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USAGE BEHAVIORS OF E-PAYMENT SERVICES BY CHINESE MILLENNIALS (GENERATION Y) AND ZOOMERS (GENERATION Z)

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Abstract

The purpose of this study is to examine factors influencing individual usage of e-payment in China. A conceptual model is proposed with six factors, including incentives, perceived usefulness, perceived ease of use, social influence, perceived risk, and perceived trust. The model is based in part on the technology acceptance model (TAM) and was tested on 428 respondents from urban China. E-payment usage was measured in three ways: usage frequencies, money spent via e-payment, and percent of monthly expenditure via e-payment. In addition, an average ranking was computed to create a composite measure of e-payment usage. Results suggest that ease of use and social influence are two major factors that affect all measures of e-payment usages. Working status and age are also found to be significant with most measures. The findings suggest a shift is occurring in younger generations in the motivators of technology adoption and use.

Keywords: E-Payment, China, Technology Acceptance Model, Theory of Reasoned Action, Incentives, Perceived Usefulness, Ease of Use, Social Influence, Perceived Risk, and Perceived Trust

Introduction

Based on government statistics, China has been the fastest-growing economy in the world since the 1980s, with an average annual growth rate of 10% since 1978. The GDP per capita of China went from \$1,753 in 2005 to \$10,062 in 2019 (World Bank Group). China has been transitioning from a state-dominated planned socialist economy to a mixed economy since the end of the Maoist period in 1978; such transformation required an intricate number of reforms in China's fiscal, financial, and legal systems and the aptitude for the government to respond to the unintended consequences of these changes flexibly (Krober, 2020; Naughton, 2007). Economic activity improves when goods and services are exchanged at a faster rate and in greater volume. A healthy economy occurs when business activity is profitable and reliable. One of the drivers of an enhanced economy is the ability to easily conduct business activities through the use of online services.

E-payment systems are steadily becoming a more critical component in the marketplace in today's business world due to their efficiency, convenience, and timeliness. E-

payment is a non-cash payment system that includes any financial transaction between a payer and a payee through an electronic medium; it includes credit cards and online or mobile-based third-party payment system (Chen et al., 2018; Kabir et al., 2015; Masihuddin et al., 2017). Examples of e-payment in China include AliPay, WeChat Pay, QQ Wallet, and Union Pay. This payment method is convenient for both the merchant and the consumer because it saves time, is (mostly) secure, and the electronic receipt from each transaction allows an easy track record. Consumers and merchants do not need any face-to-face interaction during an e-payment transaction, which is beneficial, especially in a time of pandemic.

In China, the transition to the adoption of e-payment services has seen some success. At the end of 2020, around 86% of internet users in China had used online payment services (Lai, 2021). However, it is estimated that internet penetration in China stands at about 46% (Saleh, 2021), meaning there are approximately 750 million adult Chinese who do not use online payment services. This study examines the reasons for the adoption of e-payment services in China. What are those factors which persuade or impel individuals to use such a service? In particular, this study looks at the younger generations, both Millennials, born between 1981 and 1996, and Generation Z, called Zoomers, born between 1996 and 2010. These two groups are critical in studying the use of this technology. Millennials were the first generation that grew up with technology, a distinction one study called “digital natives” (Calvo-Porrall et al., 2019, p. 231). They are the first life-long Internet and digital media users, and the most active and experienced generation for new technologies. Zoomers, who represent about one-third of the global population, present unique challenges for businesses (and for marketing), as they have less brand loyalty, prefer technology to direct contact, and are wedded to their smart phones. An understanding of the important factors in adoption/use is important to businesses and governments who wish to take advantage of e-payment efficiencies. With a goal of increasing individual participation, it will aid decision-makers in focusing efforts on those factors which are most appropriate. Given the importance of online payment services for economic growth, increasing participation in this and other technologies is an objective to which many organizations aspire. This study sheds light on the factors which promote e-payment adoption.

Literature Review

Not surprisingly, there are a plethora of extant studies on the adoption and use of e-payment technologies. Given its importance to businesses and other organizations, these studies have examined e-payment from a wide variety of aspects, including the technology itself (Al Farawn et al., 2020), its importance to businesses, and why users adopt and interact with the technology, which is the focus of this study. It has been examined in the context of culture, in particular the penetration of adoption/use in various countries in the world (Chen et al., 2018; Chen et al., 2020).

Despite this large number of studies, there is only a jumbled consensus on the factors involved in adopting e-payment technologies. Many studies use some of the same factors, but there are distinctions. There are multiple streams of theoretical research which provide the basis for explaining why adoption and use occurs. There are also conflicting findings among the studies. For example, in one study, an individual's perceived trust in e-payment systems significantly influenced adoption (Barkhordari et

al., 2017); in another, perceived trust was not significant (Ozkan et al., 2010). These issues suggest that further study would aid in unraveling the complex interaction between an individual and their adoption and use of technology.

