
4 RESEARCH RESULTS

4.1 Data Editing

There was some problem with the data concerning profile of the organization (Section 1 of the questionnaire). Due to the low number of respondents, the responses for organization's revenue and paid-up capital tend to skew to the maximum scale. This imbalance the responses and might make it difficult to make a worthwhile analysis.

Some adjustments were made to overcome this problem. For organization's revenue, response (1) Not exceeding RM 500,000, (2) RM 100,000 - RM 500,000, and response (3) RM 1 million - RM 10 million were combined into response (3) Not exceeding RM 10 million. For organization's paid-up capital, response (1) Less than RM 100,000, (2) RM 100,000 to RM 500,000, and (3) RM 500,000 to RM 1 million, were combined into response (3) Not exceeding RM 1 million.

No more adjustments were made as the responses were good for analysis.

4.2 Summary Of Responses - Frequency Analysis

4.2.1 Organization's Profile

150 questionnaires were sent to various companies while another 50 organizations were called for interview. Most of the companies declined to be interviewed and even those who agreed, turned down the interview in the last minute, citing company's policy of private and confidentiality of information, and not having time to entertain university students. On mailed questionnaires, only 26 companies sent back the forms. Therefore, only these 26 companies will form the basis of this research.

In terms of number of years in operation, the companies range from having been in operation for only one year to the longest of 114 years. However, most of the companies are young companies which have been operating for only 1 to 21 years (see Appendix 2). In terms of number of employees, the smallest number of employees in a company are 3 while the highest number of employees are 5480 employees in a company. However, most of the companies have 1 to 1200 employees in their company (see Appendix 2).

Type Of Industry	Frequency	Percent
Manufacturing	8	30.8
Retailing/Trading/Marketing	8	30.8
Telecommunications/Utility Property/Construction	6	23.1
Banking/Finance/Insurance	4	15.4

Table 1 : Type of Industry

Ownership Of Company	Frequency	Percent
100 % local	9	34.6
100% foreign	4	15.4
More Than 50% local	6	23.1
More Than 50% foreign	7	26.9

Table 2 : Ownership Of Company

Table 1 shows the distribution of the companies in this research while Table 2 shows the ownership of the companies. As shown in the table, the highest number of companies are in the retailing/trading/marketing industry and the manufacturing industry. In terms of ownership of the company, most of the companies involved in this study are locally owned companies, followed by companies which are majority owned by foreigners. Most of the companies have a paid-up capital of

more than RM 1 million and annual revenue of more than RM 10 million (see Appendix 2).

Investment In IT	Frequency	Percent
Less Than RM 100,000	4	15.4
RM 100,000 - RM 500,000	7	26.9
RM 500,001 - RM 1,000,000	3	11.5
More Than RM 1 million	12	46.2

Table 3 : Investment In Information Technology

Having Own Web-Site	Frequency	Percent
Yes	20	76.9
No	6	23.1

Table 4 : Having Company's Own Web-Site

Table 3 shows the companies investment in Information Technology (IT) while Table 4 shows whether the companies involved in this study have their own web-site or not. In terms of investment in IT, most of the companies are investing heavily in IT with most of the companies spending more than RM 1 million in this area. Not surprisingly though, most of the companies have their own web-site compared to those who are not

4.2.2 Usage and Knowledge of Online Payments

Online Payment Systems	Frequency			
	Use	Percentage	Do Not Use	Percentage
Electronic Checks	2	5.9	24	92.3
Credit/Debit Cards	8	30.8	18	69.2
Electronic Cash	1	3.8	25	96.2
Smart Cards	2	7.7	24	92.3

Table 5 : Usage Of Online Payment Technologies

Online Payment Systems	Frequency			
	Will Use	Percentage	Will Not	Percentage
Electronic Checks	7	29.2	17	70.8
Credit/Debit Cards	1	5.6	17	94.4
Electronic Cash	8	30.2	17	68.0
Smart Cards	8	33.3	16	66.7

Table 6 : Intention To Use Online Payment Technologies

Table 5 shows the number of companies using and not using online payment systems while Table 6 shows the number of companies intending to use online payment systems. It is clear that the number of companies not using online payment systems far outweigh the number of companies using online payment systems. Things get better when it comes to the number of companies intending to use online payment systems in the future. However, the number of companies not intending to use online payment systems still outweigh the ones who are planning to use it.

