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Usage of Information Technologies in Malaysian Businesses

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Abstract

A survey on small and medium sized industries in Malaysia has been carried out in order to identify and recognize the usage of IT in business. The parameters such as organizational details (i.e. the numbers of employees, sales or profitability and the type of business) and managers details (in terms of educational level, computer literacy and computer experiences) were studied in order to see whether these parameters do contribute towards the usage of IT in business. Based on the survey, the results found are discussed and an IT adoption model is proposed.

Keywords: Adoption model, small & medium sized industries, organizations.

Introduction

Understanding the major roles and functions of Information Technology (IT) in an organization is an important factor in shaping the organization's characteristics and determining the usage of IT as an enabler in the business. However, few researches have been done in Malaysia to gather information from small and medium sized industries on how and why IT can be applied to the business. The survey was done in order to collect and gather information regarding the usage of IT in small and medium sized industries (SMIs) in Malaysia. Quantitative and qualitative questions were asked in order to acquire both tacit and explicit data on various aspects regarding IT usage in Malaysian industries.

Various surveys (Ang et al., 1994; Sohal et al., 1998) have been conducted to investigate the impact of business using IT in respective countries. In this paper, we share the lessons learned from the survey of Malaysian business in regards to the usage of IT. Throughout the survey, we also collected two main categories of information: from the organizational perspectives (such as size, sale or profitability and type of business) and the managerial perspectives (such as education level, computer literacy and computer experience).

This research has four core objectives. Firstly, is to collect data from a selection of small and medium sized industries, which has relations to IT. Secondly, is to identify the relationship between the usage of IT in their business with the size of industry and the managers' tacit or explicit knowledge in IT. Thirdly, is to investigate and analyze whether the parameters used such as the managers' computer literacy and the sale or profitability (annual sales turnovers) of

industries do contribute directly to the usage of IT in businesses. Finally, a proposed IT Adoption Model for SMIs in Malaysia is to be developed based on the survey done.

Research Methodology

A survey method has been conducted in this study. A total number of 100-survey questionnaires was developed, printed and distributed (by snailmail) to small and medium sized industries throughout Malaysia. The selected organizations were located throughout the East and West of Malaysia as the representative of Malaysian future oriented organizations. The questionnaire respondents were to be people holding senior positions such as executive officers or managers.

A pilot study was also conducted before distributing the survey questionnaires. A face-to-face interview was also conducted to 25 respondents representative from different organizations throughout major cities in Malaysia: Kuala Lumpur, Johor, Penang, Kota Kinabalu, Miri and Kuching. The respondents were executives with their companies. Each session was conducted by combining structured and unstructured questions.

Of the one hundred survey questionnaires that were mailed out, forty-seven were received while the other fifty-three did not respond. Overall, we had good responses from the organizations. As the response rate was of forty-seven percent, therefore we concentrated on the forty-seven organizations, which have given full responses to our survey questionnaires, for the analysis phrase.

The Survey Results

The questionnaire was structured into two main sections. The first section includes the general information of the organization and the second section contains the respondents' information including their IT knowledge and their influence to the usage of ICTs. Both these sections reflect the objectives of the study.

General Information about the Organization

All of the organizations responded to our survey were from the private organizations where majority (80.9%) of the organizations has less than 50 employees (size of organization). (Refer to Table 1). Thirteen organizations of the 47 surveyed, have more than RM10 millions annual sales turnovers (27.7%) (see Table 2). From Table 2, out of 19 organizations that have annual sales turnovers more than RM 6 millions, 18 of those organizations are proprietary limited organizations. This reflects to the huge amount of annual sales turnovers due to the high investment done by the proprietary limited organizations.

Table 1. Size of Organization: Number of employees

No of employees	Frequency	Percentage
Less than 50	38	80.9%
51 – 250	9	19.1%

Table 2. Annual sales turnovers

Annual Sales Turnovers	Frequency	Percentage
Less RM 1 million	14	29.8%
RM 1 –5 million	14	29.8%
RM 6 – 10 million	6	12.8%
More RM 10 million	13	27.7%

Out of the 47 organizations surveyed, 26 organizations' major business area is in manufacturing (refer to Table 3). From the survey, 15 organizations' major business area is in retailing and other organizations are involved in other business areas.

Based on the cross reference from Table 1 with Table 2 and 3, we found out that 5 out of 9 organisations (number of employees are more than 51 people) are in the manufacturing business area and they are the proprietary limited organisations and have income more than RM 10 million.