Chen and colleagues (2018) define e-payment as the transfer of funds electronically from a payer to a payee through an e-payment platform that enables customers to access and manage their financial transactions through an electronic network. It is a system that provides monetary exchanges among purchasers and vendors online that is enabled by a digital financial system (Masihuddin et al., 2017). E-payment is a business transaction that takes place over telecommunication networks, such as the process of buying and selling goods, services, and information over the internet (Andrew, 2002). Three important concepts are identified: non-cash financial transactions, payer/ payee, and an e-payment platform (Chen et al., 2019; Jeffus et al., 2017; Kabir et al., 2015). In this study, we consider e-payment as a non-cash payment system that includes any financial transaction between a payer and a payee through an online or mobile-based third-party electronic medium.

Theoretical Background

Most studies that examine the adoption of any technology rely on the seminal work of Davis (1989) and his Technology Acceptance Model (TAM). TAM has been used to help identify the motivations of individuals to accept and adopt technology. The model holds that perceived ease of use (EU) and perceived usefulness (PU) are key factors in technology adoption. Perceived ease of use is the degree to which the user believes that using technology would be relatively free of effort. Perceived usefulness is the degree to which the user believes that using technology would enhance their daily life. Users are more likely to adopt and use technology when they perceive it easy to use and contributes to their lifestyle. TAM has a long history of extant studies in which both EU and PU significantly contributed to technology adoption and use.

The theoretical foundation provided by TAM is not the only research stream that attempts to clarify adoption behavior. The Theory of Reasoned Action (TRA) holds that attitudes and subjective norms influence an individual's rational decision to adopt (or intend to adopt) a behavior (Fishbein & Ajzen, 1975). Attitude is defined as a positive or negative feeling of an individual regarding performing the target behavior. Subjective norm is the influence significant others have on the decision; what the individual's social network thinks is important. Those with more positive attitudes toward the behavior and whose social network favors the behavior are more likely to adopt and use the technology.

Perceived trust and perceived risk have also been identified as predictors of adoption and use. Both have extensive research streams in human behavior, psychology, business, and other fields. Gefen and colleagues (2003) added perceived trust to TAM and found that trust significantly influenced perceived usefulness and intended use of online commerce interactions. Risk has long been negatively associated with adoption behavior. The riskier an individual perceives the technology interaction, the less likely adoption will occur. Risk aversive behavior has been found somewhat prevalent in third world nations (using Nigeria as the case study; Omotubora & Basu, 2018). Using the modified Unified Theory of Acceptance and Use of Technology (UTAUT2; Venkatesh et

al., 2012), Chopdar and associates (2018) added privacy and security risk to the model and found that both significantly influenced the use of mobile shopping applications in India; the same study found that risk influenced mobile shopping applications in the U.S. UTAUT2 also includes the construct price value, which measures the tradeoff between benefits and costs. Interestingly, in the Chopdar study, the same result was found as with risk: price value significantly predicted mobile shopping apps in India but not in the U.S.

In this study, we examine six factors that influence the use of e-payment technology in China. These factors include perceived ease of use, perceived usefulness, financial incentive, social influence, perceived risk, and perceived trust.

Hypotheses Development

Perceived Ease of Use (EU). As defined above, complex technology is less likely to be adopted than a user-friendly one. This has been a relatively common finding in many studies, including many of the studies already mentioned. This notion was supported by Rogers' theory of diffusion of innovation (1995), with complexity and compatibility influencing diffusion. Compatibility refers to the consistency of e-payment systems with the existing technology infrastructure of the firm, culture, values, and preferred work practices (Beatty et al., 2001). Complexity is the degree to which an innovation is perceived as relatively difficult to understand and to use (Rogers, 1995). In just two examples, EU significantly influenced mobile shopping applications in India (Chopdar et al., 2018) and e-payment usage in Cote d'Ivoire (Chen et al., 2018). A variety of other studies in non-Western countries also support this relationship: in India (Kallanmarthodi & Vaithyanathan, 2012; Roy & Sinha, 2014), in Nigeria (Gholami et al., 2010), and in Vietnam/Taiwan (Lin & Nguyen, 2011).

While perceived ease of use has generally influenced adoption, there have been some mixed results. In one study, it did not influence technology risk and trust in Iran (Barkhordari et al., 2017). It did not influence e-payment usage in a study of urban Chinese (Nadler et al., 2019), nor did it influence mobile shopping applications usage in the U.S. (Chopdar et al., 2018). These mixed findings suggest that perceived ease of use requires further study. Given the majority support, the following hypothesis is presented:

H1: Perceived ease of use (EU) is positively related to e-payment usage

Perceived Usefulness. Perceived usefulness (PU) is the degree to which a person believes that using a particular system would enhance his or her performance (Davis, 1989). For a user, an increase in performance can mean navigating tasks more effectively and efficiently. From a merchant perspective, usefulness provides benefits, such as faster transaction times, increased spending, and enhanced customer loyalty (Lai & Chuah, 2010). Other benefits of the e-payment system include cost savings, reduced processing of paper-based payments such as cash and checks, faster collection of funds, and enhanced inventory management (Mallat & Tuunainen, 2005).

