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The success factors and barriers of information technology implementation in small and medium enterprises: an empirical study in Malaysia

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Abstract: The use of information technology (IT) among entrepreneurs is one of the critical aspects as the usage of IT effectively and efficiently will enable to increase productivity and performance in small and medium enterprises (SMEs). Previous reports revealed that SMEs in Malaysia have many concerns about the durability, competitiveness and efficiency due to problems associated such as financial, lack of information and knowledge, capability and capacity. This research is derived based on the issues related to IT implementation in SMEs in Malaysia. It determines the problems and issues related to the implementation, and identify factors for the successful implementation of IT in SMEs. The research approach includes the usage of questionnaires, interviews and case studies. Literature study identified ten critical success factors that include the management, staff, IT planning, financial, consultants, vendors, organisational culture, relationship management and change, and perception. This paper presents the success factors and the barrier of IT implementation based on the empirical study.

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1   Introduction

Since the advent of information technology (IT) in the year of '80s and after more than 30 years, IT has sparked a phenomenon that is very impressive. With the advent of IT, many large organisations and small and medium enterprises (SMEs) have realised the importance of IT in the business and various other activities. IT will not only facilitate the work but also to increase productivity, competitive advantage, improve management performance, thus saving operating costs and add value to a product or service in the business market either locally or internationally. No wonder, then SMEs are the lifeblood of the economy, representing over 90% of businesses and employ 65% of the total workforce in Malaysia. This market segment contributed 37% to the gross domestic

product (GDP) by the end of 2010; this makes it so great to economic growth (Abraham, 2010).

However, the level of preparedness and the use of IT in Malaysia are still modest although the government has carried out various incentives. Many still think IT is too expensive and view it as a cost rather than an investment. A recent study by *Global Information Technology Report* (2014) found that Malaysia is ranked 30 of IT readiness for society as a whole. Available positions decreased when compared to the years 2010–2012 in which Malaysia is ranked 28. Yet in the Asia, Malaysia is ranked ninth in 2014 compared to the sixth in 2010–2012 (Mohd Nor, 2012). The study was conducted on an assessment of readiness and how the economy practised the use of ICT in a country. This recent study showed a decrease in ICT involvement in the economy and industry organisations in the country.

2   Background

With the intense competition either from within and outside the country, SMEs should be able to meet the standards on the quality, cost and delivery set by large organisations and companies. With these three main points, then the SME companies can grow and continue to develop. Global involvement is important for SMEs because statistics show that SMEs have a great opportunity to become more competitive. Previous reports shown the Malaysia Productivity Corporation (MPC) that 92% of SMEs in Malaysia are from the manufacturing sector compared to 99% in Taiwan, Japan and Australia (Ab Rahim, 2007). However, this sector can only provide 6% to constant domestic product (GDP) which is too low compared to 55% in Japan and 57% in Germany. To cope, he said SMEs in Malaysia are to increase the terms of productivity, creativity, branding, packaging and increase efficiency. Thus, we see the needs of SMEs in Malaysia to concentrate more sensitive to the needs of technology and ICT in particular.

Previous research has also shown that SMEs in Malaysia have various problems regarding endurance, competition and efficiency due to financial problems, lack of access to information and knowledge, including the lack of ability and capacity. Other problems such as low productivity, low quality, lack of human resources, expertise and infrastructure costs are high (SME Corps, 2010). One other report said although 92% of Malaysian SMEs have internet access, the majority do not make use of the technology in marketing (Abdul Rahman, 2009). Internet penetration rate in Malaysia is currently around 66% (*The Star*, 2011). It also describes the lack of usage among SMEs is due to wrong interpretation of the high cost of technology and lack of technical knowledge. The report also reported that 55% of SMEs have one to five personal computers and 82% use computers for work such as payment and invoices. While another 94% have never had the experience of e-commerce. It also explains another 53% have a website but do not have the ability to use e-commerce. A further report describes only a little more than 100,000 SMEs in Malaysia amounted to almost 600,000 have a website (*The Star*, 2011).

Among the issues that often become obstacles not only SMEs in Malaysia and abroad is the cost. This issue can be dealt with like the ones made by Cisco Systems Malaysia that offers computer hardware by means of renting or leasing facilities coupled with flexible financial instalment scheme (Cisco Report, 2005, 2013). Although Cisco is offering this facility but according to the report, 52.1% of SMEs do not have employees

or staff to manage IT and staff or employee is also not among those who have the knowledge or skills of IT (*The Star*, 2010).

