Task technology fit in online transaction through apps

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Abstract

The purpose of this chapter is to examine what aspects of task-technology characteristics are more relevant to fit, satisfaction, and continuance intention of using apps in mobile banking transactions. Applying SEM approach to a sample of 250 Malaysians, the findings of this study imply that task characteristic of transaction-based apps is more relevant than technology characteristics. The results suggest that degree of fit is highly associated with mobile apps' user satisfaction. Furthermore, the higher the degree of fit, the higher is the continuance intention to use apps for online transactions. Surprisingly, the findings show that the task characteristics are not relevant to continuous intention to use apps for online transactions.

Keywords: Task technology fit, task characteristics, technology characteristics, mobile apps, online transactions

Introduction

Recent years, the rapid development of applications has evolved extensively and electronic devices are being smarter and smaller. Nowadays, companies are struggling to provide their services on the go through apps to not lag behind their competitors. Mobile application, as a new channel, has become the necessity for humanbeings (Rezaei *et al.*, 2017). Consumer orientation toward using the online banking has changed. Study by Sangle and Awasthi (2011) indicate that mobile banking is crucial after understanding the importance of the concurrent use of various channels of financial and banking companies. Customers prefer to do transactions, transfer funds, pay their bills, and see their statements on the go (Wannemacher and L'Hostis, 2015, Nikhashemi *et al.*, 2017), and they favor a 24/7 banking service.

Mobile banking is defined as the behaviour of making a financial transaction through mobile devices such as tablets and smartphones. Consumer behaviour has influenced increasingly by mobile banking (Taghavi-Fard and Torabi, 2010). Rahmani *et al.* (2012) indicate that wireless communication channel and affordable

Internet data plans by telecommunication providers let the customers to move toward mobile banking. Previous research shows that mobile banking allow banks to reduce their costs, stay competitive, and retend of customers (Laukkanen *et al.*, 2008).

Goodhue and Thompson (1995) claim that if the technology achieves a good fit, the performance will be greater fulfilling user needs. Task-technology fit will be higher when the functionality of technology fits the needs of customers. According to Lin and Wang (2006), customer satisfaction is the key element to determine the continuous intention of customers to use a technology. If the apps meet the consumer need, they will be satisfied and continue in using the apps (Rezaei and Valaei, 2017). Research is scarce on what aspects of task-technology fit impacts on satisfaction and continuance intention to use apps in mobile banking. However, this research tries to bridge this gap by answering the following question:

- What aspects of task-technology fit are more relevant to fit, satisfaction, and continuance intention of using apps in mobile banking transactions?

A brief literature review

Task-technology fit is a model used to determine the concepts of fit and utilisation. Task-technology fit theory focuses on the representation of problem and tasks which must have suitable fit to solve the problem. Task-technology fit is used to determine the intersection between a right technological tool and the performing task (Goodhue and Thompson, 1995). According to Goodhue and Thompson (1995), there are three key elements in Task-technology Fit model, where "task characteristics" and "technology characteristics" will fit together to form the "task-technology fit".

Task characteristics is defined as a behaviour performed by individuals to satisfy their information needs by changing inputs to outputs (Goodhue and Thompson, 1995). Relying on Schrier *et al.* (2010), a completion of a task is linked to the individual performance and the increasing of the task can enhance the effectiveness and efficiency.

H1: Task characteristic is positively related to level of fit in apps mobile banking.

According to task-technology fit theory, when the task fits the customers need and improves their performance, then the customers will adopt the information system (Gebauer *et al.*, 2010). Technology characteristics are the attributes of the tools users use when carrying out specific tasks and they include software, hardware and support services (Goodhue and Thompson, 1995). When technology is utilised, chances are that it has a good fit (Schrier *et al.*, 2010). However, it is likely that this scenario applies in apps channel as well.

H2: Technology characteristic is positively related to level of fit in apps mobile banking.

Customer satisfaction is the "fit" between the advantage of using a system and the need of customers (Goodhue, 1998). According to Goodhue (1998), satisfaction is the most appropriate way to measure the usefulness of systems. Furthermore, the most appropriate way to measure "task-technology fit" would be the feeling of users about the systems and how the system satisfaction meet the task needs (Goodhue, 1998).