At the consumer level, there are many studies in which PU motivates the adoption of technology in a variety of contexts. One study found that e-payment introduction could spur impulse purchases and increase the availability of products and services, and bring

new customers (Mallat and Tuunainen, 2008). Other studies found that usefulness significantly influenced internet applications (Gefen et al., 2003) and e-payments (Chen et al., 2018; Ozkan et al., 2010). Based on these findings, the following hypothesis is proposed:

H2: Perceived Usefulness (PU) is positively related to e-payment usage

Incentive. Similar to price value, monetary benefits are frequently used in e-payment technology promotion to attract and retain customers (Sierzchula et al., 2014). Agarwal and colleagues (2010) found that cashback rewards had a significantly positive impact on increasing credit card usage and spending. Carbó-Valverde and Liñares-Zegarra (2011) showed that financial incentives such as cashback, points, and discounts had a positive effect on promoting the use of credit cards instead of cash. Another study found that the availability of financial incentives had a positive effect on the intention to adopt mobile payments, and financial incentives indirectly affected intention through perceived risk (Zhao et al., 2019). The amount of financial incentives users can receive from reward programs is usually associated with the value of the transaction (Arango et al., 2015). This study will investigate the effect of the following financial incentives: discounts, coupons, cashback, membership points, gifts, and money certificates. A recent study conducted by Chen and colleagues (2020) in Japan found that incentives from merchants were important for young Japanese consumers. Given the support in the literature, the following is proposed:

H3: Incentive (INC) is positively related to e-payment usage

Social influence. The terms social influence and subjective norm are often used interchangeably in the literature. A keystone of the Theory of Reasoned Action, the influence of significant others can impact the adoption and use of technology (Ajzen & Fishbein, 1980; Gholami et al., 2010). Social influence is composed of informational and normative influence. Informational influence occurs when individuals accept information from others as evidence of reality. It is produced by the fact that inexperienced and prospective adopters and users sometimes lack self-experience and tend to depend on other's counsels and information before adopting an innovation (Md Jusoh & Teng, 2019). Normative influence prompts conformity to the expectations of others to achieve rewards or to avoid punishment (Ajzen & Fishbein, 1980; Bearden et al., 1989; Ma et al., 2012). It occurs when individuals believe significant others have accurate information. This situation may happen, for example, when we rely on authoritative figures such as a parent, a teacher, or an employer.

Past research finds that people generally mimic those behaviors that are accepted by those that they interact with or are significant to them in some way (Chen & Chang, 2013, Hofstede, 2001; Smith et al., 2011). In a study also using WeChat, the authors found that the influence of others (subjective norm) significantly influenced using the platform to share health information (Wu & Kuang, 2021). In social psychology, this influence is frequently seen as cognitive in nature, driven by subjective beliefs, perceptions, and expectations (Morris et al., 2015). The cognitive process includes compliance, identification, and internalization that affect people's technology adoption behavior (Graf-Vlachy et al., 2018, Kelman 1958).

Our model assesses social influence in terms of people who are important to the respondents, such as family, friends, and colleagues. In light of the noted literature, the following hypothesis is proposed:

H4: Social Influence (SI) is positively related to e-payment usage

Perceived Risk. Perceived risk refers to the degree of personal, financial, or transactional risk involved in an e-payment transaction. Lee (2009) found that perceived concerns negatively influence merchants' intention to adopt e-payment. Those perceived concerns include the perceived security and privacy risk, the financial risk, and uncertainties about benefits, costs, and utility of new technology. Perceived risk can also significantly influence individual users in their decision to adopt or use technology. Lower perceptions of risk have been found to be positively related to the intention to adopt e-payment systems (Teoh et al., 2013; Wang et al., 2003; Xin et al., 2015). A study conducted by Kaushal and Balaini (2016) found that perceptions of risk are a powerful explanatory factor in consumer behavior as individuals appear to be more motivated to avoid mistakes than to maximize purchasing benefits. While increased perceived risk is predicted to negatively influence usage, in our instrument risk is presented in a reversed format, so that less risk is associated with increased usage. Following this discussion, the following hypothesis is proposed:

H5: Less Perceived Risk (PR) is positively related to e-payment usage

Perceived Trust. Perceived trust in the online payment system is defined as consumers' belief that e-payment transactions will be processed following their expectations (Kallanmarthodi & Vaithyanathan, 2012). Gefen et al. (2003) defined trust as the willingness to depend on or to be vulnerable to another party based on their ability, benevolence, and integrity. Trust extends to technology as well; one study found that an individual's perceived trust significantly influenced intention to drive an autonomous vehicle (Hegner et al., 2019). Past studies show that trust was an important predictor of user's willingness to adopt e-payment or engage in online exchanges (Friedman et al., 2000; Gefen, 2000; Gefen et al., 2003; Wang et al., 2003). Consequently, the following hypothesis is proposed:

H6: Perceived Trust (PT) is positively related to e-payment usage

Research Methodology

Survey Instrument

This study collected 430 total responses from Chinese respondents in three urban areas. Two of the responses were incomplete, so this resulted in 428 usable responses. Respondents were selected based on a convenience sample and asked to fill out an online survey via Qualtrics. The sampling procedure was to send out the link of the survey instrument through WeChat, the most popular social networking site in China (Chen et al., 2019). With well over 1 billion users in China, this platform is used to share all types of information between users (Wu & Kuang, 2021). Because this is used by younger Chinese, the respondents were more likely to be Millennials or Zoomers. The constructs and questions used in this study were selected from the existing literature and listed in the Appendix. While the survey questions were originally written in English, they were translated to Mandarin by native-speaking college students,

faculty, and staff. The survey instrument was then pretested by a group of fluent bilingual college students for accuracy.