One report states SMEs do not invest or afraid to invest in IT. They are too worried and concerned with issues. Research by the Ministry of Entrepreneur Development also found that nearly 70% of IT entrepreneurs in Malaysia lack of knowledge of IT and in the use of IT (Central Bank of Malaysia, 2006). The same report also mentioned the lack of information on incentives and financial assistance offered due to the problem of transmission of information that is not efficient. A research by MITI also found that Malaysian SMEs are not interested and less confident in the performance of IT, especially those related to e-commerce because of the lack of information and lack of awareness on existing technology. Similar problem is also indicated by a report by the (European Commission, 2003). But unfortunately, according to sources of SME Corps during the presentation of annual report 2008, only 100,000 SMEs have a website compared to 598,000 total numbers of SMEs in Malaysia (only 16%). The figure shows that there is a large scope for SMEs to market their products even with the awareness of the internet space are able to offer international marketing potential to the international level (Alias, 2010).

While realising the benefits of the IT, a study by the Federation of Malaysian Manufacturers (FMM) explained that there are three issues that hindered the use of IT; IT expensive implementation costs, lack of trained resources and tangible benefits. In a literature survey by other global researchers (Management Services, 1997; Pollard and Hayne, 1998; Igbaria et al., 1998; McDonagh and Prothero, 2000) show the similarity of the obstacles whether in the form of internal and external to the implementation of IT in SMEs. Obstacles are the expensive cost of IT cannot be borne by the SME entrepreneurs. Attitude covering temperament or behaviour of entrepreneurs themselves are not enthusiastic about IT. The superficial knowledge of IT, especially to a veteran entrepreneur, is also considered as an obstacle. Another obstacle is the limited IT resource especially for SMEs in rural areas. There are also among entrepreneurs who have difficulties to accept the changes in IT although they aware that it will help them increase productivity and so on. Intense competition from big companies or organisations causes the SMEs to be not interested to IT. Perceived government support is not enough, especially in terms of providing funds and support in terms of infrastructure (Burgess, 2002).

There is also among entrepreneurs who claimed that they have limited time in terms of the implementation and maintenance of IT and lack of knowledge to know the advantages of IT. Some even claim they are not getting good advice, lack of use of vendors and consultants and external consultant. In fact there are entrepreneurs who have a shallow perspective management. Other constraint is a lack of understanding about how IT can bring benefits and how to evaluate the advantages. Finally, the problem is in terms of lack of formal planning or control procedures.

Swartz and Walsh (1996), Zinatelli et al. (1996) and Yap et al. (1996) found several factors that contribute to the successful implementations of IT:

- involvement of the managers and owners in the implementation of IT

- involvement of users (employees) in the development and installation

- the robust training

- selection of the selected applications to computing

- use planning methodology in preparing applications

- use analytical and strategic applications

- the rate of IT experts in organisation

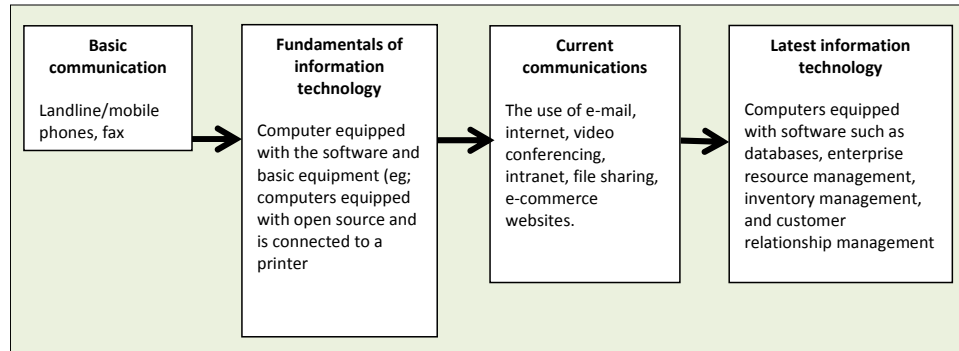- the role of outside vendors and consultants.

Most of this research involves data for more than 15 years ago and a new study should be done to examine the problems and success factors in the implementation of IT in current time, especially in the SME industry.

In addition to all the above issues and problems, the lack of availability of IT model to evaluate the readiness of SMEs is a new problem that has been identified. While there are many provisions, funding and support, utilisation rates in IT as indicated above, but the use of IT is still low among SMEs (*The Star*, 2010).

The absence of IT Readiness Model and systems that can measure the level of preparedness towards IT has demonstrated the urgent need for researchers to explore research topics in the hope readiness model and measurement equipment developed will be used for SMEs. Hopefully, this research also opens new research chain related to IT readiness to other subject or another domain. The purpose of this empirical study are to determine the problems and issues related to the implementation of IT among Malaysian SMEs and to identify the success factors of the implementation of IT in SMEs in Malaysia. Overall this study is to develop a model of IT readiness for SMEs. However, this paper only focuses on empirical studies conducted in Malaysia to examine and identify critical success factors and obstacles in the implementation of IT in SMEs in Malaysia.

