Application of Multiple Linear Regression on Factors Affecting the Acceptance of Financial Technology Among UiTM Students

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ABSTRACT

Financial technology, also referred to as "FinTech," is a term used to describe emerging technology that aims to enhance and automate the provision of financial services. In this research, the focus was on cryptocurrencies, non-fungible tokens (NFT), and metaverses that are considered part of
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Financial Technology
Regression
Acceptance

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In most advanced democratic countries, the conduct of by-elections is an integral part in The contemporary digital era has brought about some significant changes in the context of traditional financial operations as well as in the state of the global economy. Financial technology, also referred to as "FinTech," is a term used to describe emerging technology that aims to enhance and automate the provision of financial services. FinTech has efficiently maintained its dominance in the international financial sector since its inception because of the advantages it obtains from the system (Huei et al., 2018). FinTech makes previously unattainable traditional financial services accessible to people and businesses in new directions (Whiteman, 2022). This research focused on cryptocurrencies, non-fungible tokens (NFT), and metaverses that are considered part of the fintech industry, as they all involve technology to facilitate financial transactions and interactions. The insufficiency of quantitative academic literature on the factor influencing students’ acceptance of financial technologies resulting to have uncertainty on the local degree student's attitudes and perceptions towards these emerging technologies. The purpose of this study was to identify the factors influencing the acceptance of financial technologies. A stratified sampling technique was utilized and 329 respondents were selected. This study used primary data which is by distributing the questionnaire in Google Form and the link was sent out via WhatsApp to collect the data. The independent t-test, one way ANOVA and multiple linear regression were applied in this study. The result of T-test indicates that the male students had higher mean value than female students in accepting the financial technology. Meanwhile, based on ANOVA, there was a significant mean difference in fintech acceptance between programmes. Hence, by using multiple linear regression, the significant factors influencing the acceptance of financial technologies were knowledge, openness, and social influences. It is recommended that future researchers study other areas of Fintech, like blockchain, to gain a better understanding of Fintech as a whole.

Contribution/Originality: This study is one of very few studies which have investigated the factors affecting the acceptance of fintech among students. This will boost the student's awareness to use the new technologies especially related to financial technologies. The local fintech startup can understand students’ perception on these emerging technologies very well.

1. Introduction

However, despite gaining widespread users across the globe, these revolutionized financial technologies are still new in Malaysia, and it is not yet clear what impact they will ultimately have on society. Moreover, the studies relating to the general consumer
awareness and acceptance of FinTech products in Malaysia are largely unreported and limited especially among the high institution students (Jin et al., 2019). On the other hand, under develop countries like Bangladesh and India reported some factors influencing the acceptance of the financial technologies among students. The acceptance factors of fintech among Bangladeshi students were social influences, including peer influence and social norms, that affected the students’ acceptance decisions (Mahmud et al., 2023). Meanwhile, the acceptance towards financial technology among SRM Institute of Science and Technology students in Chennai, India found that awareness and attitude of students towards innovative technologies positively influence the acceptance of fintech (Vetrichelvi & Shanmuga, 2022). Therefore, the goal of this study was to assess degree students’ acceptance regarding FinTech products (including cryptocurrencies, the metaverse, and NFT) to advance the interdisciplinary field of FinTech products research and better align it with the information system domain.

The students are being highlighted because they may be the potential target markets for the local fintech startups as these generations are more digitally literate to be interested in these technologies due to their association with creativity, innovation, and profitability. Since student is the potential target market, the challenge exists when the local degree student’s attitudes and perceptions towards these emerging technologies are not well understood. Therefore, the purpose of this paper was to bridge the gap between the insufficiency of quantitative academic literature on the acceptability of financial technologies (cryptocurrency, metaverses, and NFT) and the significant factors influencing it among UiTM Kota Bharu students. Given the uncertainty surrounding FinTech’s future and the lack of empirical evidence from the users’ perspective, it hoped that the findings of this study will provide Malaysia’s fintech companies with insights into approaching financial technologies from the perspective of degree students.