The survey instrument was comprised of three sections. Section I contained the six independent variables, which were derived from the work of Teoh et al. (2013). A few changes to the wording were judged necessary for better clarity. The most significant change from the Teoh et al. study is that we used a 7-point Likert scale rather than a 4-point scale. Section II included three dependent variables, all assessing the extent of e-payment usage. It included seven questions about whether the respondent used e-payment, the weekly frequency of e-payment usage, and the amount of money they generally spend each month using e-payment. Section III was composed of questions on demographics (e.g., age, gender, education level, working status, and student status).

Results

Respondent Demographics

Table 1 displays the demographic profiles of the study respondents. While most respondents answered all items, there were a few missing items (indicated in Table 1). The split between male and female respondents was 276 (64.5%) to 147 (34.3%). Of the total sample, 300 (70%) were under the age of 25. About 89% belonged to the Millennial/Zoomer generations. In terms of education, 264 (61.7%) of the 428 respondents reported that they completed a 4-year college degree. The findings show that 259 (60.5%) of the respondents worked either full or part-time, suggesting that they should have enough financial resources to engage in transactions and possibly use an e-payment system to facilitate those transactions. Of the respondents, 152 (35.5%) were either full-time or part-time students. In general, respondents were younger with a relatively high educational background.

Table 1: Demographic Information				
	Frequency	Percentage	Mean	S.D.
Gender			.65	.48
Female	147	34.3		
Male	276	64.5		
Missing	5	1.2		
Total	428	100.0		
Age			26.72	8.53
18-20	37	8.6		
21-25	263	61.4		
26-30	50	11.7		

31-35	25	5.8		
36-40	7	1.6		
41-45	9	2.1		
46-50	14	3.3		
51-55	17	4.0		
56-60	1	.2		
61 and over	1	.2		
Missing	4	.9		
Total	428	100.0		
Education			2.82	.75
High School	30	7.0		
2 Year Associate Degree	74	17.3		
4 Year College Degree	264	61.7		
Master's degree or +	56	13.1		
Missing	4	.9		
Total	428	100.0		
Working Status			.58	.48
Full Time	231	54.0		
Part-Time	28	6.5		
Do not work	163	38.1		
Missing	6	1.4		
Total	428	100.0		
Student Status			.36	.47
Full Time	142	33.2		
Part-Time	10	2.3		
Not a student	262	61.2		
Missing	14	3.3		
Total	428	100.0		

Construct Statistics

Descriptive statistics of the six major independent variables are provided in Table 2. Reliability for each scale is provided using Cronbach's alpha. Results show that all scales exceeded the .70 minimum recommended by Nunnally (1978). Means and standard deviations are provided. Ease of use had the highest mean of 6.28 (based on a 7-point Likert scale), followed by social influence (5.58) and perceived usefulness (5.41). Incentive, perceived trust, and perceived risk had relatively moderate means of 5.33, 5.11, and 4.71, respectively.

	# of Items	Alpha	Mean	S.D.	N
Perceived ease of use	6	.913	6.28	1.13	424
Perceived usefulness	8	.853	5.41	1.30	422
Incentive	6	.935	5.33	1.70	417
Social influence	4	.867	5.58	1.47	426
Perceived risk	5	.913	4.71	1.73	421
Perceived trust	7	.926	5.11	1.53	415

In this study, there were four dependent variables, all measuring some aspect of e-payment usage. We measure the e-payment from a view of 1) how often (frequency of usage), 2) how much (dollars/yuan spent every month), 3) how intense (proportion of monthly expenditure), and 4) an overall measure, which is a composite measure of average of the three previous ordinal measures. Table 3 provides descriptive statistics for e-payment usage.

The first measure of usage was frequency, or the number of times the respondent uses e-payment per week. The data revealed that 34.8% of the respondents used e-payment more than 31 times weekly. Using the mid-value of each group, we found on average, and respondents use 21.8 times e-payment weekly, or approximately thrice daily.

The second measure of usage was how much money respondents spent each month on e-payment transactions. It was found that 28.5% of the respondents spend between 1,201 and 2,500 yuan (about \$190 to \$390 USD) each month. On average, respondents spent 2,652 yuan (\$408 USD) with a standard deviation of 3,238 yuan (\$498 USD).

The third measure of usage was the percentage of monthly expenditure spent via e-payment. The study found that 67.1% of the respondents spent more than 71% of their monthly income using e-payment systems. On average, we found that respondents spent 69.5% of their income on e-payment systems transactions.

In addition to these three dependent variables, a fourth composite variable is included. Using the ordinal measures of the first three measures, we combined them into a composite usage measure, with a relatively high degree of reliability (alpha = .71). This

variable loosely represents the overall usage of e-payments. Based on three 1-7 Likert-scale measures, the mean for the composite usage variable was 6.54 with a standard deviation of 1.84.