2.1 The use of IT in SMEs

The use of IT consists of the basic technology such as radio and fixed telephone lines to the latest technologies such as e-mail, e-commerce and information processing system (see Figure 1). Using the latest IT helps improve business processes that fall in the category of e-communication with fixed line or mobile phone, or any of the two which is more economical and rejuvenates their business. This allows the SME to communicate directly with suppliers and distributors without having to visit. After realising and have basic communication needs, thus the added IT typically is a computer with basic software. Even without an internet connection, SMEs can use computers to make the paperwork, accounting and other businesses in various ways. With the advent of the internet also SMEs can take advantage of advances such as the advent of e-mail, file sharing, creating a website and e-commerce. All of these may be enough for most SMEs, especially those in service industries such as tourism. SMEs in the manufacturing industry are adaptable IT equipment which is more complex as ERP software or inventory management. SMEs can also apply IT devices progressively or directly to the ability of the more recent IT. IT adaptation step in a business is described by Kotelnikov (2007) (Figure 1).

Figure 1   IT adaptation measures (see online version for colours)

Basic communication	Fundamentals of information technology	Current communications	Latest information technology
Landline/mobile phones, fax	Computer equipped with the software and basic equipment (eg; computers equipped with open source and is connected to a printer	The use of e-mail, internet, video conferencing, intranet, file sharing, e-commerce websites.	Computers equipped with software such as databases, enterprise resource management, inventory management, and customer relationship management

Source: Kotelnikov (2007)

3   Empirical study design

In this study, two methods of data collection were used, namely through questionnaires and interviews given by mail based on limited resources such as financial, human, technical and time. To ensure that respondents who answered the questionnaire were reliable, questionnaires were only sent to managers or the owners of SMEs throughout the country at random from a variety of businesses. The questions designed in this study need an answer choice. Some of the choices are using a Likert scale of 1–5 which explains 1 (very not ready); 2 (not ready); 3 (less ready); 4 (prepared); and 5 (very well-prepared). There is also an open-ended question where respondents can answer what is felt to be related to the question and answer, and there is also the question that requires indication in the order of importance. To conduct the pilot study, the final draft of the questionnaire was sent to ten experts who are the entrepreneurs, consultants related to SMEs, academia. Seven of the experts sent back the questionnaire with answers. The purposes of this pilot study were to get comments on the appropriateness of the questions, and the reliability of the question and others. Comments like too many questions, the question is confusing is between the comments received by the researchers. After all comments are received, improvements to the questionnaire have been made.

A total of 430 questionnaire forms were distributed all over Malaysia where the percentage of return was 25.1%. The sample study was of 108 SME companies across Malaysia covering a wide range of industry sectors made at random. The data about the respondents was obtained from the MPC, the Council of Trust for the People (MARA) and from Malay Business Centre directory.

4   Analysis and findings

Analysis of the data and findings were obtained from the distributed questionnaires. The questionnaire includes three parts. Section 1 covers personal information such as title, race, age and so on. Section 2 includes information such as the category of industry, location, how long the company operates, the number of employees and others. Section 3 includes information on important factors that influence success of the use of IT, then

engaging key factors, both internal and external factors that prevent the use of IT. Finally, the questionnaire has open questions related to suggestions from respondents on how to improve and promote the use of IT in SMEs.

4.1 Demography

The majority of respondents (37%) as shown in Table 1 is composed of managers or directors. 36.1% did not assigned any position in the form and researchers assume they are managers or directors as well. 8.3% is made up of senior executives and a few more respondents are representative of the company consisting of supervisors, IT officers and others.

Table 1 Position of respondents in the highest frequency

Position	Post	Frequency	Percentage (%)
1	Manager/director	40	37
2	No answer	39	36.1
3	Senior executive/executive	9	8.3
4	Clerk	5	4.6
5	Senior marketing officer	3	2.8
6	Secretary	3	2.8
7	Designer	2	1.9
8	Supervisor	2	1.9
9	IT officer	2	1.9
10	Finance	1	0.9
11	Public	1	0.9
12	Business	1	0.9
Total		108	100

Two main categories of respondents were service (41.7%) and manufacturing (30.6%). Supply is 10.2%, and retail of 9.3%. Agriculture covers 0.9% and the rest is unknown and other industries (refer to Table 2). It was found that 44.4% of the respondents do business in the commercial business area, 23.1% and 19.4% of industrial zones and in light industrial zone respectively. Only 6.5% do business in residential areas and the rest in other places (refer to Table 3).

