Factors Influencing the Consumers Adoption of E-commerce in the Agricultural Market

Wong Chee Hoo, An Pei Pei, Wong Fock Keong, Kumarashvari Subramaniam

Faculty of Business, Communication & Law, INTI International University, Persiaran Perdana BBH, Putra Nilai, 71800, Nilai, Negeri Sembilan, Malaysia.
Email: cheehoo.wong@newinti.edu.my

Abstract
In China, the agriculture economy accounts for 7.2% of the national economy, and the farmer population is about 260 million, agricultural modernization has made significant progress, but its agricultural market has encountered some problems. This research aims to determine the key factors that influence the adoption of e-commerce on agricultural trades in He Nan, China. According to Innovation Diffusion Theory (IDT), the researcher found that many factors significantly affect the consumer's intention to use e-commerce as the dependent variable. Therefore, these factors will be adopted as independent variables in this research: perceived usefulness, ease of use, compatibility, trialability, perceived risks, and reliability. The research was conducted using a convenient sampling under non-probability sampling to save time and cost. A total of 384 completed online questionnaires were collected among consumers in He Nan. Simple regression analysis showed that all factors, namely the perceived usefulness, perceived ease of use, compatibility trialability, perceived risks and reliability, could significantly influence the adoption of agriculture e-commerce in He Nan, China. Thus, policymakers would need to facilitate these factors to speed up the adoption of e-commerce in the agriculture sector.
Keywords: Innovation Diffusion Theory, E-commerce, Agriculture, He Nan.

Introduction
In recent years, the most obvious problem of the agricultural economy is that the backlog of agricultural products has become more and more common. In just one year in 2018, hundreds of inefficient sales incidents happened among 15 regions in China, like He Nan, Shan Dong, Jiang Xi and so on (Jie, 2018). Due to the incomplete information in the agriculture market, the farmer has a lack of understanding of what the consumers demand in a certain session. Hence, the farmer's supply cannot meet consumer's demand in the market, which posts structural imbalances between supply and demand. At the same time, the unreasonable market supply has put a negative impact on the normal fluctuations of goods prices in the

agricultural product trading market, which causes a market surplus of a single product like apple, potato or tomato. And this over floating prices posts unaffordable risks for farmers to get enough return.

The rise of e-commerce has provided a good opportunity to solve the problems of the above agricultural products market, but at the same time, people's intention to purchase agricultural products online has been affected by many factors in form of perceived usefulness, ease of use, compatibility, trialability, perceived risks and reliability. He Nan market, it is common to see the adoption of e-commerce in other fields like catering, tourism industry. However, consumers and agricultural producers both use rarely e-commerce platforms to conduct businesses of agricultural products. This research will try to identify which factors are influencing the adoption of agriculture e-commerce platforms among consumers in He Nan market.

Literature Review
Intention to Adopt
According to Zaremohzzabieh (2016), the intention toward the adoption of a particular system has influenced positively by perceived usefulness (PU) and perceived ease of use (PEoU), and PU is effected significantly by PEoU factors. Assumed that a user has to spend more hours or money to learn a new system, they perceive negatively the usefulness and even feel useless.

Ease of Use
Prior research (Lin & Chen, 2017) that PU (perceived usefulness) has influenced positively on the tourist's intention to adopt a reality Tour-sharing Application. Nabhani's study (2016) states that farmers in Southern East Java, Indonesia are more favourable to use mobile broadband when this technology shows its usefulness in agricultural transactions.

Compatibility
According to Rogers (2003), compatibility is defined as the extent to which an innovation is perceived to be compatible with existing values, prior experiences and current demands of the potential users. The study by Mallat (2007) found mobile ticketing is much more convenient for users to buy many kinds of tickets at any time, which is popular and compatible to satisfy the consumer's practical need.

Triability
According to Rogers (2003), trialability is the important component of diffusion of innovation, which is that the extent to which an innovation can be available to have experimented on a limited basis Rogers (2003) stated that if potential users had an opportunity to trial with any innovations before practical adoption, those users would feel more comfortable with the innovations they adopted (Alam, 2018).