Online Payment Systems	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
Electronic Checks	4	(15.4)	7	(26.9)	7	(26.9)	4	(15.4)	4	(15.4)
Credit/Debit Cards	3	(11.5)	2	(7.7)	10	(38.5)	4	(15.4)	7	(26.9)
Electronic Cash	5	(19.2)	7	(26.9)	5	(19.2)	5	(19.2)	4	(15.4)
Smart Cards	3	(11.5)	5	(19.2)	8	(30.8)	5	(19.2)	5	(19.2)

Table 7 : Knowledge On Online Payment Systems

Note : Number in parentheses are in percentage

Table 7 shows the level of knowledge on online payment systems among the companies. From the table, we can see that the level of knowledge is highest in credit/debit cards based system and smart card based systems, compared to electronic checks based systems and electronic cash based systems. This is due perhaps to the fact that companies which are using online payment tend to use

credit/debit/smart cards based systems compared to the rest.

4.2.3 Benefits Of Online Payment

Table 8 on the next page shows what the companies think will be the benefits of using online payment. On one end, companies feel that using online payment will not increase the number of customers, will not increase the revenue of the company, will not improve cash flow management, and will not intensify relationship among business partners. While on the other end, companies feel that online payment usage will improve business process flow and enhance company's image. However, all the companies feel that there are benefits to using online payment in companies

	1		2		3		4		5		6		7	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Enhance Company's Image	0	(0)	2	(7.7)	0	(0)	3	(8.8)	7	(20.6)	8	(30.8)	6	(23.1)
Improve business process flow	0	(0)	1	(3.8)	2	(7.7)	3	(8.8)	6	(23.1)	9	(34.6)	5	(19.2)
Intensify relationship among partners	1	(3.8)	2	(7.7)	1	(3.8)	4	(15.4)	8	(30.8)	6	(23.1)	4	(15.4)
Able to integrate with online billing	0	(0)	0	(0)	4	(15.4)	3	(11.5)	6	(23.4)	10	(38.5)	3	(11.5)
Improve cash-flow management	1	(3.8)	1	(1)	3	(11.5)	8	(30.8)	5	(19.2)	7	(26.9)	2	(7.7)
Reduction in cost	1	(3.8)	1	(3.8)	5	(19.2)	5	(19.2)	8	(30.8)	4	(15.4)	2	(7.7)
Better customer relationship	1	(3.8)	1	(3.8)	3	(11.5)	8	(30.8)	5	(19.2)	7	(26.9)	1	(3.8)
Participate in customers acquisition process	0	(0)	2	(7.7)	4	(15.4)	3	(11.5)	14	(53.8)	2	(7.7)	1	(3.8)
Increase in revenue	1	(3.8)	1	(3.8)	2	(7.7)	9	(34.6)	6	(17.6)	6	(17.6)	1	(2.9)
Increase in number of customers	1	(3.8)	1	(3.8)	4	(15.4)	7	(26.9)	8	(30.8)	5	(19.2)	0	(0)

Table 8 : Benefits Of Using Online Payment

Note : The number in parentheses are percentages

4.2.4 Motivators To Usage Of Online Payment Systems

Table 9 on the next page shows the responses to measures that need to be taken to motivate local companies to use online payment systems. The most important aspect is the upgrading of the country's Internet infrastructure followed by the government's policies and laws concerning online payment and the barriers to online payment have been resolved. Meanwhile, not many companies feel that the company's financial situation is a major aspect to motivate them to use online payment. Generally, a lot need to be done to persuade the companies to fully embrace online payment.