Financial institutions are growing fast nowadays and they have transformed from traditional systems to more digital systems and the nature of a relationship between customers, products and services is a significant element of the banking industry (Mohsan *et al.*, 2011).

H3: There is a positive relationship between task characteristics and user satisfaction in apps mobile banking.

H4: There is a positive relationship between technology characteristics and user satisfaction in apps mobile banking.

H5: There is a positive relationship between fit and user satisfaction in apps mobile banking.

The evaluation of quality perceptions and services can determine the continuous usage of Internet by customers (Ribbink *et al.*, 2004). The success of the IT products and services depends on the continuous intention of individuals (Parthasarathy and Bhattacherjee, 1998, Karahanna *et al.*, 1999). Bhattacherjee (2001) indicates that while the expectation of the information system is satisfied, then the customers will continue using the information system. However, once customers have loyalty towards apps then they will continue to use mobile banking apps. Figure 1 schematically depics all the research hypotheses.

H6: There is a positive relationship between task characteristics and continuance intention of using apps in mobile banking.

H7: There is a positive relationship between technology characteristics and continuance intention of using apps in mobile banking.

H8: There is a positive relationship between fit and continuance intention of using apps in mobile banking.

H9: There is a positive relationship between satisfaction and continuance intention of using apps in mobile banking.

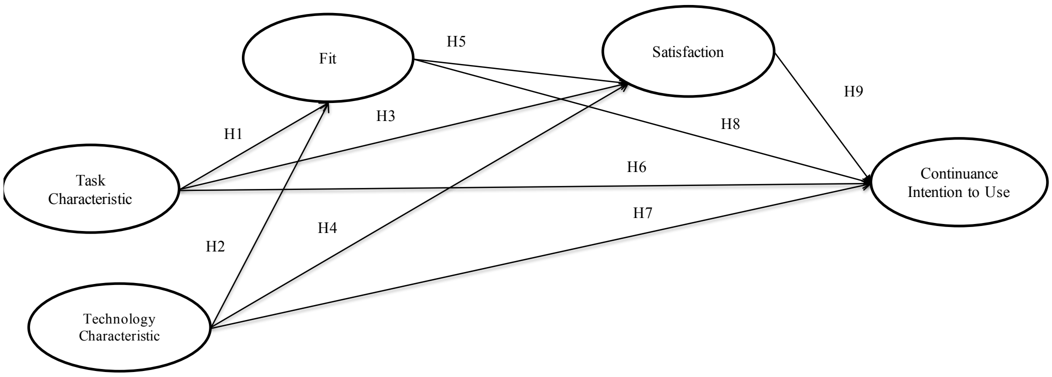

Figure 1: Research model

Methodology

This study uses convenience sampling approach and to measure the variables, measurement items are adopted from prior established researches as a methodological norm in measuring latent variables (Westland, 2015, Valaei *et al.*, 2017). Prior to data analysis, we applied several steps to ensure that any possible bias is avoided. For instance, Harman's one factor test (Podsakoff *et al.*, 2003) shows that there is no common method bias, as no single factor accounts for more than 50% of the total variance (the results of principal component analysis with no rotation showed a total variance of 45.3%). We addressed the missing values through expectation-maximization algorithm (EMA) (Little, 1988) applying SPSS software (Version 20). Finally, a-priori sample size calculator for structural equation models (Soper, 2015) showed that sample size of 250 is adequate, as the recommended minimum sample size for an anticipated effect size of 0.3 and desired statistical power of 0.95 is 223.

The questionnaire was developed from previous established studies as a methodological norm. Data is collected from university students to test the measurement and structural models using partial least squares (PLS), a variance-based structural equation modeling approach (Valaei and Jiroudi, 2016). A seven level

Likert scale was used within which 1 denotes "strongly disagree" and 7 denotes "strongly agree". Table 1 shows the sample information. To analyze the models, SmartPLS software version 3.2.4 (Ringle *et al.*, 2015) is used.