Table 2 Industry category

Position	Industry	Frequency	Percentage (%)
1	Servicing	45	41.7
2	Manufacturing	33	30.6
3	Supply	11	10.2
4	Retail	10	9.3
5	Agriculture	1	0.9
6	No answer	5	4.6
7	Others	3	2.8
Total		108	100

Table 3   Business location

Position	Location	Frequency	Percentage (%)
1	Commercial business area	48	44.4
2	Industrial zone	25	23.1
3	Light industrial zone	21	19.4
4	Residential area	7	6.5
5	Others	4	3.7
6	No answer	3	2.8
Total		108	100

The breakdown of respondents by industry is as shown in Figure 2. It was found that 37% of respondents are involved in the manufacturing industry, 5% agriculture, 18% in the service industry, followed by 14% growth in the supply industry and 21% in the retail industry. On the other hand, the next 5% are in the category of other industries.

Figure 2   The breakdown of respondents by industry (see online version for colours)
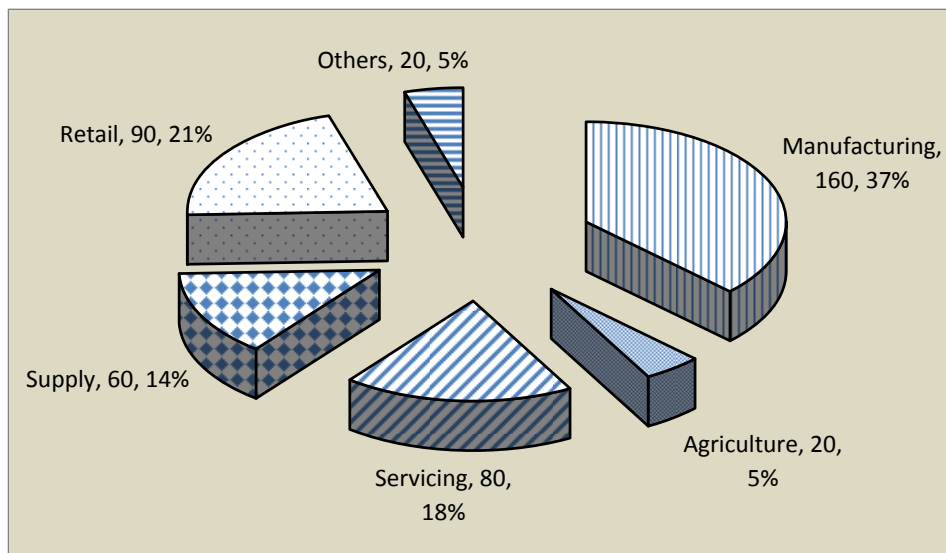
4.2   Analysis of factors that influence the success of IT

This section describes 20 factors affecting the success in the use of IT in SMEs, as shown in Table 4. These factors acquired in the study of relevant literature on this issue which is a measure of the success of SMEs in Taiwan (Wong and Lu, 2005) and Fink model (Fink, 1998).

Table 4 Factors that influence the success of IT

Factor	Description
1	Reduce transaction time
2	Reduce administrative costs
3	Reduce operating costs
4	Reduce the cost of information
5	Reducing turnover
6	Access to international markets
7	Awareness of the business environment
8	Improve business decision making
9	Improve management effectiveness
10	Improving the quality
11	Increasing the supply of stock
12	Improving internal efficiency
13	Improve relationships with business partners/customers
14	Improving marketing
15	Increase sales/income/productivity
16	Improve control and follow-up
17	Increase return on capital
18	Increase return on investment
19	Enhancing innovation capacity
20	Enhance the image of the company's business and technology opportunities

In the survey questionnaire, respondents were asked to rank and indicate the five most important factors that influence the success of the use of IT in SMEs. Of the total respondents, factor 15 was marked by 52 times and is considered an important factor in this analysis. This is followed by factor 12 marked 51 times and factor 20, 46 times (see Table 5). So the ranks or positions of these factors explain this issue in accordance with the highest frequency of marked and chosen by the respondents. Factors that have the high percentage are the most important factor affecting the success of the use of IT in SMEs.

Table 5 Position of the factors that influence the use of IT by highest frequency

Position	Factor	Description	Frequency	(%)
1	15	Increase sales/income/productivity	52	7.2
2	12	Improve internal efficiency	51	7.0
3	20	Enhance the image of the company's business and technology opportunities	46	6.3
4	10	Improve quality	42	5.8
5	3	Reduce operating costs	42	5.8
6	9	Improve management effectiveness	42	5.8
7	2	Reduce administrative costs	41	5.7

Table 5   Position of the factors that influence the use of IT by highest frequency (continued)