4.2.5 Barriers To Use Online Payment Systems

Table 10 shows the responses of respondents on the barriers to using online payment systems. We can see from the table that the most serious factors that hinder companies from using online payment are threat from intruders (hackers), threat of computer viruses, fear of other parties getting private and confidential information, authenticity of the parties involved in the transactions, and no legislative guide to courts on online payment. Meanwhile, the companies perceived that waiting for other's success and the unacceptability of online payment in the real world as not serious factors that hinder companies from using online payment. Generally, the companies perceived that there are many barriers that stop companies from using online payment systems.

	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
Upgrading of the country's Internet infrastructure	0	(0)	0	(0)	1	(3.8)	8	(30.8)	17	(65.4)
Government's policies and laws concerning online payment	0	(0)	1	(3.8)	2	(7.7)	8	(30.8)	15	(57.7)
All the barriers to online payment have been resolved	0	(0)	1	(3.8)	2	(7.7)	9	(34.6)	14	(53.8)
Success of local organizations in implementing online payment	0	(0)	1	(3.8)	4	(15.4)	9	(34.6)	12	(46.2)
More companies are offering online payment	0	(0)	3	(11.5)	4	(15.4)	14	(53.8)	5	(19.2)
Major campaign to promote online payment	0	(0)	4	(15.4)	3	(11.5)	12	(46.2)	7	(26.9)
Good economic situation	0	(0)	3	(8.8)	5	(19.2)	8	(30.8)	10	(38.5)
Company's financial situation	2	(7.7)	7	(26.9)	2	(7.7)	6	(23.1)	9	(34.6)

Table 9 : Motivators To Using Online Payment

Note : The number in parentheses are percentages

	1		2		3		4		5	
	F	%	F	%	F	%	F	%	F	%
Threat from intruders (hackers)	1	(3.8)	3	(11.5)	3	(11.5)	7	(26.9)	12	(46.2)
Threat of computer viruses	1	(3.8)	2	(7.7)	6	(23.1)	5	(19.2)	12	(46.2)
Fear of other parties getting private & confidential information	1	(3.8)	2	(7.7)	4	(15.4)	8	(30.8)	11	(42.3)
Authenticity of the parties involved in the transaction	0	(0)	1	(3.8)	5	(19.2)	9	(34.6)	11	(42.3)
Legal definition of offer & acceptance	0	(0)	0	(0)	10	(38.5)	8	(30.8)	8	(30.8)
Problems in doing cross-countries transactions	3	(11.5)	3	(11.5)	10	(38.5)	7	(26.9)	3	(11.5)
Recognition of whether the value stored in, or transferred by the system is equal to bank money	3	(11.5)	7	(26.9)	2	(7.7)	8	(30.8)	6	(23.1)
No legislative guidance to courts on online payment	0	(0)	3	(11.5)	3	(11.5)	10	(38.5)	10	(38.5)
Traffic on the internet	2	(7.7)	4	(15.4)	7	(26.9)	10	(38.5)	3	(11.5)
Limited functionality and slow development of today's online payment technology	1	(3.8)	4	(15.4)	7	(26.9)	10	(38.5)	4	(15.4)
No exact industry standardization	1	(3.8)	5	(19.2)	5	(19.2)	11	(42.3)	4	(15.4)
Inter-operability of systems between the parties concerned	0	(0)	2	(7.7)	10	(38.5)	8	(30.8)	6	(23.1)
Insecure about the reliability of the new payment system	0	(0)	4	(15.4)	3	(11.5)	12	(45.2)	7	(26.9)
Herd mentality - waiting for other's success	5	(19.2)	3	(11.5)	8	(30.8)	9	(34.6)	1	(3.8)
Online payment mechanism is unacceptable in the real world	5	(19.2)	5	(19.2)	8	(30.8)	6	(23.1)	2	(7.7)
Less value proposition compared to the existing payment system	3	(11.5)	7	(26.9)	8	(30.8)	8	(30.8)	0	(0)
Lack of IT experts and exposure in the organization	2	(7.7)	4	(15.4)	8	(30.8)	6	(23.1)	6	(23.1)
Increased cost of doing business	1	(3.8)	7	(26.9)	9	(34.6)	6	(23.1)	3	(11.5)
The small number of Internet users in this country	0	(0)	7	(26.9)	5	(19.2)	9	(34.6)	5	(19.2)
Lack of capable online payment system providers in the country	0	(0)	1	(3.8)	10	(38.5)	10	(38.5)	5	(19.2)