Table 1: Sample information (*N*= 250)

		Frequency	Percentage
Gender	Male	113	45.2
	Female	137	54.8
Age	18 – 24 years old	205	82.0
	25 – 34 years old	38	15.2
	35 – 44 years old	5	2.0
	45 – 54 years old	1	0.4
	55 – 64 years old	1	0.4
Race	Chinese	221	88.4
	Malay	8	3.2
	Indian	9	3.6
	Others	12	4.8
Monthly Expenses	Below 2000	187	74.8
	2001 - 4000	47	18.8
	4001 – 6000	9	3.6
	More than 6001	7	2.8

Results

Measurement model assessment

Before assessing the structural model, the researcher needs to ensure the validity and reliability of measurement model. To assess the measurement model, Cronbach's alpha, rho_A values, composite reliability, AVE (average variance extracted) and discriminant validity are examined. As tabulated in Table 2, all factor loadings are higher than the threshold of 0.7 and the AVEs are higher than 0.5. All values of rho_A (as a new measure of construct reliability), composite reliability, and Cronbach's alpha are acceptable (more than 0.7). Figure 2 schematically shows the measurement model within which the Task characteristic→ Continuance intention to use apps has the lowest path coefficient.

Table 2: Reliability and validity

Research Construct	Item	Loading	Rho_A	AVE	Composite Reliability	Cronbach Alpha
Task characteristics	**TaskCh1**	0.856	0.852	0.767	0.908	0.848
	TaskCh2	0.891				
	TaskCh3	0.880				
Technology characteristics	**TechCh1**	0.780	0.854	0.575	0.890	0.852
	TechCh2	0. 803				
	TechCh3	0.733				
	TechCh4	0.737				
	TechCh5	0.775				
	TechCh6	0.720				
Fit	**Fit1**	0.841	0.896	0.698	0.920	0.891
	Fit2	0.869				
	Fit3	0.771				
	Fit4	0.854				
	Fit5	0.838				
User satisfaction	**Sat1**	0.916	0.899	0.831	0.937	0.898
	Sat2	0.898				
	Sat3	0.921				
Continuance intention to use apps	**CI1**	0.914	0.900	0.831	0.936	0.898
	CI2	0.902				
	CI3	0.917				

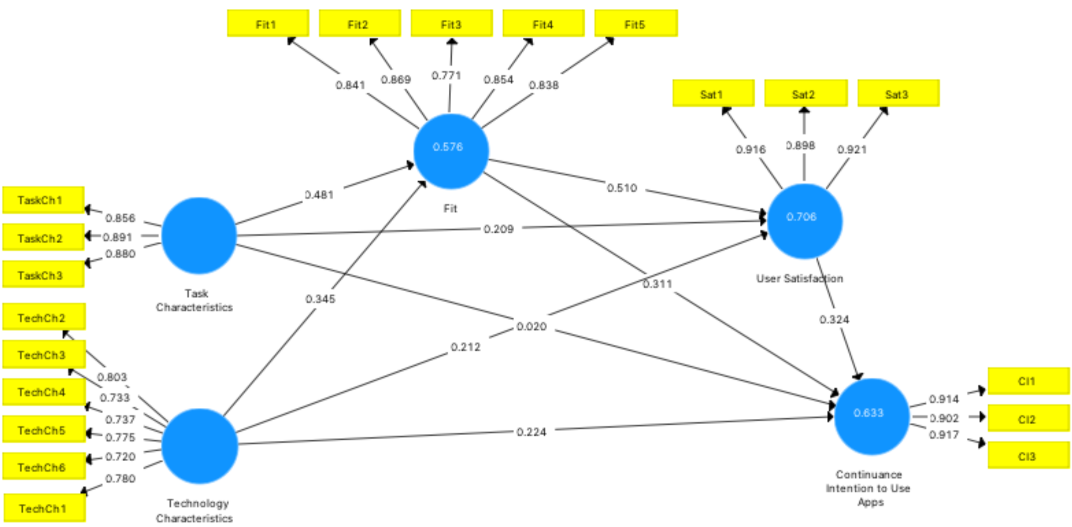

Figure 2: Results of measurement model

To assess the discriminant validity, Table 3 shows the Fornell-Larcker criterion (Fornell and Larcker, 1981). The results show that this criterion is met and the square roots of AVEs (diagonals in Table 3) are higher than the correlations between the constructs.