Risk
Tho (2017) has stated that risks can be regarded as a multi-dimension combination or mix consisting of psychological & physical, financial, social or time cost. According to Biucky (2017), this study indicates that social risk will be taken into account when people develop social business by utilizing their social network. Also, the research (Alalwan, 2017) mentions that perceived risk is a crucial component in testing innovations.

Reliability

Sila (2013) has stated that network reliability has a positively significant relationship with firms' decision to adopt B2B EC. Besides that, Shareef (2014), which is relevant about customer behaviour in mobile health care service, has proved that customers show a positive attitude to use ICT-driven service after ensuring the perceived reliability of this technology.
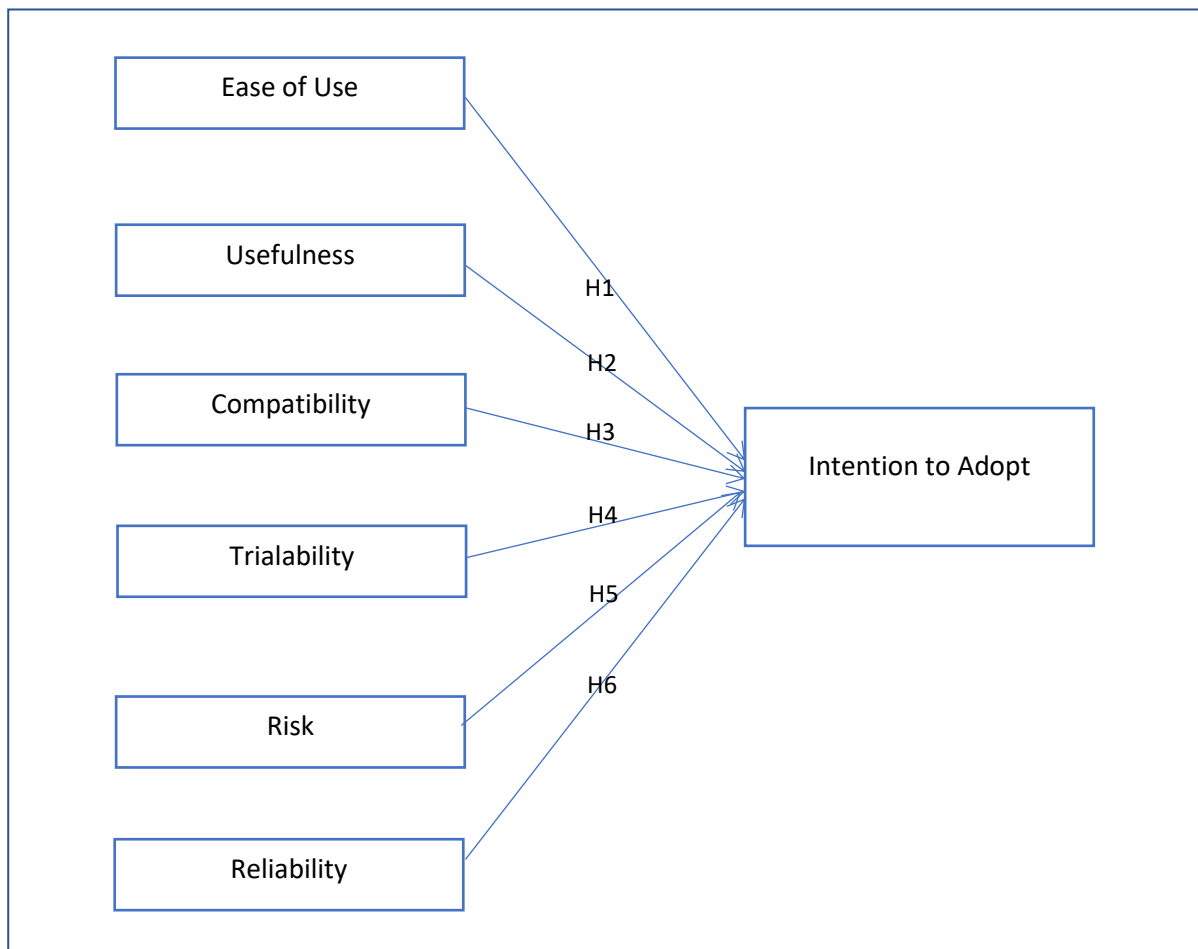
Below is the research framework for this study.