Table 3: Descriptive Statistics For Dependent Variables				
	Frequencies	Percentage	Mean	S.D.
Frequency per week			21.87	11.76
0	4	.9		
1-5	44	10.3		
6-10	47	11.0		
11-15	48	11.2		
16-20	60	14.0		
21-25	34	7.9		
26-30	38	8.9		
31 and over	149	34.8		
Missing	4	.9		
Total	428	100.0		
Monthly spending*			2,652.01	3,238.03
0	6	1.4		
1-200	28	6.5		
201-400	26	6.1		
401-800	47	11.0		
801-1200	74	17.3		
1,201-2,500	122	28.5		
2,501-5,000	63	14.7		
5,001-8,000	33	7.7		
8,001-12,000	8	1.9		
12001 and over	17	4.0		
Missing	4	.9		
Total	424	100.0		

Percentage of Monthly Expenditure			69.46	27.23
0	6	1.4		
1%-10%	20	4.7		
11%-20%	19	4.4		
21%-30%	16	3.7		
31%-40%	8	1.9		
41%-50%	20	4.7		
51%-60%	25	5.8		
61%-70%	23	5.4		
71%-80%	82	19.2		
81%-90%	122	28.5		
91%-100%	83	19.4		
Missing	4	.9		
Total	428	100.0		
Composite Usage (average of all DVs)			6.54	1.84
* The Chinese currency RNB or yuan; the current exchange rate is about 1 USD = 6.43 RNB				

Relationships among Variables

The relationships between the variables in this study are presented in Table 4. Looking first at the usage dependent variables, there was a strong correlation between the composite usage variable and the three usage variables from which it is derived (as there must be). The three usage variables were significantly related to each other ($p < .01$ for all). All of the six independent variables were also significantly related to each other, all at the $p < .01$ level. This suggests evidence of some face validity among the constructs. These relationships will be further explored in hypothesis testing.

The demographic variables provided clarifying information, which in some respects is quite revealing. Demographic variables had few significant relationships with the six constructs of interest. There were three: gender was significantly related to perceived usefulness and perceived risk (both $p < .01$). Age was significantly related to ease of use (also $p < .01$). Women valued usefulness and less risk. Younger respondents found the ease of use more important than older respondents. This finding was contrary to expectations since the perception is that younger users of technology are more adept at meandering their way through interfaces.

The relationship between five demographics (age, gender, education, student status, employment status) and the four dependent variables of usage was also revealing. Half of all the relationships were significant, suggesting that one's status and state in life have some influence on their use of e-payment systems. For two of the variables, gender and student status, only one relationship was significant, and that was for the same usage variable of monthly income spent. Women spent more per month than did men, and non-students spent more per month than full or part-time students. But there was no statistically significant difference noted for women and students with respect to the other usage variables, frequency of e-payment use, percent of income spent, nor the composite usage construct. Education status had a significant relationship with the percentage of monthly income spent as well as the composite usage variable. The more educated a respondent was, the greater the percentage spent and the more likelihood to use an e-payment systems.

The two demographic variables with the most significant relationships were age and work status. Both of these had three significant relationships, including one with the composite usage variable. Employed respondents had greater usage (frequency) and spent more monthly income on e-payment transactions. This makes some sense, as employed respondents likely had more income. Three of the age relationships with usage were significant, in the negative direction. Younger respondents used e-payment more frequently and had a higher percentage of income devoted to this technology. Having "grown up" with such technology, it is more influential for younger Chinese. The one usage variable not significant with age was the amount of money spent per month using e-payment systems. This was an interesting finding because it was expected that this would be significant in the positive direction. That is, older respondents, likely with higher salaries, would spend more per month using e-payments. The fact that this was not significant tells us that all respondents, young and older, spent about the same per month.

Hypotheses Testing

Testing the hypotheses was done simply by using Pearson correlation analyses. Additional explanatory testing using regression analyses is discussed below. Table 5 provides a synopsis of the testing results. Each independent variable was examined in four tests because there were four dependent (usage) variables. Therefore, there were 24 tests, i.e., six constructs time four dependent variables. Of these 24, 9 were significant. This in itself is revealing; many of the proposed relationships between e-payment use motivators and actual use were not significant.