Table 10 : Barriers To Online Payment (Note : The number in parentheses are percentages)

4.3 Testing Of Hypotheses

The first test will be the reliability test. Reliability test will be conducted on four variables, namely, the knowledge on online payment technologies, the benefits of online payment, the motivators to usage of online payment, and the barriers to using online payment. The result of the testing can be seen in Appendix 5. The knowledge on online payment systems shows an alpha of 0.8543, which means that the scale is highly reliable with 85.43% reliability. The most important item is the knowledge on smart card, where the alpha will drop to 0.7508 if this item is deleted. The benefits of online payment shows an alpha of 0.8842, which means that it is highly reliable with 88.42% reliability. The most important item in the variable is enhancing company's image. If the item is dropped, the variable's alpha will drop to 0.8653.

The motivators to usage of online payment shows an alpha of 0.7648, which means that the scale is highly reliable with 76.48% reliability. The most important item in the scale is more companies are offering online payment. If the item is dropped, the variable's alpha will drop to 0.6902. The barriers to online payment shows an alpha of 0.9253, which means that the scale is very reliable with 92.53% reliability. The most important item in the scale is recognition of whether the value stored in, or transferred by the system is equal to bank money. If this item is dropped, the variable's alpha will drop to 0.9177.

Next, the first two hypotheses will be tested. The hypotheses are:

H_0 = There are no difference between the number of companies using online payment and not using online payment

H_0 = There are no difference between the number of companies intending to use

online payment and not using online payment

These null hypotheses will be tested using non-parametric chi-square. The result of the testing is as follows :

Online Payment Systems	Frequency		Chi-Square	Significance
	Using	Not Using		
Electronic Checks	2	24	18.615	0.000
Credit/Debit Cards	8	18	3.846	0.050
Electronic Cash	1	25	22.154	0.000
Smart Cards	2	24	18.615	0.000

Table 11 : Chi-Square Test On Usage Of Online Payment

Intention To Use Online Payment Systems	Frequency		Chi-Square	Sig.
	Will Use	Not Use		
Electronic Checks	7	17	4.167	0.041
Credit/Debit Cards	1	17	14.222	0.000
Electronic Cash	8	17	3.240	0.072
Smart Cards	8	16	2.667	0.102

Table 12 : Chi-Square Test On Intention To Use Online Payment

Table 11 shows that there are a significant difference in number of companies using online payment systems compared to those who are not in all the online payment technologies. Meanwhile, Table 12 shows that there are a significant difference in number of companies intending to use online payment compared to those which are not planning to use them. These significant differences occur in credit/debit cards electronic cash based system and the electronic checks based system. Based on this finding, we can conclude that we can reject the two null hypotheses.

Next, we are going to test the next two null hypotheses. The hypotheses are :

H_0 = The awareness of the benefits of online payment systems does not correlates with the knowledge of online payment technologies

H_0 = The barriers to using online payment does not correlates with the motivators

to use online payment systems

To test these hypotheses, we use simple correlation co-efficient. The result is as follows:

		Knowledge	Benefits
Knowledge	Correlation	-	0.457
	Significance	-	(0.019)
Benefits	Correlation	0.457	-
	Significance	(0.019)	-

Table 13 : Correlation Test On Knowledge And Benefits Of Online Payment

		Barriers	Motivators
Barriers	Correlation	-	0.507
	Significance	-	(0.008)
Motivators	Correlation	0.507	-
	Significance	(0.008)	-