Figure: Research Framework

Methodology

The study will be conducted with convenient sampling to collect data, in which case researchers can effectively collect valid information. Besides, the research population is defined as urban network consumers in Henan Province, China. The population of Henan Province is around 100 million. Due to subjective constraints like labour and time factors, it is not easy to survey the entire population in this agriculture province. By this case, the recommended sample size could be designed as 384 based on a 5% error margin and a 95% confidence level. Therefore, the investigator will distribute 400 questionnaires in the survey to collect valid information from agricultural e-commerce users. In this research, there were 400 questionnaires distributed among urban consumers online and 16 sets were not completed, therefore, a total of 384 sets of valid data was employed for factor analysis.

This study aims to survey the extent which the urban consumers intend to adopt agriculture e-commerce, specifically, which factors will affect the intention of adoption by users. Therefore, those consumers who can use mobile applications or online website will be mainly targeted respondents, especially, female consumers. There are two reasons for the chosen respondents that the people who could use the mobile apps understand more profoundly those influencing using factors. The other factor is that in Chinese custom, the female is the main purchaser of agriculture product in a family, who helps to narrow down the scope of this study.

Results and Discussion

The hypotheses were tested using the simple regression analysis ad the results were depicted by the following tables:

Table 1
Ease of Use and Adoption

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.058	.150		13.710	.000
	EUM	.554	.040	.580	13.927	.000

a. Dependent Variable: AM1

Table 2
Usefulness and Adoption

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.708	.173		4.083	.000
	UM	.830	.042	.712	19.835	.000

a. Dependent Variable: AM1

Table 3
Compatibility and Adoption

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.944	.193		4.882	.000
	CM	.772	.047	.646	16.525	.000

a. Dependent Variable: AM1

Table 4
Trialabilty and Adoption
Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.176	.173		6.812	.000
	TM	.733	.043	.661	17.194	.000

a. Dependent Variable: AM1

Table 5
Risk and Adoption
Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.979	.173		5.668	.000
	RM	.772	.042	.684	18.336	.000

a. Dependent Variable: AM1

Table 6
Reliability and Adoption
Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.897	.166		11.433	.000
	PRM	.566	.042	.570	13.548	.000

a. Dependent Variable: AM1

The simple regression analysis is to test the regression coefficient between the single independent variable and dependent variable. Based on the table above, the perceived usefulness indicates the most significant relationship with the adoption, which posts the largest regression coefficient of 0.830, followed by the compatibility and perceived risk with the same coefficients of 0.772. The trialability also presents regression strength of 0.733, finally, the perceived ease of use and perceived risks witness the regression coefficients of under 0.6. Therefore, it can conclude that the perceived usefulness presents the strongest linear relationship with the dependent variable.

Table 7
Hypotheses testing

Hypotheses	t-test sig	Result
H1: Usefulness will influence the adoption of agriculture e-commerce by consumers in He Nan.	P < 0.05	Supported
H2: Ease of Use will influence the adoption of agriculture e-commerce by consumers in He Nan.	P < 0.05	Supported
H3: Compatibility will influence the adoption of agriculture e-commerce by consumers in He Nan.	P < 0.05	Supported
H4: Trialability will affect the adoption of agriculture e-commerce by consumers in He Nan.	P < 0.05	Supported
H5: Risk will affect the adoption of agriculture e-commerce by consumers in He Nan.	P < 0.05	Supported
H6: Reliability will influence the adoption of agriculture e-commerce by consumers in He Nan.	P < 0.05	Supported

From table 7 above, the outcome of significance level in this research indicates that the perceived usefulness has the highest positive influence on the adoption of the agriculture e-commerce by urban consumers in He Nan. In truth, it is identified as the most significant variable on the adoption of agriculture e-commerce because of the highest value of the regression coefficient. According to Cloete (2008), he stated that the perceived usefulness had the most significant influence with the intention to use an e-marketplace in South Africa.

