Determining Factors for the Usage of Web-Based Marketing Applications by Small and Medium Enterprises (SMEs) in Malaysia

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Applications of web-based marketing in the business environment have profound profit implications. Large companies around the globe have invested much of their resources to incorporate web-based applications as an important marketing tool to reach their customers. Cost reduction, increase capability, communication improvement and customer service improvement are among the benefits perceived by these companies. However, the practice of web-based marketing among small and medium enterprises (SMEs) in Malaysia is still in its infancy. This study intends to investigate determining factors for the usage of web-based marketing by SMEs in Malaysia. The potential benefits from such an application will be addressed in this study.

EXECUTIVE SUMMARY

This study focuses on defining the factors affecting usage of web-based marketing or so called "internet marketing" as well as the extent of its usage amongst small and medium enterprises (SMEs) in Malaysia. Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA) and e-Commerce Assimilation Models were used to develop a theoretical framework for this study. Three determining factors namely technology characteristics, organizational characteristics, and environment characteristics constitute the central focus of the theoretical framework in this study.

A quantitative survey was developed to gather data from 200 SMEs in Penang in relation to factors that would influence SMEs' adoption of web-based marketing. Findings from this study revealed that the

proposed framework could be used to understand the factors influencing adoption of web-based marketing by SMEs in Malaysia.

Results also showed that general usage of web-based marketing among the SMEs in Malaysia is still low, particularly in the state of Penang. The most used web-based marketing application is email, whereas the least used application is online payment system. Furthermore, a substantial number of the SMEs claimed to have their company's website, but these websites were used merely to display products and company information rather than have advanced features such as providing online transactions and online payment services. More than half of the SMEs also indicated that they were not aware of the benefits to be gained from the applications of web-based marketing. Issues related to pitfalls of the adoption of web-based marketing and limitations of the study are also discussed.

INTRODUCTION

Application of the Internet in the business environment has changed the way companies communicate, how they share information with business partners, and how they buy and sell. Connectivity to the Internet reached over 1.4 billion of the world's population by 2008. The Internet's presence is undeniably commanding and poses tremendous opportunities as well as challenges for web-based marketing.

Web-based marketing or so-called "Internet marketing" can be defined as the use of the Internet and related digital technologies to achieve marketing objectives and to support the transactions of marketing activities processes such as supply chain management, building customer relationships and enhancing service quality delivery (Chaffey *et al.,* 2000). Large companies such as Xerox, IBM, Merrill Lynch, Motorola, Intel and Hewlett Packard are embracing web-based marketing applications as an alternative distribution and communication channel to conduct daily business as well as to reach their customers, business partners, and other stakeholders with the aim of improving their total customer service experience (Pallab, 1996). This achievement was due to companies' total readiness in technology, organizational and environment to apply web-based marketing practices into their business. Technological, organizational and environmental characteristics such as security and privacy, ease of use the technology, entrepreneurs attitude and knowledge, product fit, availability of technical knowledge to the firm, customers and competitors pressures as well as the government's support are among the factors that have been identified as drivers for the successes or pitfalls of web-based marketing applications in various large industries. However, the trend of profit maximization shown by the large companies as a result of integration of web-based marketing applications was not seen in the small medium enterprises (SMEs) in the Asian countries especially Malaysia.

The term SME was introduced and adopted in Malaysia in the year of 2006 by the National SME Development Council. SMEs fall into two broad categories: (i) manufacturing, manufacturing-related services and agro-based industries (enterprises with full-time employees not exceeding 150 or with annual sales turnover not exceeding RM25 million), and (ii) services, primary agriculture, information, and communication technology sectors (enterprises with full-time employees not exceeding 50 or with annual sales turnover not exceeding RM5 million).

SMEs represent 99.2% of the total business establishments in Malaysia, account for 65.1% of total employment and 19% of total exports, and contribute 47.3% to GDP (Bank Negara Malaysia, 2006). In terms of share contribution, SMEs accounted for 43.5% of total output and 47.3% of value added revenue (Table 1). SMEs in the services sector contribute to the largest share of the economic growth, followed by manufacturing and agriculture.