Table 3. Major Business Area

Major Business Area	Frequency	Percentage
Manufacturing	26	55.3%
Retailing	15	31.9%
Wholesaling	2	4.3%
Distribution	2	4.3%
Construction	1	2.1%
Professional Services	1	2.1%

Based on the cross reference from Table 2 and Table 3, we have derived that 5 of 6 organizations whose sales turnovers between RM6 to RM 10 million are in the manufacturing business area and 9 out of 13 organizations whose incomes are more than RM 10 million are also in the manufacturing business area. Those organizations in both categories are proprietary limited organizations.

The distribution of IT areas is as shown in Table 4 where 15 organisations use personal productivity tools whereas 37 organisations use IT in the area of administrative or Management Information Systems (MIS). Table 4 shows that MIS is heavily used area of IT that is about 78.7% and Networking and Knowledge-based System are the least area of IT used (2.1%).

Table 4. Major Area of IT Used

Area of IT used	Frequency	Percentage
Administrative/Management Info. Systems	37	78.7%
Personal productivity tools	15	31.9%
Multimedia Application	5	10.6%
Computer Aided Design	3	6.4%
Geographical Information System (GIS)	3	6.4%
Knowledge-based System	1	2.1%
Software Development	2	4.3%
Networking	1	2.1%

Table 5 shows the frequency of IT tools/software usage for each organization. Fourteen organizations responded that they heavily use IT tools and/or software. Thirty-eight (80.8%) organizations responded that they use IT tools and/or software from average to very much while three (6.4%) organizations responded that they do not use IT tools and/or software in their organization at all.

Table 5. Using IT tools/software

Using IT tools/software	Frequency	Percentage
Not used at all	3	6.4%
Mildly used	6	12.8%
Average used	12	25.5%
Frequent used	12	25.5%
Very much used	14	29.8%

Information on Respondents

We have also included respondents' information in our survey and in this paper. The aims of this section are to find respondents information on their education level, computer literacy and computer experience, and to identify the relationship between the respondents' tacit and explicit knowledge in IT and its usage in business.

As mentioned earlier, the questionnaire respondents were either executive officers or managers. Out of the 47 organisations surveyed, 28 respondents work at strategic management level and 4 respondents work at support level where these 4 respondents are executive officers (see Table 6).

Table 6. Respondent: Level in the Organization Hierarchy

Level in the Org. Hierarchy	Frequency	Percentage
Support	4	8.5%
Middle Management	15	31.9%
Strategic Management	28	59.6%

Though the surveyed respondents were executive officers or managers, only 13 respondents (27.7%) have degree (see Table 7). From Table 7, 12 respondents (25.5%) highest education is only up to secondary or vocational school. Based on cross reference between Table 6 with Table 7, we found out that 8 out of 12 respondents whom their highest education is up to secondary or vocational school work at strategic management level, another 2 respondents work at middle management level and the last 2 respondents work at support level.

Table 7. Respondent: Highest Education

Highest Education	Frequency	Percentage
Secondary/Vocational School	12	25.5%
Diploma	14	29.8%
Professional	3	6.4%
Bachelor	13	27.7%
Master/PhD	5	10.6%

From the 47 surveyed respondents, 40 of them (85.1%) own personal computer (PC) at home and 7 respondents (14.9%) do not have PC at home (see Table 8).

Table 8. Respondent: Own PC at Home

Own PC at Home	Frequency	Percentage
Yes	40	85.1%
No	7	14.9%

Table 9 shows the respondents' computer literacy. Thirty-four respondents (72.3%) stated that they gained their computer literacy through self-study and 22 respondents (46.8%) gained their computer literacy through general courses in colleges or universities. Note that respondents are allowed to tick more than one box in Table 9.

Table 9. Respondent: Computer Literacy

Computer Literacy	Frequency	Percentage
General Courses in College/University	22	46.8%
Outside training provided by Vendor/Consultants	11	23.4%
In-house company training	5	10.6%
Self-study	34	72.3%

Based on the cross reference between Table 7 and Table 9, we found out that 12 out of 34 respondents who gained their computer literacy through self-study have their highest education up to secondary or vocational school.

Out of the 47 surveyed respondents, it is derived that higher percentage of respondents (89.4%) has average to excellent computer experience in using computer packages (see Table 10). Table 10 shows that most respondents' computer experience is in using computer packages. Few respondents' computer experience goes beyond using computer packages. For examples, 28 respondents (59.6%) stated that they have no experience using computer languages, 22 respondents (46.8%) stated that they have no experience in building models on computers, 33 respondents (70.2%) stated that they have no experience using programming languages, 23 respondents (48.9%) stated that they have no experience on participating in the non-technical design of computer systems and 26 respondents (55.3%) stated that they have no experience on participating in the technical design of computer systems.