Table 3: Fornell-Larcker criterion

Constructs	Continuance Intention to Use Apps	Fit	Task Character-istics	Technology Character-istics	User Satisfaction
Continuance Intention to Use Apps	**0.911**				
Fit	0.736	**0.835**			
Task Characteristics	0.627	0.716	**0.876**		
Technology Characteristics	0.672	0.672	0.680	**0.759**	
User Satisfaction	0.744	0.802	0.718	0.696	**0.912**

Note: The diagonals represents the square root of AVE values and off-diagonals are the correlations between variables.

Another measure of discriminant validity is assessing the cross loading criterion. According to Table 4, all loadings of each construct (bold values in Table 4) are higher than the cross loadings of other measurement items of other constructs. However, this criterion is met.

Table 4: Cross loadings criterion

Items	Continuance Intention to Use Apps	Fit	Task Characteristics	Technology Characteristics	User Satisfaction
CI1	**0.914**	0.629	0.522	0.577	0.658
CI2	**0.902**	0.688	0.595	0.615	0.673
CI3	**0.917**	0.691	0.595	0.642	0.701
Fit1	0.620	**0.841**	0.640	0.636	0.689
Fit2	0.642	**0.869**	0.651	0.588	0.705
Fit3	0.504	**0.771**	0.499	0.456	0.560
Fit4	0.653	**0.854**	0.587	0.551	0.695
Fit5	0.638	**0.838**	0.598	0.559	0.685
Sat1	0.708	0.754	0.659	0.683	**0.916**
Sat2	0.654	0.745	0.671	0.582	**0.898**
Sat3	0.670	0.692	0.632	0.637	**0.921**
TaskCh1	0.517	0.568	**0.856**	0.554	0.581

TaskCh2	0.563	0.649	**0.891**	0.588	0.661
TaskCh3	0.566	0.658	**0.880**	0.641	0.639
TechCh2	0.550	0.538	0.554	**0.803**	0.552
TechCh3	0.475	0.488	0.524	**0.733**	0.486
TechCh4	0.514	0.488	0.464	**0.737**	0.468
TechCh5	0.545	0.554	0.541	**0.775**	0.577
TechCh6	0.484	0.480	0.434	**0.720**	0.502
TechCh1	0.486	0.504	0.570	**0.780**	0.574

The last discriminant validity criterion is Heterotrait-monotrait ratio . Shown in Table 5, all values are lower than the threshold of 0.9. Therefore, the discriminant validity of the constructs is met and the measurement model is reliable and valid.

Table 5: Heterotrait-monotrait ratio

Constructs	Continuance Intention to Use Apps	Fit	Task Characteristics	Technology Characteristics
Fit	0.817			
Task Characteristics	0.716	0.817		
Technology Characteristics	0.766	0.766	0.797	
User Satisfaction	0.826	0.892	0.820	0.793

Note: The threshold value for Heterotrait-monotrait ratio is 0.9 (Teo *et al.*, 2008).

Structural model assessment

The results of Table 6 show that the model has high predictive relevancy and the R^2 and Q^2 values have large effect size. The results of hypothesis testing (tabulated in Table 7 and schematically depicted in Figure 3) show that all hypotheses are supported except H6 (Task Characteristics → Continuance Intention to Use Apps with a weak path coefficient of 0.02 and insignificant T-value of 0.277). The highest significant path coefficients are received for the Fit → User Satisfaction and Task Characteristics → Fit relationships with value of 0.51 and 0.481 respectively.

Table 6: R^2 and Q^2 values

	R^2	Q^2	Effect Size
User satisfaction	0.706	0.551	Large
Continuance intention to use apps	0.633	0.492	Large

Note**:

Q^2 Value		Effect Size
0.02	=	Small
0.15	=	Medium
0.35	=	Large

Table 7: Results of hypothesis testing

Hypothesis	Path	Path coefficient	Standard Error	T-Statistics	Decision
H1	Task Characteristics -> Fit	0.481	0.066	7.345*	Supported
H2	Technology Characteristics -> Fit	0.345	0.074	4.633*	Supported
H3	Task Characteristics -> User Satisfaction	0.209	0.052	4.019*	Supported
H4	Technology Characteristics -> User Satisfaction	0.212	0.061	3.45*	Supported
H5	Fit -> User Satisfaction	0.51	0.064	8.03*	Supported
H6	Task Characteristics -> Continuance Intention to Use Apps	0.02	0.073	0.277	Not Supported
H7	Technology Characteristics -> Continuance Intention to Use Apps	0.224	0.062	3.611*	Supported
H8	Fit -> Continuance Intention to Use Apps	0.311	0.075	4.169*	Supported
H9	User Satisfaction -> Continuance Intention to Use Apps	0.324	0.074	4.405*	Supported

Note: *p<0.01

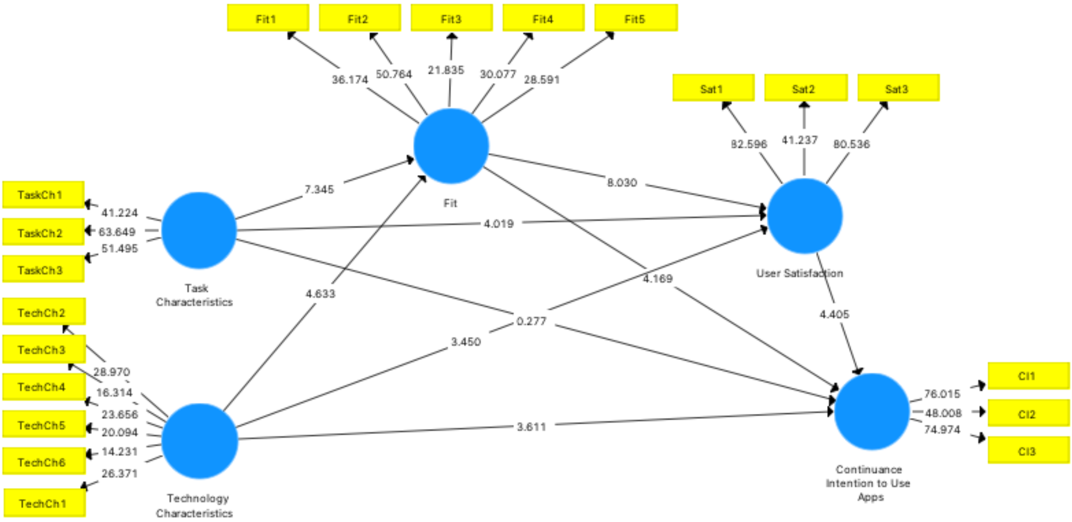

Figure 3: Bootstrapping results

Discussion and conclusion

Task characteristics are closely related to the fit (Hollingsworth, 2015). An appropriate fit for the technology device-specific activity could be achieved by the combination of the relevant task characteristics. The findings of this study imply that task characteristic of transaction-based apps (path coefficient of 0.481) is more relevant than technology characteristic.

Task-technology fit can be affected by the functionality of technology. The performance of an app can be influenced by the fit between technologies (Trice and Treacy, 1988). Due to the convenience mobile devices provide, degree of fit becomes important. The findings suggest that degree of fit is highly associated with mobile apps' user satisfaction (path coefficient of 0.51). According to Goodhue (1998), satisfaction is the most appropriate way to measure the usefulness of systems.

A poor fit decreases the intention to adopt a new technology (Lee *et al.*, 2005, Liang *et al.*, 2007). The results show that the higher the degree of fit, the higher is the continuance intention to use apps for online transactions (path coefficient of 0.311). Furthermore, continuous intention of information systems is resorted to the satisfaction of the consumers (Larsen *et al.*, 2009). Delone and McLean (2003) indicate that the determination of nett benefit and customer loyalty can be assumed by the customer satisfaction in IS success model. Aligned with previous researches (Zeithaml *et al.*, 1996, Szymanski and Henard, 2001, Heitmann *et al.*, 2007), this study finds a positive relationship between customer satisfaction and continuous intention to use apps.

Surprisingly, the results indicate that the task characteristics are not relevant to continuous intention to use apps for online transactions (path coefficient = 0.02 and T-value = 0.277). Further research is required to examine other factors associated with the fit and the extent to which they may impact on user satisfaction and continuous intention to use apps for online transactions.

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