Position	Factor	Description	Frequency	(%)
8	1	Reduce transaction time	40	5.5
9	8	Improve business results	38	5.2
10	14	Improve marketing	38	5.2
11	6	Access to international markets	35	4.8
12	7	Awareness of the business environment	33	4.6
13	13	Improve relationships with business partners/customers	32	4.4
14	16	Improve control and follow-up	32	4.4
15	17	Increase return on capital	30	4.1
16	4	Reduce the cost of information	30	4.1
17	5	Reduce turnover	26	3.6
18	18	Increase return on investment	26	3.6
19	11	Increase supply of stock	25	3.4
20	19	Enhance innovation capacity	24	3.3
Total			725	100

If the factor of 2, 3 and 4 are combined because these factors are related to costs in general (operating cost, administrative cost and cost of information), Table 6 shows the findings of these factors that influence the use of the IT in SMEs. As obtained in Table 6, it appears that factors 2, 3, and 4 are the 3 main factors that influence the success of IT in SMEs increased by 15.6%. It was followed by factors of 15, 12 and 20 (see Table 6).

**Table 6**   Frequency table for each significant factors

Position	Factor	Description	Frequency	%
1	2	Reduce administrative costs	113	15.6
	3	Reduce operating costs		
	4	Reduce the cost of information		
2	15	Increase sales/income/productivity	52	7.2
3	12	Improve internal efficiency	51	7.0
4	20	Enhance the image of the company's business and technology opportunities	46	6.3
5	10	Improve quality	42	5.8
6	9	Improve management effectiveness	42	5.8
7	1	Reduce transaction time	40	5.5
8	8	Improve business results	38	5.2
9	14	Improve marketing	38	5.2
10	6	Access to international markets	35	4.8
11	7	Awareness of the business environment	33	4.6
12	13	Improve relationships with business partners/customers	32	4.4

Table 6   Frequency table for each significant factors (continued)

Position	Factor	Description	Frequency	%
13	16	Improve control and follow-up	32	4.4
14	17	Increase return on capital	30	4.1
15	5	Reduce turnover	26	3.6
16	18	Increase return on investment	26	3.6
17	11	Increase the supply of stock	25	3.4
18	19	Enhance innovation capacity	24	3.3
Total			725	100

Figure 3 shows the frequency of these factors in the bar chart. In this chart it clearly shows the cost factor has a significant influence on the use of IT in SMEs in Malaysia.

Figure 3   Frequency of the important factors that influence the success of IT implementation in SMEs (see online version for colours)
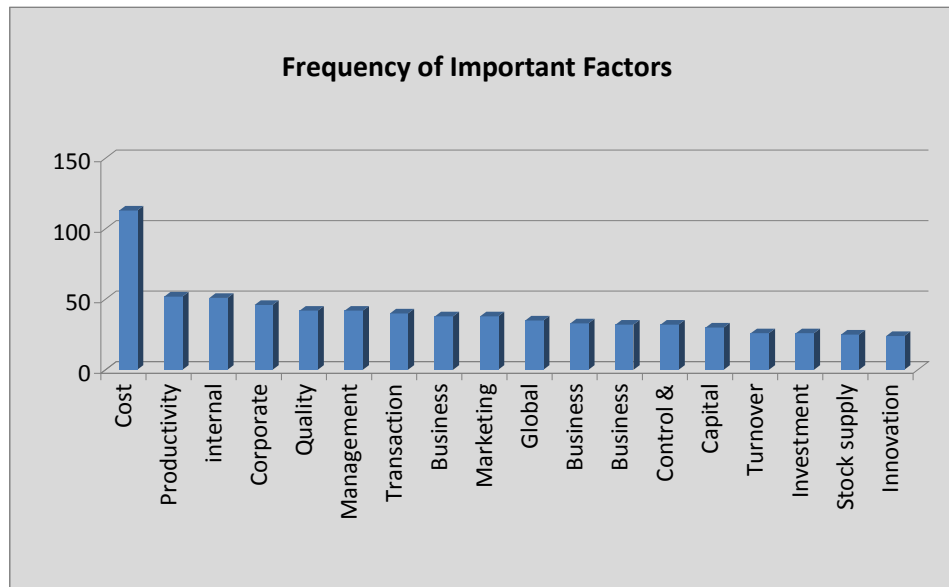
4.3   Barrier factor (internal) towards the execution and IT consumer

This section discusses the findings of the analysis and to identify internal factors that may hinder the use of IT in SMEs. Such factors are identified in advance of the review of the literature as a factor limiting the performance of IT in SMEs as shown in Table 7 (Management Services, 1997; Pollard and Hayne, 1998; Igbaria et al., 1998; McDonagh and Prothero, 2000). There are 13 factors identified as internal factors that inhibit the use and implementation of IT in SMEs.