Table 14 : Correlation Test On Barriers And Motivators of Online Payment

Table 13 shows that there is a positive correlation between knowledge of online payment systems and the perceived benefits of using online payment in companies. Furthermore, it is proven from the table that there is a significant correlation between the two variables at $\alpha < 0.05$. Meanwhile, Table 14 shows that there is a positive correlation between the barriers to online payment and motivators to using online payment systems. Furthermore, at $\alpha < 0.05$, it is proven that there is a significant correlation between these two variables. Thus, we can conclude that we can reject the two null hypotheses which say that there are no correlation between the two variables.

The next two hypotheses will be tested. The hypotheses are :

H_0 = There is no difference between security, legal, technical, social, and business suitability concerns relating to the barriers of using online payment.

H_0 = There is no correlation between security, legal, technical, social, and business suitability concerns relating to the barriers of using online payment.

The first hypotheses will be tested using the paired t-test while the second hypotheses will be tested using simple correlation co-efficient. The result for the test can be found at Appendix 3. The result shows that by far, there is a significant difference at $\alpha < 0.05$ between the security concerns and the other four concerns relating to online payment. The result also shows that there is a significant difference between legal and social concerns, and between technical and social. Therefore, we can reject the first null hypotheses.

In terms of correlation, the result shows that there is a positive correlation between security, legal, technical, social, and business suitability concerns relating to barriers to online payment. Furthermore, it is shown that there is a significant correlation at $\alpha < 0.05$ between all the variables. Therefore, we can conclude that based on the results, we can reject the null hypotheses.

The next hypotheses to be tested is as follows :

The next two null hypotheses that are going to be tested are as follows :

H_0 = There is no difference in organizational characteristics in relation with the use of online payment systems.

H_0 = There is no difference in organizational characteristics in relation with the intention to use online payment systems.

To test this hypotheses, we are going to use cross-tabulation with chi-square technique to see the differences. Four items in the organization profile have been chosen for the purpose of this testing. The items are the type of industry the company is in, ownership of the organization, IT investment, and having the

company's web-site.

The result of the testing can be seen in Appendix 4. Based on the result, there seems to be no significant difference in the organizational characteristics in either the usage of online payment, or the intention to use online payment systems in the future. This result could be because the small number of respondents, which makes it difficult to have a really large spread in the responses in organization's profile. As there is no significant difference, we cannot reject the two null hypotheses.

The last two null hypotheses that are going to be tested are as follows:

H_0 = There is no significant difference between the type of industries in relation with the knowledge, benefits, motivators and barriers to online payment.

H_0 = There is no significant difference between the types of industries in relation with the security, legal, technical, social and business suitability concern which form the barriers to online payment.

The results are shown in Table 4.1 in Appendix 4. Again, we cannot see any significant differences between the types of industries in relation to the knowledge, benefits, motivators and barriers to online payment. The results also show that there is no significant differences between the types of industries in relation to the security, legal, technical, social, and business suitability concerns which form the barriers to online payment. As there is no significant differences in both tests, we conclude that we cannot reject the two null hypotheses.

4.4 Summary Of Research Results

There are several interesting findings in this study. Firstly, there is a clearly

significant difference in the number of companies using online payment and those which do not, and a significant difference in the number of companies intending to use online payment systems and those which are not. There is no significant differences among the type of companies when it comes to the use and the intention to use online payment. There is also no significant differences among the companies in relation to the knowledge, benefits, barriers, and motivators to online payment, plus there is also no significant differences when it comes to the five concerns which hinder companies from using online payment.

As expected there is a positive and significant relationship with the knowledge of online payment systems and the awareness of the benefits brought by using the systems in companies. Also as expected, there is a positive and significant relationship between the motivators to online payment and the barriers to using online payment in companies.

On barriers to online payment, we can see that the most important and serious barrier to online payment is security concern, followed by legal concern. We can also see that there is a positive and significant correlation between all the concerns in the barriers to online payment.