When consumers experience the usefulness of agriculture e-commerce platforms that improve their life efficiency or convenience, they will express more intensive intention to use them in the future (Chinomona, 2013). To develop better the e-commerce economy in agriculture, the local government should encourage to formula the appropriate policies to the e-commerce companies. And those companies are supposed to provide more useful platforms, for example, increasing more accurate information agricultural products or presenting more promotions, to the urban consumers. As long as these e-commerce platforms show more useful or practical, the user will witness positive growth.

Conclusion
This study had successfully examined the factors affecting the adoption of agriculture e-commerce by consumers, contributing to valuable experience and implications. These factors confirmed to influence the adoption of agriculture e-commerce in He Nan are perceived usefulness, perceived ease of use, compatibility, trialability, risk and reliability provides a meaningful direction for further researchers. These factors could be further researched again to determine if they apply to other regions in China. More users adopting agriculture e-commerce would mean it is feasible to tackle the imbalanced distribution of agricultural products, which stimulate the vitality of the agriculture economy in the local market.

References

Alam, S. S., Omar, N. A., Ariffin, M., Azmi, A., Hashim, N., and Hazrul, N. M. (2018). Integrating TPB, TAM and DOI Theories: An Empirical Evidence for the Adoption of Mobile Banking among Customers in Klang Valley, Malaysia. *International Journal of Business & Management Science*, 8(2).

Alalwan, A. A., Dwivedi, Y. K., and Rana, N. P. (2017). Factors Influencing Adoption of Mobile Banking by Jordanian Bank Customers: Extending UTAUT2 with Trust. *International Journal of Information Management*, 37(3), pp.99-110

Biucky, S. T., Abdolvand, N., and Harandi, S. R. (2017). The Effects of Perceived Risk on Social Commerce Adoption Based on the Tam Model, *International Journal of Electronic Commerce Studies*, 8(2), pp. 124–147.

Cloete, E., and Doens, M. (2008). B2B E-marketplace Adoption in South African Agriculture, *Information Technology for Development*, 14(3), pp. 184–196. doi: 10.1002/itdj.20105

Chinomona, R. (2013). The Influence of Perceived Ease of Use and Perceived Usefulness on Trust and Intention to use Mobile Social Software: Technology and innovation, *African Journal for Physical Health Education, Recreation and Dance*, 19(2), pp.258-273.

Hou, J. (2018). Unsettled Inventory of Agricultural Products in 2018: It is difficult to sell in months and months, what is the way out? Viewed on August 8th, 2018.Available at: <http://www.shiwuzq.com/portal.php?mod=view&aid=1759>

Mallat, N. (2007). Exploring Consumer Adoption of Mobile Payments-A Qualitative Study. *The Journal of Strategic Information Systems*, 16(4), 413–432

Nabhani, I., Daryanto, A., Machfud, & Rifin, A. (2016). Mobile Broadband for the Farmers: A Case Study of Technology Adoption by Cocoa Farmers in Southern East Java, Indonesia, *Agris On-Line Papers in Economics & Informatics*, 8(2), pp. 111–120.

Rogers, E. M. (2003). Diffusion of Innovations. *New York, NY*: The Free Press.

Shareef, M. A., Kumar, V., Kumar, U. (2014). Predicting Mobile Health Adoption Behavior: A Demand Side Perspective. *Journal of Customer Behaviour*. 13(3):187–205.

Sila, I. (2013). Factors Affecting the Adoption of B2B e-commerce Technologies, *Electronic Commerce Research*, 13(2), p. 199.

Tho, N. X., Lai, M. T., and Yan, H. (2017). The Effect of Perceived Risk on Repurchase Intention and Word-of-Mouth in the Mobile Telecommunication Market: A Case Study from Vietnam. *International Business Research*, 10(3), pp.8-19.

Zaremohzzabieh, Z. (2016). Information and Communications Technology Acceptance by Youth Entrepreneurs in Rural Malaysian Communities: The Mediating Effects of Attitude and Entrepreneurial Intention, *Information Technology for Development*, 22(4), pp. 606–629.