Table 7   Barrier factor (internal) in the execution and use of IT

| Factor	Description
1	Lack of awareness/understanding of the potential that can be found
2	Perception of the value of the business
3	Lack of knowledge in financial capability
4	Lack of knowledge, expertise, skills, technical aspects of IT
5	Lack of technical understanding and IT implementation
6	The perception of cost/cost benefit of the use of IT
7	An acceptable cost
8	Lack of human resources
9	Lack of financial resources
10	Confusion in IT selection
11	Lack of management planning and strategy
12	Fear of open competition
13	Inconsistent with the SMEs way of business

Analysis and study of the responses of the respondents in this survey found that factors 6 and 7, which were the perception of costs and benefits in the use of IT and the costs accepted by respondents, were the two main factors in resistance factors (internal). Due to both of these factors are related with cost then they are combined and become a major factor as shown in Table 8. Further factor according to its significance based on the responses of the respondents were less human resources (factor 8), lack of awareness and understanding of IT (factor 1), and lack of financial resources (factor 9). The hindering factor (internal) in the use of IT in SMEs can be found in Table 8.

Table 8   Position of barrier factor (internal) of IT usage

Position	Factor (F)	Description	Frequency	(%)
1	6 and 7	Perceived costs and benefits of the use of IT, an acceptable cost	71	(12.3)
2	8	Lack of human resources	71	(12.3)
3	1	Lack of awareness/understanding of IT	68	(11.7)
4	9	Lack of financial resources	64	(11.1)
5	10	Confusion in IT selection	56	(9.7)
6	3	Lack of knowledge in financial capability	53	(9.2)
7	2	Perception of business value	42	(7.3)
8	5	Lack of technical understanding/IT implementation	39	(6.7)
9	11	Lack of management planning and strategy	37	(6.4)
10	13	Inconsistent with SME business	28	(4.8)
11	4	Lack of knowledge, expertise, skills, technical aspects of IT	26	(4.5)
12	12	Fear of open competition	24	(4.1)
Total			579	100

While Figure 4 also displays this finding more clearly in the form of pie chart. The chart is labelled by a factor of 1 to 13 (labels as F1 to F13 respectively), together with the percentage factor on the findings from this study. It is clearly demonstrated in the chart that the most hindering factors in the usage of IT in SMEs are F6 and F7 (cost related), F8 (lack of human resources), and F1 (lack of awareness and understanding of IT). These factors are considered as the major factors in IT barriers toward execution of IT in Malaysia. Similarly, it is shown that F9 (lack of financial resources), follow by F10 (confusion in IT selection) and F3 (lack of knowledge in financial capability) are also contributed to the hindering factors revealed in this study. The other hindering factors are F2 (perception of business value); F5 (lack of technical understanding and IT implementation); F11 (lack of management planning and strategy); F13 (inconsistent with SME business); F4 (lack of knowledge, expertise, skills and technical aspects of IT); and F12 (fear of open competition). These factors are also displayed in the chart and can be referred in Table 8 as well.

Figure 4 Percentages for the internal factors (F) that hinder the use of IT in SMEs (see online version for colours)
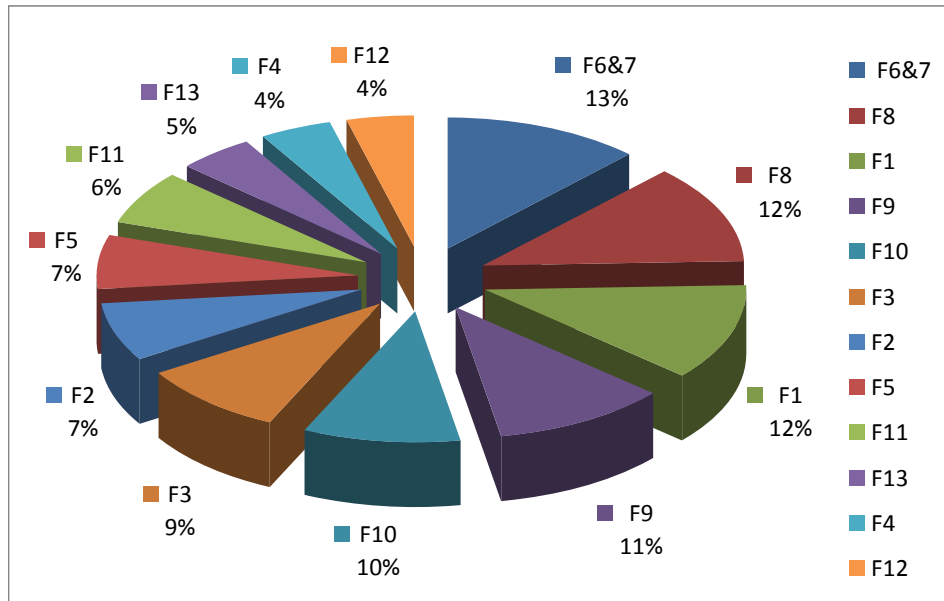
4.4   Barrier factor (external) in the use of IT

In early studies, the external factors that hinder the implementation and use of IT have been identified. These factors (consisting of 12 factors) are identified as a result of a literature review of previous studies (Management Services, 1997; Pollard and Hayne, 1998; Igbaria et al., 1998; McDonagh and Prothero, 2000). Table 9 shows the factors mentioned.