TABLE 1
OUTPUT AND VALUE ADDED BY SECTOR*

Output (RM billion)				Value added (RM billion)		
Sector	Total	SMEs	%	Total	SMEs	%
Manufacturing	549.1	191.6	34.9	128.1	47.5	37.1
Services	361.7	204.9	56.7	187.6	102.7	54.7
Agriculture	20.6	8.7	42.1	9.1	3.6	39.7
Total	931.4	405.2	43.5	324.7	153.7	47.3

** This data is only available up to year 2003.*

Realizing the economic importance of the role of SMEs, the Malaysian government's commitment and concern for the development of SMEs were reinforced. In tandem to this, 198 programs of web-based marketing applications such as strengthening enabling structure through SME Credit Bureau, incubation centers in SIRIM, marketing infrastructure to package, distribute and market agricultural products, provision of financial services and rural economy funding schemes were introduced to SMEs in the year of 2008 (The Sun, 2008).

However, despite the efforts of the government and the various support programs, the number of SMEs achieving advanced stages of web-based marketing is very low and lags behind larger companies in their use. The Malaysian Small and Medium Industry Association revealed that only 30% of the local SMEs have their own websites; some are still at the initial stage, and or not progressing much beyond e-mail and simple information-based web-pages.

Thus, in view of the low usage of web-based marketing applications among the SMEs in Malaysia, there is a need to examine factors in particular the technological, organizational and environmental characteristics that contribute to the adoption or rejection of these applications among the SMEs, for future program enhancement.

LITERATURE REVIEW

The terms web-based marketing, internet marketing and e-commerce are often used interchangeably in business transactions conducted on the Internet (Chaffey et al., 2000). It encompasses a wide range of supply chain business activities and relationship management via online (selling, ordering, payments, home shopping/banking, purchasing online, communication) with the aim of improving market efficiency in dealings with suppliers and clients (Hoffman & Novak, 1997). According to Zwass (1998), the thrust of web-based marketing or e-commerce applications is to create a business environment that promotes 'sharing business information and maintaining business relationships'.

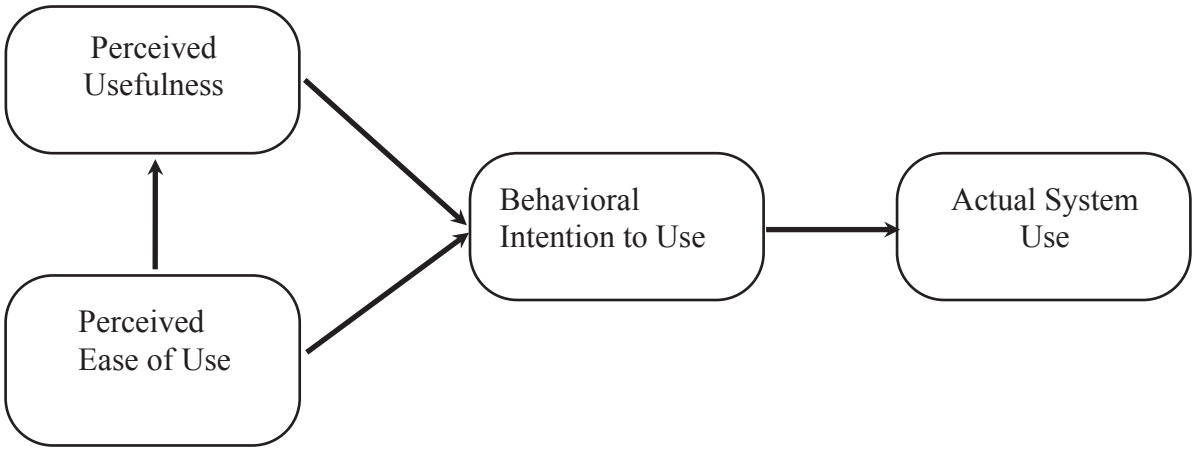
Studies have shown that the usage of web-based application as one of marketing tools in various firms provides extensive benefits such as better management information between employers and employees, customers and suppliers; better integration of suppliers and vendors; better channel partnership; lower transaction costs; better market understanding and expanded geographical coverage (Pallab, 1994; Ghosh, 1998; Hoffman *et al.,* 2000). However, the benefits gained from such technological applications are achievable only when the technology is fully accepted and utilized by the users (Davis, 1989; Davis et al., 1989; Mathieson, 1991; Moore & Benbasat, 1991; Taylor & Todd, 1995). Businesses that invest hugely

in this technology will be doomed to failure if their employees, suppliers and customers are not ready to accept such practices.