2. Literature Review

There is a growing body of research on the topic of public acceptance and adoption of FinTech including cryptocurrency, metaverse, and NFTs. Researchers have been studying various aspects of these technologies, such as how they are being used, how they are perceived by the public, and what factors influence their adoption.

2.1. Acceptance of Financial Technology

According to Davis (1989), perceived usefulness and ease of use, as antecedent variables, are important determinants of users’ technology acceptance and thus influence their actual usage behaviour. The adoption of Fintech payment services among employed recent graduates was also influenced by performance expectancy, effort expectancy and consumer trust (Ahmad et al., 2021). By using descriptive analysis, the adoption features of behavior intention to use FinTech services are determined from the frequency of the variables (Singh et al, 2020).

2.2. Factor Affecting the Acceptance of FinTech

Financial knowledge is defined as an individual’s level of understanding of various financial concepts (Stolper & Walter, 2017), and it enables people to make informed financial decisions. Financial knowledge has been shown by some researchers to be a predictor of behavioural intention to use financial products and services. According to Lusardi and Mitchell (2014), having a better command of financial knowledge increases a
person’s willingness to participate in financial markets. It has been demonstrated that adoption of FinTech is positively correlated with financial literacy (Junger et al., 2020). Kuzmina and Saksonova (2018) suggested that FinTech start-ups educate the public about available FinTech services. According to Ambily and Achal (2022), awareness and trust have a substantial impact on attitude, which, when combined with pleasure with bitcoin services, might lead to a desire to adopt cryptocurrencies. Swathy and Akshay (2019) say that people commonly are aware of the cryptocurrency, and they want to see it as part of their investment portfolio as it gives good return. Furthermore, due to the technical nature of cryptocurrency, the increase in the level of technology awareness is assumed to be important and have a positive effect on attitude (Alaeddin & Altounjy, 2018).

Social influence also can be defined as the degree to which a person feels that influential others believe he should adopt a new system (Oktafian, 2022). The result of new technology adoption shows that customers are influenced by their social networks, including their family and friends, in addition to the benefits of fintech. When it comes to influencing one’s behaviour in accepting new technologies, such as Fintech payment systems, the knowledge and encouragement given by those around one play an important role in helping the customer understand themselves (Ahmad et al., 2021). Openness to innovation (OI) is a concept used in the current study to characterize how innovative a person is. It also assesses how open a person is to trying new technology products or services. An individual with a higher innovative personality is more likely to accept new information technology products (Simarmata & Hia, 2020). According to Wu et al., (2022), openness to innovation could be a significant predictor of peoples’ behaviors toward the usage of financial technologies.

2.3. Application of Multiple Linear Regression

Multiple linear regression is one of the most fundamental statistical models due to its simplicity and interpretability of results (Moreira-Santos et al., 2022). Multiple linear regression is used to assess the dependent variable’s dependency on more than two explanatory factors. According to Yoon et al. (2016) to analyze loyalty for fintech services and the possibility of recommendation to an acquaintance, multiple linear regression analysis was conducted, focusing on variables relating to perception of users.

3. Methodology

3.1. Population and Sampling

The population for this study was 1328 students consisting of undergraduate students from UiTM Kota Bharu with six various programs. The sampling technique used for this study was proportionate stratified sampling. A sample size was calculated using a Raosoft sample size calculator, providing a confidence level of 95% and a margin of error of 5% with additional 10 - 20% subjects were required to allow adjustment of other factors such as withdrawals, missing data, loss of follow-up etc. So, the non-response rate considered in this study was 10 % and the minimum sample size was 340 respondents. Therefore, the sample size for each program depends on the population of each programmes that has shown on Table 1.
Table 1: Sample Size for Each Programme