Based on the cross reference between Table 9 with Table 10, we found out that 34 out of 42 whom have average to excellent computer experience in using computer packages gained their computer literacy through self-study.

An IT Adoption Model

One major purpose of conducting this survey is to form an IT Adoption Model. An IT Adoption Model can be used in difference perspective. Kim et al. (2002) discussed on the dynamic IT adoption model for small office and home office (SOHO). Sherry et al. (1999) discussed on the technology adoption for communities of learners to enrich their teaching and learning. This section will discuss the formation of IT Adoption Model for SMIs in Malaysia based on the survey that have done.

The development of an IT Adoption Model is important seeing that it can be used as guidelines by organizations in Malaysia. The factors affecting the use of IT in an organization were discovered via two research approaches. The two research approaches taken are the qualitative approach and quantitative approach. The qualitative approach consists of interviews while the quantitative approach comprises population sampling, pilot study, data collection, data analysis and results. From the qualitative approach (which includes literature review and interviews), questionnaires were developed for use in the quantitative approach.

Table 10. Respondent: Computer Experience

Computer Experience	1	2	3	4	5	Total
Using Computer Packages such as spreadsheet, word processing or data management	4	1	14	19	9	47
Use of computer languages (database) such as SQL, ORACLE, DBASE1V, Access	28	10	3	4	2	47
Building models on computers such as Financial, Statistical or Graphical	22	7	10	8	0	47
Programming in computer languages such as COBOL, ASSEMBLY, BASIC, PASCAL, VISUAL BASIC, C, C++	33	6	3	3	2	47
Participating in the non-technical design of computer systems such as Feasibility studies or Requirement Analysis	23	5	8	5	6	47
Participating in the technical design of computer systems such as System Analysis or Design and Implementation	26	7	3	5	6	47

Legend for No: 1 = No Experience; 2 = Little Experience; 3 = Average Experience; 4 = Good Experience; 5 = Excellent Experience

Fink (1998) outlines the guidelines for successful adoption of IT for SMIs in general. Other researchers such as Seyal et al. (1999) and Sohal et al. (1998) have surveyed the IT usage in SMIs according to their home country. Hence, it is essential to determine the factors that influence the usage of IT in Malaysian organizations. With this, an IT Adoption Model for entrepreneurs can be developed. From the survey, we have identified few parameters that influence the usage of IT in businesses. These parameters were based on literature reviews and interviews. As mentioned earlier, the interview consists of structured and unstructured questions. Due to the diversity of society and culture in Malaysia, only essential parameters were extracted. This can be seen in two perspectives: the managerial perspectives and the organizational perspectives.

From the managerial perspectives, we found that ownership of PC, computer literacy and computer experience are parameters that contribute towards the usage of IT in businesses. From the organizational perspectives, we found that sizes of an organization (which implies the number of employees), type of business and sales or profitability of an organization (i.e. the annual sales turnovers) are the parameters that do contribute towards the use of IT in businesses. High education for manager is not a crucial parameter in contributing IT use in businesses. Based on the discussed parameters, we propose an IT Adoption Model (as shown in Figure 1) that can be used as guidelines to infancy entrepreneurs in Malaysia. This IT adoption model consists of IT adoption parameters and its relationships with other parameters that in one way or another influence the IT use in businesses. The parameters are only limited within the survey instrument.

Other researchers have included other parameters such as organizational readiness (Fink, 1998) as one of the guidelines in his IT adoption model.