Technology Acceptance Model (TAM)

TAM was developed by Davis (1989), and it was adapted from Fishbein and Ajzen's Theory of Reasoned Action (TRA) (1975). According to the TRA, beliefs influence attitudes, which in turn lead to intentions, which then generate behaviors. TAM adapted this belief-attitude-intention-behavior relationship to model user acceptance of IT (Chau & Hu, 2001; Shih, 2003). TAM is an intention-based model that is developed specifically for explaining and/or predicting the acceptance of computer technology among users, and their intention to use it in the future. The intention for future use can be explained in terms of their perceived usefulness, perceived ease of use, attitudes, subjective norms and other related variables (Davis et al., 1989) (Figure 1). TRA and TAM, both of which have strong behavioural elements, assume that when someone forms an intention to act, that they will be free to act without limitation.

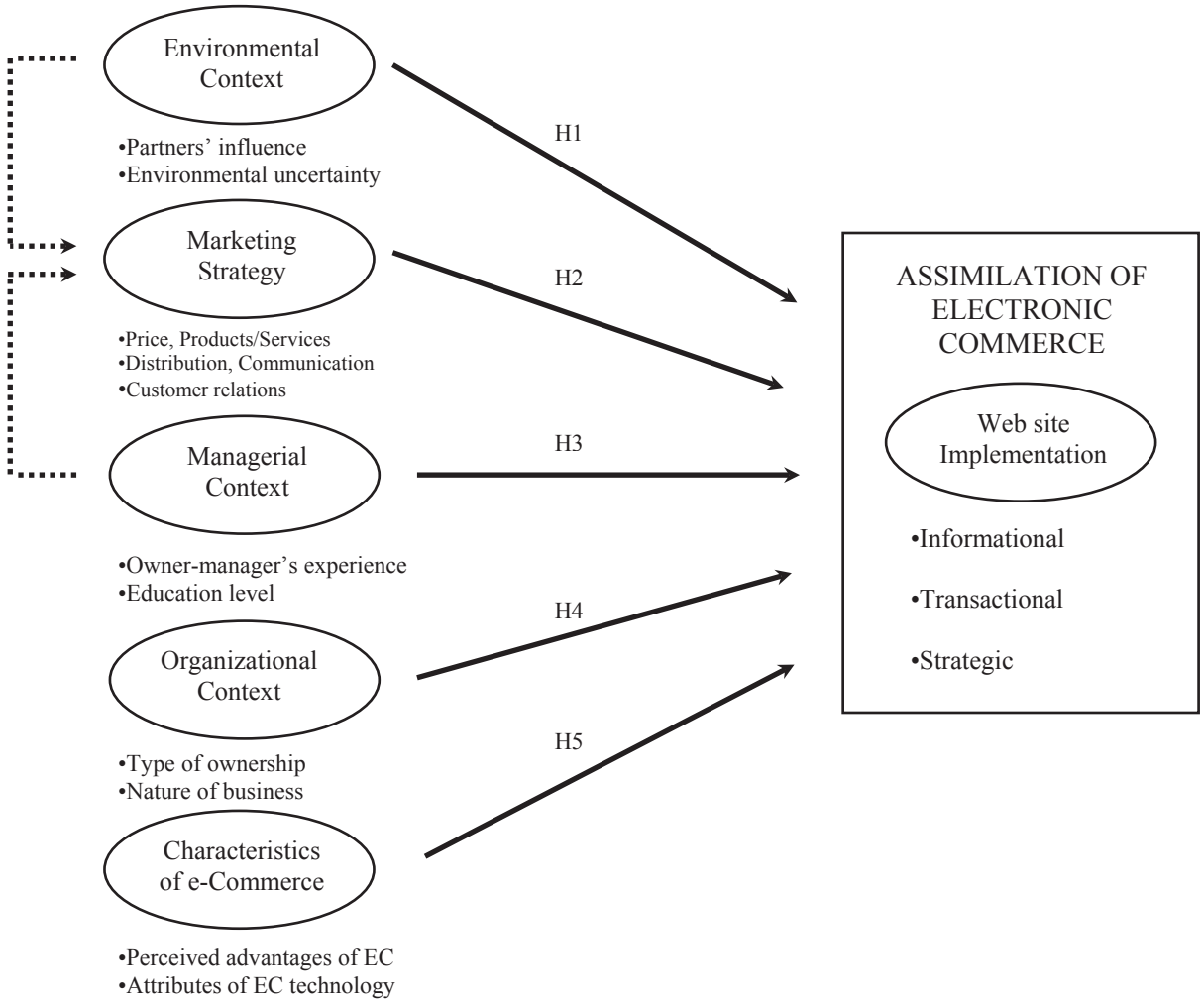
FIGURE 1
THE TECHNOLOGY ACCEPTANCE MODEL