<table>
<thead>
<tr>
<th>Programme</th>
<th>Number of population</th>
<th>Number of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Business Administration (Hons) Marketing</td>
<td>228</td>
<td>56</td>
</tr>
<tr>
<td>Bachelor of Business Administration (Hons) Finance</td>
<td>409</td>
<td>101</td>
</tr>
<tr>
<td>Bachelor of Business Administration (Hons) Islamic Banking</td>
<td>215</td>
<td>53</td>
</tr>
<tr>
<td>Bachelor of Business Administration (Hons) Business Economics</td>
<td>204</td>
<td>51</td>
</tr>
<tr>
<td>Bachelor of Science (Hons) Statistics</td>
<td>245</td>
<td>61</td>
</tr>
<tr>
<td>Bachelor of Science (Hons) Statistics and Bachelor of Entrepreneurship (Logistic and Distributive Trade) With Honors</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1328</strong></td>
<td><strong>329</strong></td>
</tr>
</tbody>
</table>

### 3.2. Research Instruments

This study used a guided questionnaire consisting of six sections: section A on demographics, section B on the acceptance of FinTech, section C on knowledge of FinTech, and Section D on awareness of FinTech. Meanwhile, section E and F on social influence and openness to accept new technologies. All questionnaires used a ten-point Likert scale for all parts of the questionnaire except for demographic, starting from 1, a strongly disagree, and 10 as strongly agree. The questionnaire was adapted from some resources. The instruments are summarized in Table 2.

Table 2: Sources of the questionnaire

<table>
<thead>
<tr>
<th>Section</th>
<th>Variable</th>
<th>Number of items</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Acceptance of FinTech</td>
<td>11</td>
<td>Wu et al. (2022), Aburbeian et al. (2022)</td>
</tr>
<tr>
<td>C</td>
<td>Knowledge</td>
<td>8</td>
<td>Wu et al. (2022)</td>
</tr>
<tr>
<td>D</td>
<td>Awareness</td>
<td>9</td>
<td>Aburbeian et al. (2022)</td>
</tr>
<tr>
<td>E</td>
<td>Social Influence</td>
<td>8</td>
<td>Wu et al. (2022)</td>
</tr>
<tr>
<td>F</td>
<td>Openness</td>
<td>7</td>
<td>Wu et al. (2022)</td>
</tr>
</tbody>
</table>

### 4. Result

#### 4.1. Demographic Profile

Table 3 summarized the demographic profile of students involved in this study. There are 215 (65.3%) of female and 114 (34.7%) of male students participated in this study. It was found that most of the students aged 21 to 22 (49.2%) and majority of the students came from Bachelor of Business Administration (Hons) (Finance) - BA242 with the percentage of 30.7 percent. Students participated in this study from semester 6 (30.4%) followed by semester 4 (30.1%), semester 5 (15.8%).
Table 3: Demographic Profile of respondents

<table>
<thead>
<tr>
<th>Demographic Attributes</th>
<th>Number of Respondents</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>114</td>
<td>34.7</td>
</tr>
<tr>
<td>Female</td>
<td>215</td>
<td>65.3</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19-20</td>
<td>24</td>
<td>7.3</td>
</tr>
<tr>
<td>21-22</td>
<td>162</td>
<td>49.2</td>
</tr>
<tr>
<td>23-24</td>
<td>132</td>
<td>40.1</td>
</tr>
<tr>
<td>25 and above</td>
<td>11</td>
<td>3.3</td>
</tr>
<tr>
<td>Programmes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA240</td>
<td>56</td>
<td>17.0</td>
</tr>
<tr>
<td>BA242</td>
<td>101</td>
<td>30.7</td>
</tr>
<tr>
<td>BA249</td>
<td>53</td>
<td>16.1</td>
</tr>
<tr>
<td>BA250</td>
<td>51</td>
<td>15.5</td>
</tr>
</tbody>
</table>

Figure 1 shows most respondents, which were more than 150, had a moderate level of acceptance with financial technology, which was the highest frequency in this study. Meanwhile, less than 150 students have a strong level of acceptance on fintech, and less than 50 students had a low level of acceptance on fintech. Thus, it can be concluded that the level of acceptance among the students in UiTM Kota Bharu is moderate.