**Table 9**   External factors that hinder the implementation and use of IT

Factor	Description
1	Less influence of industry
2	Lack of promotion from the vendor
3	Fear of open competition
4	The legal issues and reliability
5	The cost of change and adaptation
6	Not sure of the advantages of the use of IT
7	Less pressure from business partners
8	The lack of security in the use of IT
9	Lack of external technical support
10	Not sure/do not correspond to the products, services and business
11	Returns are not clear
12	The high cost of computer maintenance

Table 10 shows the findings of this study which reveals that factors 5 and 12 (involve cost) are the main external barrier that prevents the use of IT in SMEs. The external technical support, factor 9 and factor 6, which is not certain of the advantages of IT, are the exterior problems that also affect the use of IT in SMEs. Figure 5 shows the position of these factors in the form of graphs. The result of this is through the frequency of respondents making choices in these factors. The factors presented in the graph are corresponded with factors demonstrated in Table 9.

Table 10   Frequencies of external factors

Position	Factor	Description	Frequency	(%)
1	12	The high cost of computer maintenance	118	(21.3)
	5	The cost of change and adaptation		
2	6	Not sure of the advantages of the use of IT	54	(9.7)
3	10	Not sure/do not correspond to the products, services and business	53	(9.5)
4	9	Lack of external technical support	50	(9.0)
5	1	Less influence of industry	45	(8.1)
6	2	Lack of promotion from the vendor	45	(8.1)
7	7	Less pressure from business partners	43	(7.7)
8	4	The legal issues and reliability	42	(7.6)
9	11	Returns are not clear	39	(7.0)
10	8	The lack of security in the use of IT	35	(6.3)
11	3	Fear of open competition	31	(5.6)
Total			555	(100)

Figure 5   External factors that prevent the use of IT in SMEs (see online version for colours)
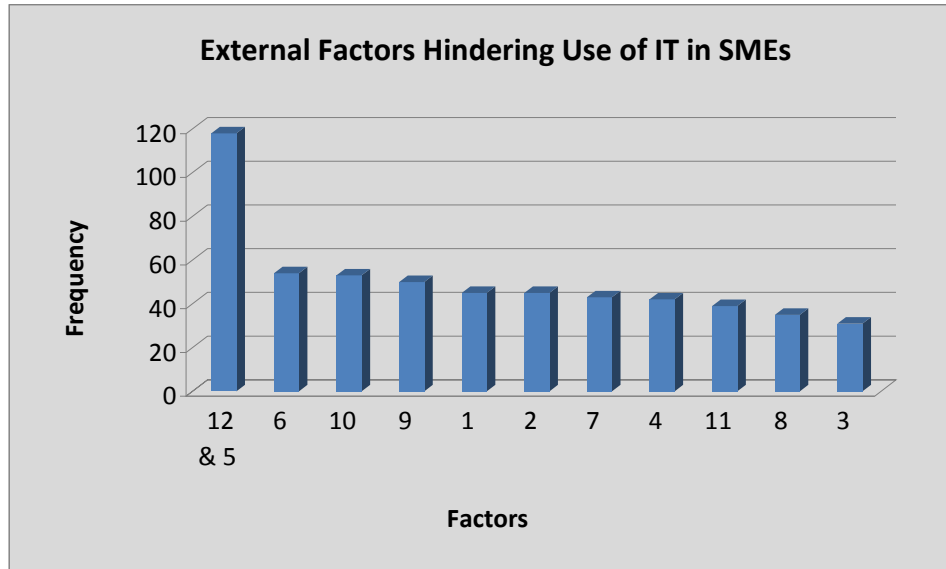
5   Analysis of open comments and suggestions

In the survey questionnaire, the open comments were also obtained from the respondents. Some suggestions were given to improve or promote the use of IT and can be classified as follows:

a   *Assistance and support:* Respondents expressed support and assistance required from the technical and equipment, financial, advisory and training services as well as free trial products.

b   *Systems and infrastructure:* Recommends the use of open source systems in SMEs and the use of comprehensive and standardise financial system.

c   *Skills:* Training needed by staff, skilled personnel, management and administration.

d   *Campaigns and promotions:* wider dissemination of the use of IT among SMEs, encouragement and incentives in the use of IT in SMEs, and supplier involvement in the campaign and promotion.

e   *Education and research:* IT seminars and courses. The higher institutions are encouraged to produce IT syllabus that meets current market and employment demands. Encouragement and intensification are needed from the local and international researchers to explore problems and issues related to SMEs or at the level of SMEs.