Three constructs were not significant at all for any of the four usage variables. The respondents were not motivated to use e-payment by monetary incentives, perceived usefulness, or perceived trust. All three of these constructs had relatively high means (average is 5.28 on a scale of 1-7), so respondents considered each of these relatively important. But this did not translate into meaningful relationships with actually using e-payment systems. Perceived risk was significantly related to only one usage variable, frequency of use ($p < .01$). Respondents used e-payments more when they perceived risk was lower. While this partially supports hypothesis H5, the other three measures of usage were not significantly related to risk. The frequency of use was significant, but the risk had little effect on how much money was spent using e-payments.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Use	1.0													
2. Frq.	.76**	1.0												
3. Spn	.59**	.36**	1.0											
4. %	.84**	.39**	.32**	1.0										
5. M/F	-.04	-.07	-.17**	.06	1.0									
6. Age	-.20**	-.16**	.05	-.23**	-.07	1.0								
7. Edu.	.10*	.07	.02	.11*	.08	-.18**	1.0							
8. Wk	.18**	.11*	.31**	.04	-.20**	.19**	-.14**	1.0						
9. Std.	-.09	-.02	-.29**	.03	.15**	-.33**	.21**	-.8**	1.0					
10. INC	.04	.03	-.03	.04	.09	-.06	.05	.03	.01	1.0				
11. PU	.05	.05	.02	.03	-.13**	.07	-.03	.00	-.00	.36**	1.0			
12. EU	.21**	.11*	.10*	.21**	.05	-.11*	.02	-.01	.02	.32**	.55**	1.0		
13. SI	.16**	.12*	.10*	.13**	-.06	.04	-.07	.02	-.05	.29**	.52**	.55**	1.0	
14. PR	.09	.16**	.06	-.01	-.14**	.08	-.06	.05	-.09	.15**	.43**	.33**	.44**	1.0
15. PT	.10	.08	.08	.03	-.06	.08	-.00	.06	-.07	.26**	.53**	.48**	.47**	.63**

1: Composite usage. 2-4: dependent variables. 5-9 demographic variables. Inc: incentive; PU: perceived usefulness; EU: perceived ease of use; SI: social influence; PR: perceived risk; PT: perceived trust

* p < 0.05 ** p < 0.01

This left two constructs that were significantly related to all four measures of usage. One was perceived ease of use; for respondents, it was important that the e-payment platform be simple and straightforward to use. Likewise, all respondents were influenced by significant others in using this technology. Both ease of use and social influences were the two constructs that most significantly influenced respondents to use e-payment.

Regression Analysis

There were five demographic variables, six independent constructs, and four dependent variables. Particularly with the six constructs, multicollinearity was evident. All of the correlations between the six were strong and significant. Therefore, a second exploration of the relationships between the variables was conducted. The relationships were tested using stepwise regression analysis. Because there were four dependent variables, there were four separate and independent tests to establish which of the independent variables were significant. For each of the dependent variables, all

independent variables were included: six constructs: incentives, perceived usefulness, perceived ease of use, social influence, perceived risk, and perceived trust, and five demographic variables: gender, age, education, work (work full or part-time), and if the respondent is a student. These analyses were carried using SPSS (version 27). Table 6 provides the results for the four analyses conducted.

	Usage (composite)	Frequency	Spending	% of Expenditure
PEOU	p < .01	p < .05	p < .05	p < .01
PU	NS	NS	NS	NS
Incentive	NS	NS	NS	NS
Social Influence	p < .01	p < .05	p < .05	p < .01
Perceived risk	NS	p < .01	NS	NS
Perceived trust	NS	NS	NS	NS

All four regression analyses were significant at the $p < .01$ level (F test); the models explained anywhere from 7% to 13.4% of the variability. The regression analyses revealed that four of the six constructs were not significant in any of the four tests. Incentives, perceived usefulness, perceived trust, and social influence did not significantly predict any of the four measures of usage. While the first three were also not significant in hypotheses testing, social influence was significant. Mirroring the hypothesis testing, perceived risk significantly influenced the frequency of e-payment usage. Perceived risk was only significant for the frequency dependent variable. The less the perceived risk, the more frequent the use. Only one of the six constructs was a significant predictor of more than one usage variable, and that was perceived ease of use. It was significant in money spent on e-payment use per month, percent of monthly income spent, and the composite usage variable. Similar to the hypothesis tests, ease of use established itself as the most important motivator of e-payment usage.

Interestingly, demographic variables explained more of the variability in the four models. Two were not significant for any of the four regression analyses: educational and student status. It did not matter whether a respondent was a student or how much schooling they had. Gender was the only demographic variable that was significant in only one of the four analyses, in which the dependent variable was the amount of money spent per month using e-payments. This was the same finding as to the correlational tests, with women spending more than men.

Two demographic variables were significant in three of the four regressions: age and employment status. Younger respondents used e-payment more frequently and spent a greater percentage of their income on it. Respondents who worked used it more frequently and spent more money monthly on it. Both age and employment status also

significantly predicted the composite usage variable. While these relationships were strong, they are not particularly surprising. Younger individuals are typically more tech-savvy and would use and rely on online payment options. Individuals who work are similar; with more income, it seems more likely that they will spend more, and the ease of e-paying is hard to resist.

Variables	Usage (composite)		Frequency		Spending		% of Income	
	β	t-value	B	t-value	β	t-value	β	t-value
(Constant)	5.75	9.04**	22.55	8.67**	-3.10	-0.003	68.703	7.17**
Gender					-689.34	-2.08*		
Age	-.05	-4.17**	-.30	-3.79**			-.732	-4.17**
Work	.87	4.58**	4.17	3.31**	2110.36	6.32**		
EU	.26	3.14**			296.96	2.08*	3.290	2.66**
Perceived risk			1.01	2.89**				
Model Test								
F	15.05**		9.78**		18.78**		13.67**	
R-Square	0.11		0.08		0.134		0.07	
All β s are unstandardized * $p < 0.05$ ** $p < 0.01$								

Discussion

The purpose of this study was to examine the factors that motivate individuals in China to use e-payment systems; of particular interest to this study were Millennials and Zoomers. From a business perspective, the advantages of using such systems are well documented. The easier it is to transfer cash to a business, the more likely it is to enhance profitability. It is also advantageous for the individual consumer in terms of ease and the ability to shop online. Despite the advantages, the adoption and use of this technology have been unsteady. Previous studies have identified some issues but also have had conflicting results. The study examines respondents in China rather than in the U.S. or western countries.