4.2. Comparing Mean Difference in Acceptance of Fintech

The independent t test was applied to compare the mean acceptance of Fintech among gender. Based on Table 4, the findings shows that the variance are homogenous and this indicates that the two variances are equal (Levene’s Test; F=10.632, P-value=0.001). This study revealed that there is a significant difference in the mean acceptance of Fintech between male and female students (t test=4.338, P value=0.001). The mean acceptance of Fintech for male (mean=6.877, SD=2.11) is much better than compared to female students (mean=5.89, SD=1.62).
Table 4: Finding for Independent t test

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Levene’s Test (P-value)</th>
<th>T test (P-value)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance of Fintech Technology</td>
<td>10.632 (0.001) **</td>
<td>4.338 (0.001) **</td>
<td>Significantly difference. Male (n=114, mean=6.877, SD=2.11) Female (n=215, mean=5.89, SD=1.62)</td>
</tr>
</tbody>
</table>

Based on Table 5, the assumptions for conducting ANOVA which is homogeneity of variance was met (Levene’s Test; F=2.406, P-value=0.037). Based on the findings, this study successfully concluded that there is a significant difference in the mean acceptance of Fintech programmes (F test=5.297, P value=0.001). Even though there are six different programmes however, only two pairs had different means for acceptance of Fintech. The mean acceptance of Fintech Technology was varied between Bachelor of Business Administration (Hons) Finance (BA242) and Bachelor of Business Administration (Hons) Business Economics (BA250); (mean difference = 1.0181, P-value=0.014) and Bachelor of Business Administration (Hons) Finance (BA242) and Bachelor of Science (Hons) Statistics (CS241); (mean difference = 1.3947, P-value=0.000). This finding indicates that students from Bachelor of Business Administration (Hons) Finance more tend to accept Fintech.

Table 5: Finding for ANOVA Test

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Levene’s Test (P-value)</th>
<th>F test (P-value)</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance of Fintech Technology</td>
<td>2.406 (0.037) **</td>
<td>5.297 (&lt;0.001) **</td>
<td>Significantly difference. BA242 and BA250 (Mean difference = 1.0181, P-value=0.014) BA242 and CS241 (Mean difference = 1.3947, P-value=0.000)</td>
</tr>
</tbody>
</table>

5. Discussion

5.1. Multiple Linear Regression

Based on Table 6, the finding revealed that the model is significant (F-test=201.598, P-value=<0.001). This indicates that at least one of the factor variables significantly influences the acceptance of fintech among the UiTM students. Due to insignificant variables in the model, the analysis proceeds on to the model selection and validation criterion using stepwise regression. The independent variable that is not significant with p-value more than 0.05 will be excluded by stepwise regression. In this analysis, the variable awareness is excluded. Based on Table 6, the Model 3 is chosen as the best model to conduct the multiple regression analysis since it has the highest R-squared value of 0.650.
Table 6: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>F Change</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.764</td>
<td>0.584</td>
<td>0.582</td>
<td>458.182</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2</td>
<td>0.799</td>
<td>0.638</td>
<td>0.636</td>
<td>48.861</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>3</td>
<td>0.807</td>
<td>0.650</td>
<td>0.647</td>
<td>11.753</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

F test (ANOVA): 201.598
P-value: <0.001

Dependent Variable: Acceptance
Predictors: (Constant), Knowledge
Predictors: (Constant), Knowledge, Openness
Predictors: (Constant), Knowledge, Openness, Social Influence

Based on Table 7, the p-value for all independent variables which are knowledge, openness and social influence are less than 0.001 which is less than the critical value that is equal to 0.05. Thus, the null hypothesis for these variables was rejected respectively. Therefore, the variable knowledge, openness and social influence are significant in determining the acceptance of fintech among UiTM Kota Bharu students. Refer to Table 6, it can be concluded that only 65% of the total variation in acceptance of fintech among UiTM Kota Bharu undergraduate students can be explained by knowledge, openness, and social influence. While the other remaining 35% of the variation might be explained by other variables that are not investigated in this study.