Among the main problems that hinder the respondents in terms of the use of IT is divided into five. First, is the problem of lack of infrastructure involving online instability; second involves the problem of lack of after-sales service. Third problem is related to lack of skilled staff and less relevant IT knowledge. Staff also found to be less

knowledgeable and less trained in the operation and management of IT that lead to less acceptance of IT. The next identified problem is lack of information on IT in rural areas and the fifth problem is related to high cost of IT implementation. In this issue, respondent revealed that they did not have enough capital to purchase new IT hardware and software.

6   Results and discussion

Analysis of the survey data shows SMEs only use IT to four main factors namely the internet (23%), e-mail (23%), worksheets (15%) and word processing (13%). They are also known to use IT for three main purposes of the invoice (14%), sales (13%) and financial (12%). This explains the current situation in which the Malaysian SMEs have not yet reached the level of sophistication in the use of IT. Many issues and efforts should be undertaken to ensure that SMEs in Malaysia are able to optimise the use of IT in line with the latest technological advancements. If referring to the model of adaptation measures by Kotelnikov (2007), Malaysia SMEs are at the second step or the second stage of IT implementation (refer to Figure 1).

Further analysis found that SMEs are using IT for three main reasons, to increase sales and income (7.1%), internal efficiency (7.0%) and the image of the company (6.35%). However, our study reveals that factors associated with reducing administrative costs, lowering operating costs and reducing the information cost are considered as the major reasons of SMEs using IT. The percentage of frequencies by respondents in this study is 15.5%. This corresponds to the literature review which reduce costs is the main factor for any SMEs in the world.

Three key internal factors that prevent the use of IT in SMEs are shortage of specialist resources for new technology and software (12.6%) and these problems are still acknowledged and faced today as a report from the newspaper (*The Star*, 2011). Other problems are lack of understanding and awareness of IT potential (11.7%) and financial constraints (11.1%). The analysis also found that external factors that hinder the implementation of IT in SMEs are the problem associated with high maintenance cost of IT (12.1%), followed by non-confidence in IT (9.7%), not sure or not fit on their business products (9.5%), cost of change and adaptation (9.15%), and lack of external technical support (9%). These are some of the issues that must be resolved if we want IT to be widely implemented in Malaysian SMEs which need supports and services from various parties.

From the basis point of view, the analysis made in this study found that respondents largely are readied to implement IT in their company. But there are some issues such as training, assistance and support, after sales service, education and research, workforce training, and the system introductory and recommendation, and well versed in IT that need to be addressed. The use of open source and commercialise off-the-shelf system which are very popular in today's approach of software acquisition, should be made more carefully and with the services of experts to ensure the quality and suitability of this system, especially in the SMEs (Baharom et al., 2011; Tarawneh et al., 2011; Jusoh et al., 2012). This issue can be overcome if there is certification of software for all software products in Malaysia and globally (Yahaya et al., 2010). The risk of the use of IT and its implementation involving other parties such as outsource company and suppliers should

also be considered by the SMEs (Yahaya et al., 2014) which also requires IT expert guidance.

The analysis also showed that the surveyed respondents among SMEs in Malaysia used IT as tools to support business routine activities such as issuing invoices, shipping notices, sending and receiving e-mails, word processing and more. Thus, assistance and encouragement should be emphasised among SMEs to increase the use of more sophisticated applications and technologies that at least comparable and compete with the advancement of technology used in other countries such as Korea, Japan and USA.

7 Conclusions

This study discusses and confirms various issues and problems faced by the SMEs precisely in Malaysia in IT implementation. There are a number of issues and problems that are still relevant today and perhaps for many years to come. This is due to IT technology is constantly changing and these changes are sometimes too quick for SMEs to be able to catch up and execute because of high costs and technical constraints such as the knowledge and skills of the new technology. IT security is also another issue that should also be highlighted and considered. Using and implementing IT may be possible but uncertainties may arise to ensure the application and the technology they use are safe because all their data will include finance, sales and several other critical information that is important for the survival of a company. Therefore, comprehensive research is essential to ensure the implementation of IT among SMEs is successful and they themselves would able to reap the benefits and profits from its implementation. The IT readiness model for SMEs could be one of the potential researches to be carried out in this area of interest. With the readiness model can help SMEs to use a clear method and measures the level of preparedness in implementing IT as well as justifying for future funding. Other issues that rose up from our empirical study are the security and quality aspects that need to be highlighted, considered and improved in IT implementation.

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