Six potential motivators of e-payment systems gleaned from the literature were included. We tested these six to examine their relationship with e-payment usage, using classical adoption/use models of Technology Acceptance and Theory of

Reasoned Behavior. Unlike the typical TAM/TRA, this study utilized actual e-payment usage, rather than intent to use, which can provide a more accurate assessment of the relationships involved. Usage was instantiated using four separate measures. These included frequency of e-payment use (weekly), amount of money spent per month, the percentage of income spent, and a composite measure derived from the other three. The six motivators used included perceived ease of use (EU), perceived usefulness (PU), incentives (monetary), social influence, perceived risk, and perceived trust. All six have been associated in extant studies with the adoption and use of e-payment technologies. To test the relationships, we both correlation and regression analyses were employed.

The findings in this study were somewhat surprising. Three of the six motivators were not significant for any of the four usage measures, including perceived usefulness, incentives, and perceived trust. Perceived risk was significant with only one usage variable, frequency of use. Only perceived ease of use and social influence were significantly associated with the four measures. In addition to the six constructs that may motivate Chinese users, the study found that age and employment status had a significant influence on usage behaviors. Younger people are more likely to use e-payment. Similarly, people with full-time employment are more likely to use e-payment system in China. Age and employment status were found to be associated with at least three out of four dependent measures. Gender was found to have a positive relationship with the monthly expenditure via e-payment. Females are more likely to spend more money than their male counterpart. Students spend less money via e-payment compared to non-students.

There are potential explanations for the lack of significant findings. Taken at face value, it seems that these respondents are not motivated to use e-payment technology because it is useful, or due to incentives, or because they trust the systems. One explanation is the generational one—this generation of respondents is different from previous ones. The last two global generations have grown up with technology. Generation Z (Zoomers) in particular are pretty accustomed to using an array of technologies. Millennials are also conversant with technology; one study found that their most important characteristic was being digitally literate (Onukwuba, 2020). Combined, they comprised 89% of the respondents in this study. Indeed, while this study focused on these two generations, this was a limitation in that other generations may have different usage behaviors. Respondents appear to take e-payment systems for granted.

Another interesting facet that may help explain these findings is the importance of significant others in the decision to adopt and use e-payment technologies. Social influence was significantly associated with all four measures of usage but was not significant in any of the four regression analyses. While family, peers, and others are important, the fact that this influence is significantly correlated with other constructs (PU, EU, etc.) lessens its effect. Venkatesh and Davis (2000) found that the influence of subjective norm (social influence) depends in part on whether usage behavior is voluntary or mandatory. Another study found that social influence does not influence perceived usefulness and behavioral intention to use financial services in a voluntary context (Gu et al., 2009). The use of e-payment systems in our respondents is most

likely voluntary, and therefore perhaps this is influencing the relationship between usage and other constructs, like usefulness and perceived risk and trust. These findings have some practical and theoretical implications.

Implications for Businesses and Organizations

The findings in this study of Chinese stress the importance of designing e-payment systems that are easy to use. Creating a simple interface is the single most important task a company can undertake to enhance e-payment usage. This is true of other organizations as well. If governments wish for citizens to pay recurring items online, saving employee time and effort in manning offices, then ensure the system is easy to use. If funds are to be spent on IT systems, spending it on e-payment technology with a focus on a simple user interface is important. This is especially true for younger, heavy users of this technology (Millennials and Zoomers).

Promoting and advertising efforts aimed at enhancing e-payment use are frequently done by both businesses and governments, and this study provides some clarity on areas on which to focus. In addition to promoting systems that are easy to use, organizations might focus on reaching individuals that are currently *less likely* to use this technology. Results show that younger individuals are heavy users, so efforts to reach an older population may bear fruit in increasing usage. Advertising targeting males, those with less education, and students are also potential ways to enhance usage. In reaching out to these groups, employing the results of this study, focus on ease of use, social interaction, and that these systems are safe (not much risk). It is probably not as helpful to focus on usefulness, system trust, or providing incentives.

Theoretical Implications

This study contributes to the evolution of e-payment adoption and usage research, using constructs from TAM and TRA and using China as its focus. It adds to the literature by introducing a model of six constructs and four separate usage measures. The findings clarify which constructs are motivators, and given the results, provide a parsimonious model. In particular, the finding that some of the constructs normally associated with e-payment use were not significant is noteworthy and provides a distinguishing contribution to extant literature. This may be a cultural phenomenon (Chinese). A similar study of Japanese e-payment users found that many predictors of usage were likewise not significant, including trust, security, self-efficacy, perceived quality, and even ease of use (Chen, et al., 2020). More study is needed to clarify the impact of culture on e-payment usage.