Table 7: Significant of the Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>β- Coefficient</th>
<th>t-test</th>
<th>p-value</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>0.235</td>
<td>0.855</td>
<td>0.393</td>
<td>Significant</td>
</tr>
<tr>
<td>Knowledge</td>
<td>0.514</td>
<td>9.704</td>
<td>&lt;.001</td>
<td>Significant</td>
</tr>
<tr>
<td>Openness</td>
<td>0.252</td>
<td>6.252</td>
<td>&lt;.001</td>
<td>Significant</td>
</tr>
<tr>
<td>Social Influence</td>
<td>0.173</td>
<td>3.428</td>
<td>&lt;.001</td>
<td>Significant</td>
</tr>
</tbody>
</table>

The following is the regression model for Model 3:

\[ \hat{y} = 0.235 + 0.514 x_1 + 0.252 x_4 + 0.173 x_3 \]

Where;
Y represents acceptance of FinTech among UiTMKB student
X1 represents knowledge
X3 represents social influence
X4 represents openness

When the mean score in knowledge, social influence and openness increased, the mean score of acceptance fintech increased by 0.514, 0.173 and 0.252 respectively when other variables remain constant.

5.2. Model Adequacy Checking

Figure 2 depicts the scatter plot of regression standardized residual against regression standardized predicted value.
Based on Figure 2, the error terms are randomly scattered and do not show any obvious pattern. Thus, it indicates that the error term has constant variance and is independent. Therefore, the assumption of homoscedasticity is fulfilled.

Figure 2: Scatter Plot Regression Standardized Residual Against Regression Standardized Predicted Value.

From Figure 3, the plots lie approximately close to the line. Thus, the assumption of normality of error terms is met for this study.

Figure 3: The P-P Plot Standardized Residual

Table 8 depicts the tolerance and variance inflation factor (VIF) value for knowledge, openness, and social influence factors. Based on Table 8, tolerance values for all independent variables which are knowledge, openness and social influence are more than 0.1. It indicates that there is no correlation between all independent variables.
Aside from that, the variance inflation factors (VIF) of all independent variables are less than 10 which also supports that there is no correlation between independent variables. As a result, it can be concluded that no multicollinearity problem exists in this study.

Table 8: Tolerance and Variance Inflation Factor (VIF)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>0.397</td>
<td>2.518</td>
</tr>
<tr>
<td>Openness</td>
<td>0.711</td>
<td>1.406</td>
</tr>
<tr>
<td>Social Influence</td>
<td>0.400</td>
<td>2.498</td>
</tr>
</tbody>
</table>

6. Conclusion

The finding shows that there is significant difference between male and female in accepting financial technology. Furthermore, the study indicates that the male participant has higher mean value than female in accepting financial technology. The finding of this study match with the research from Aburbeian et al. (2022), Ahmad et al. (2021) and Keng et al. (2019) who found that males were more accept the financial technology than female. It can be concluded that there is a significant mean difference since the pair of groups BA242 with BA250, and BA242 with CS241 has a mean value less than significant level. This finding had been corresponded with the research from Saher et al. (2021) which show that there is significant mean different among various programmes. Based on multiple linear regression analysis, it can be concluded that there are only three variables that have a significant effect on acceptance of financial technology. These three variables are knowledge, social influence, and openness to accept new technology. For variable social influence and knowledge, this study results consistent with the finding from Li et al. (2023) and Keng et al. (2019), it was shown that have some knowledge about FinTech and social influence have a big impact on how people use and accept financial technology. Meanwhile, for variable openness to accept has been similar with the finding Aburbeian et al. (2022) tell that the attitude which is the openness to accept is significant with the acceptance of financial technology.

Ethics Approval and Consent to Participate

The researchers used the research ethics provided by the Research Ethics Committee of Universiti Teknologi MARA. All procedures performed in this study involving human participants were conducted in accordance with the ethical standards of the institutional research committee.

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