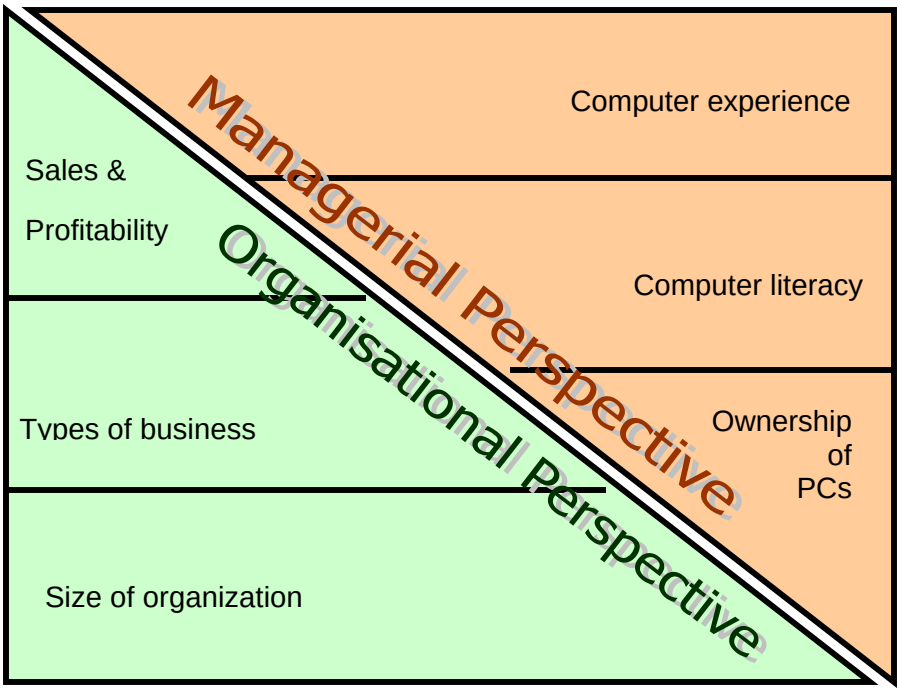

Figure 1. An IT Adoption Model based on Survey

As shown in Figure 1, from the managerial perspective, the ownership of PCs parameter and the size of an organization (in terms of the numbers of employees in the organization) contribute to the type of IT business. In the organizational perspective, the type of business the entrepreneur is doing and the sales or profitability parameters of the organization depends on the computer literacy and working experience in computer area. The term computer literacy means computer knowledge through self-study and working experience. Therefore, paper qualifications in computer science and IT is not a crucial parameter. However, Seyal et al. (1999) shows that educational level is one of the parameters for IT use in business in Brunei. This differs from usage of IT in Malaysia. From the survey that we have carried out, it indicates that for small and medium sized industries in Malaysia, higher education for executive officers or managers is not a vital parameter for usage of IT in business (refer Table 7 - illustrates 12 respondents (25.5%) highest education is only secondary or vocational school).

Discussion and Recommendations

Based on this research, we found out that most respondents have personal computers at home (85.1% from Table 8) and they use IT tools/software as a basis and necessary technology device to make progress into the IT age.

The survey also shows that there is a relationship between IT usage and managers' IT knowledge in businesses. This relationship is derived from Table 4 and 9. Analysis from the survey also shows that there is a relationship between IT usage in business depending on the size of the organization (number of employees) and this relationship can be derived from Table 1 and 4. On the other hand, Table 7 indicates that for small and medium sized industries, high education in IT area is not a necessary parameter in IT businesses (from Table 7, 12 respondents (25.5%) highest education is only secondary or vocational school). In general, parameter such as computer literacy is a desirable parameter in IT businesses and this is found from the survey stating that 34 respondents (72.3%) have gained their computer literacy through self-study.

This survey has proven the massive use of IT in businesses' organizations have gained advantages to their organizations. Table 2 shows that 13 small and medium sized industries that use IT in business have more than RM10 million annual sales turnovers.

From the survey, we have identified six parameters that influence the usage of IT in businesses. From the managerial perspectives, we found that ownership of PC, computer literacy and computer experience are the parameters that contribute towards the usage of IT in business. From the organizations perspectives, we found that the size of organizations (which implies the number of employees), the type of business and sale or profitability of organizations (annual sales turnovers) are parameters that contribute towards the usage of IT in business. Paper qualification for high position is not a necessity in IT businesses. Based on these six parameters, we have come up with an IT Adoption Model as shown in Figure 1. The IT Adoption Model has been discussed in previous section.

Since most questionnaire respondents were executive officers or managers, therefore further studies need be undertaken to collect information from the technical employees on their point of view on the usage of IT in their area that indirectly could contribute to the organizations as overall.

Conclusion

One major purpose of conducting this survey is to use the results to form an IT Adoption model, which can be used by organizations in Malaysia as guidelines to form a new business.

In conclusion, from the survey there is a relationship between IT usage in business with the managers' tacit and explicit knowledge in IT. The survey has provided some valuable information on the IT adoption in business. Parameter such as managers' computer literacy is the most desirable parameter that contributes towards the IT adoption in businesses. We found out from the survey that the size of the organizations parameter contributes to IT businesses regardless of small or huge organizations. The analysis of the survey also shows that high education for executive officers or managers is not a necessary parameter in IT businesses.

As mentioned earlier, the derived IT adoption model is based on the survey that we have done and the survey instruments used have some limitations. The survey does not cover the impact of the economy towards the usage of IT in business. Presently, further studies are being conducted

to study the impact of economy as a factor towards the influence in businesses and the derived IT adoption model.

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