These results may suggest that the motivators of e-payment usage are changing from those established in the original TAM/TRA models. While culture may have an influence, it appears that there is also a significant generational aspect to such usage. In this population of Millennials and Zoomers, e-payment is ubiquitous, and the motivators of using it are different now. This study adds to the literature by proposing that most of the constructs of TAM and TRA are no longer significant motivators of usage for ubiquitous technologies. Ease of use is still critical, and social influence, but the other constructs are much less influential.

Limitations and Conclusion

The aim of this study was to examine the relationship between e-payment usage behaviors and motivators of such usage, in particular among Chinese Millennials and Zoomers. The motivators included perceived ease of use, perceived usefulness, incentives, social influence, perceived risk, and perceived trust. From the literature, each of these motivators was hypothesized to positively influence usage. The results were interesting in that half of the motivators were not significant (usefulness, incentives, and perceived trust), and only ease of use and social influence were significantly associated with each of the four measures of usage. These findings suggest that for these young Chinese respondents, the motivators typically found important in previous studies are changing. The potential generational effect may be one reason for these findings. Another potential issue may be culturally related. But given these findings, the motivators appear to be changing.

Additional research is needed to more closely examine the motivators of not only e-payment use but also the use by individuals of any digital transaction. We used six motivators, but only two were important in predicting usage. What might others be? This is a compelling question and deserves additional study. An interface that is simple and easy to use is important, which suggests that convenience may be critical. Given the importance of age and other demographics, how much does the impact of one's generation have on using such technology? How much does culture influence such behavior? This study examined Chinese, and similar findings were noted in a study of Japanese (Chen et al., 2020). But examining usage behavior from a cultural or pure generational aspect would be useful. Another potentially fruitful area of research is the use of e-payment from a merchant's perspective. Merchants and governments (and other organizations) have different objectives than do individuals.

Limitations

There were several limitations in this study. First and foremost, this was a convenience sample of mostly young, urban Chinese. While the sample size was not particularly small, the ability to generalize to other Chinese, much less citizens of other countries, is limited. There are likely differences between urban and rural Chinese, and even among urban Chinese from different urban areas. The study included six potential motivators; clearly, others might be included. Finally, this study did not examine the cultural influence inherent in the population studied. In order to generalize to other populations, cultural influence may be critical (Hofstede, 2001).

The global adoption and use of e-payment systems are growing among individuals everywhere. There are many advantages of using this technology, and an understanding of the motivators for individuals is important if businesses and governments wish to take advantage of it. This study adds to the growing collection of research that helps explicate the phenomenon of using online systems for monetary transactions. As organizations better understand the motivators of use, they will be better prepared to figure out ways to encourage and promote its practice.

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Appendix: Survey Items

Usage Measures (dependent variables)

Usage Frequency: How often do you use e-payment? Approximately ____ times **per week**.

Usage Money Spent per Month: Approximately how much money do you spend via e-payment **per month?** (in **RMB ¥**).

Usage Percentage: Approximately what percentage of your **monthly expenses** are paid via e-payment?

Composite Usage: average of the above three

Motivator Constructs (independent variables)

Perceived Ease of Use

EU1. My interactions with e-payment are smooth and understandable.

EU2. Interacting with e-payment does not require a lot of my mental effort.

EU3. I find e-payment to be easy to use.

EU4. I find it easy to get e-payment to do what I want it to do.

EU5. Learning to operate e-payment would be easy for me.

EU6. E-payment is easier than other channels.

Perceived Usefulness

PU1. E-payment makes it easier for me to conduct my financial transactions.

PU2. E-payment gives me greater control over my financial activities.

PU3. E-payment allows me to manage my finances more efficiently.

PU4. E-payment is a convenient way to manage my financial activities.

PU5. E-payment is more user friendly than other existing channels.

PU6. E-payment eliminates time constraints; thus, I can use it at any time I like.

PU7. E-payment eliminates geographic limitations and increases flexibility in mobility at any place that has internet connection.

PU8. I find e-payment is very useful in my daily life.

Incentive

When deciding to use e-payment, how important are the following **incentives** to you?

INC1. Discounts

INC2. Coupons

INC3. Cashback

INC4. Membership points

INC5. Gifts

INC6. Money certificate

Social Influence

SI1. People who influence my behavior think that I should use e-payment systems.

SI2. People who are important to me think that I should use e-payment system.

SI3. Most people around me should use e-payment.

SI4. The people I respect think I should use e-payment

Perceived Risk

PR1. The risk of an unauthorized third party viewing the payment is low.

PR2. The risk of abuse of my personal information is low.

PR3. The risk of losing money is low.

PR4. I am confident about the security of e-payment.

PR5. Advances in internet security make e-payment safe.

Perceived Trust

PT1. I trust financial institutions that facilitate e-payment.

PT2. I trust providers that handle the technical aspects of e-payment.

PT3. Companies that use e-payment are trustworthy.

PT4. Companies that use e-payment are honest.

PT5. Companies that use e-payment are responsible.

PT6. In general, I trust e-payment systems.

PT7. In general, I don't trust e-payment systems. (reverse scored)