	0.022	-
Purchase intention	0.131	0.024	0.112	0.002	-
Total effect					
Perceived flow	0.294	0.194	0.445	0.037	-
Customer satisfaction	0.027	0.020	0.121	0.236	-
Purchase intention	0.131	0.024	0.112	0.115	0.226

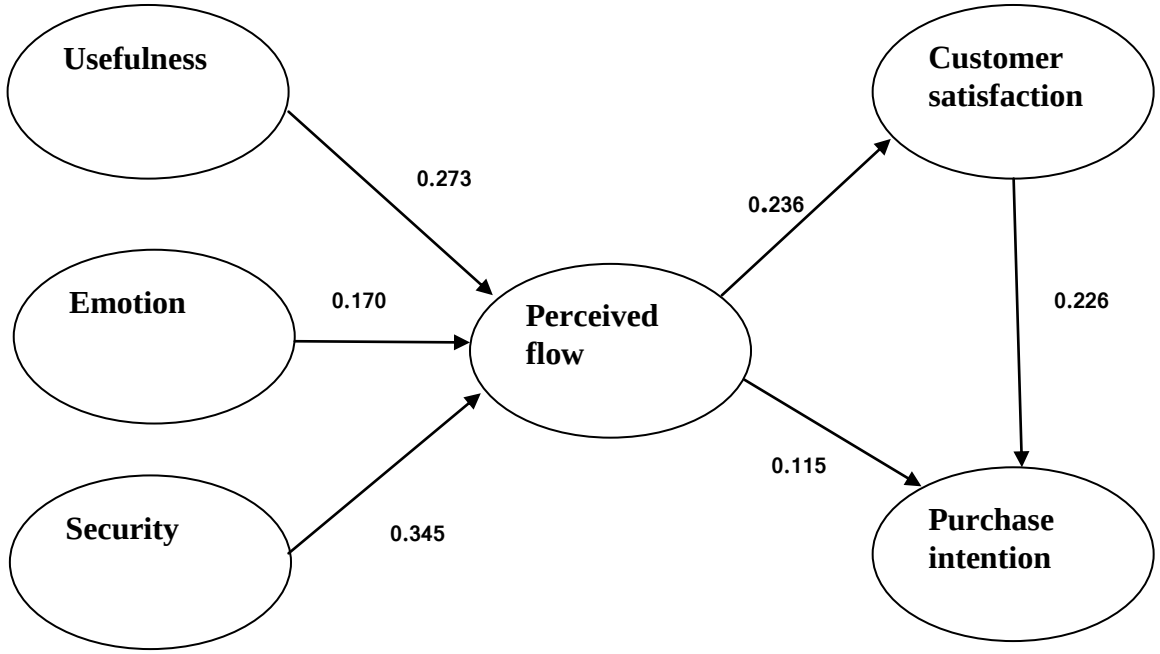

Figure 3 : Paths analysis

X^2 (chi square): 693.23; df (degrees of freedom): 534; GFI (goodness of fit index): 0.81; AGFI (adjusted goodness of fit index): 0.80; CFI (confirmatory fit index): 0.94; NFI (normed fit index): 0.93; NNFI (non-normed fit index): 0.94; IFI (incremental fit index): 0.95; RMSEA (root mean square error of approximation): 0.057.

Discussion

Structural equation modeling was used to examine the hypothesized relationships in the proposed research model. Figure 3 showed that the structural model yielded a Chi-square value of 693.23 with 534 degrees of freedom ($p < 0.001$). The ratio of the Chi-square and the degrees of freedom was 1.30, which was smaller than the recommended level of 5 (Bagozzi and Yi, 1988). A comparison of all fit indices, with their corresponding recommended values (Bagozzi and Yi 1988), indicated a good model fit (GFI = 0.81, AGFI = 0.80, CFI = 0.94, NFI = 0.93, RMSEA = 0.057), although the GFI value of 0.81 was at a marginal acceptance level (Etezadi-Amoli and Farhoomand, 1996). Figure 2 showed the structural model estimates, wherever the estimate parameters are standardized path coefficients and all coefficients of path were significant at the 95% confidence level. The analytical results presented in figure 3 showed that usefulness, emotion and security are positively associated with perceived flow, so H1a, H1b and H1c are supported. In the online shopping context, perceived flow is positively associated with customer satisfaction and purchase intention. H2a and H2b are supported and customer satisfaction is positively associated with purchase intention. From Figure 1, we got that m-payments' usefulness, emotion and security affect customer perceived flow and, in turn, their satisfaction and purchase intention in the online shopping context. This study found that m-payments' usefulness, emotion and security does have an impact on perceived flow, which then influences customer satisfaction and purchase intention. Table 4 showed that the total effects of the usefulness of m-payments on perceived flow, customer satisfaction and purchase intention was 0.294, 0.027 and 0.131 respectively. The total effect of emotion on perceived flow, customer satisfaction and purchase intention was 0.194, 0.020 and 0.024 respectively and the total effect of m-payments' security on perceived flow, customer satisfaction and purchase intention was 0.445, 0.121 and 0.112 respectively.

Conclusion

M-payments have great impact for both marketers and customers; they can increase sales because of their usefulness, emotion and security. This study supports the idea of the emotion and security of m-payments as shopping tools that can influence customers satisfaction and purchase intention. This study showed that m-payment are used for their usefulness, emotion and security, which influence the perceived flow, which then influences online shoppers' satisfaction and purchase intention, so online marketers should integrate their payment system with m-payments, that will influence customers' satisfaction and purchase intention. M-payment systems are very helpful for the marketer to influence customer satisfaction and purchase intention. Accepting m-payment will influence customers to purchase products and services. Because of usability, emotion, and security of m-payments system, marketers should accept m-payment as an easy payment tool that will lead to more profitability for organizations. Not only that but also customers can learn their behavior regarding their purchase intention through mobile payment in the online shopping context. This study has significant implications in the field of online marketing, retailing and consumer behavior.

Limitations and future study

The implications of this study are tempered by several limitations, which need to be considered in future research. This study was conducted in the context of online shopping in China, These findings may not be generalizable to geographic and technology bases (Country, Internet speed, Cost and human behavior) in online shopping contexts so further studies can

expand on our results by researching other contexts in another country. This study only used three dimensions of m-payments to operationalize the concepts of usefulness, emotion and security of m-payment. Conversely, there other important conceptualizations related to m-payments in the literature, such as information, service quality and system quality. Further studies may integrate these concepts in the online shopping context. Another limitation was that the sample was self-selected, so future studies could also test other possible ways of moderating the sample. Lastly, future studies may comprise diverse emotional components, such as perceived excitement, delight or enjoyment, in our proposed model to see their consequence on customers' satisfaction and purchase intentions.

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