Source: Davis et al., 1989; Venkatesh et al., 2003

However, in practice, constraints such as limited ability, environmental or organizational limits, and characteristics of the entrepreneurs will limit the freedom to act. This has been supported by Raymond (2001), that in a small business environment the determinant of e-commerce diffusion and assimilation is largely dependent on characteristics of the environmental context; characteristics of the organization; characteristics of the organization's leaders or decision makers; and characteristics of the technological innovation itself (Figure 2). These are the possible factors may lead to successes or pitfalls of web-based marketing practices among the SMEs.

FIGURE 2
DETERMINANTS OF ELECTRONIC COMMERCE ASSIMILATION MODEL (RAYMOND, 2001)



Technology Characteristics

The adoption of internet technologies or strategies by organizations has been studied from a variety of different perspectives. For example, concern about security and privacy, and ease of use of the systems are the common variables discussed in many technology adoption researches. The Net has very little security and any company using the Net risks disclosure of proprietary information. However, with its increasing use for marketing and advertising, there is ample justifiable concern for security and privacy in terms of copyright and other proprietary information.

In comparison to large corporations, SMEs also do not have the knowledge and the resources to adapt their systems to react flexibly to new business requirements like process changes or integration of new trading partners (Raymond et al., 2005). Therefore, SMEs need an easy to use and self-explained business tool to handle the complexity of web-based marketing applications.

Eid et al., (2006) also pointed out that intention to use web-based marketing applications is also given to ease of use. Technology applications that are easy to use are expected to have a positive influence on usage of web-based marketing among the SMEs. But briefly, both companies and customers require elements of "security" as well as "ease of use" for using web-based marketing.

Organizational Characteristics

According to Storey (1994), progression of technology practices in the business environment seems to occur when appropriate combination of factors take place, these being the characteristics of the entrepreneurs, and the characteristics of the firm.

Entrepreneur's Attitude and Knowledge

Classical diffusion of innovation theory has identified many characteristics that can determine an individual's propensity to adopt an innovation and to implement it for his or her own purposes (Rogers, 1995). Organizational readiness for Internet adoption is personified in the SME owner. SMEs that are attracted to e-commerce tend to be more entrepreneurial, are risk takers, are innovative and invariably, creative (Poon & Swatman 1999; Mehrtens et al., 2001).

Jeon et al., (2006) also agreed that the CEO factor seemed to play an essential role in web-based marketing adoption decisions among SMEs The more knowledgeable and innovative a CEO is, the more likely the small business will adopt web-based marketing. It thus appears that a number of factors that affect the adoption of web-based marketing relate to owner attitude and knowledge.

Product Fit

Hart et al., (2000) mentioned that electronic and related products are more likely to fit with the online channel. This is because of the predominant demographic characteristics and interests of early internet users, the possibility to transmit plenty of information about the product, and the opportunity for comparison-shopping. Furthermore, Mahajan et al., (2002), also mentioned that the internet channel presents a better opportunity to maximize information for certain product categories.

Technical Knowledge Availability of the Firm

One of the key aspects SMEs must consider when embracing technological advances is the availability of technical knowledge in the firm. Several studies have shown significant effect of organizational characteristics, particularly greater availability of IT resources (Lankford et al., 2000), and in-house knowledge (Dennis *et al.,* 2002) would lead to higher IT adoption. Companies that have employees with higher level of IT's knowledge and e-business technology would have greater adoption of web based marketing applications than those companies who have employees with low level of IT's knowledge (Jeon *et al.,* 2006). Thus, the employee's knowledge of IT will strongly affect the adoption of e-business. In the case of SMEs environment, most enterprises do not have a budget allocation for their employees' formal training or for hiring experts in ITs (Wagner et al., 2003). This impedes the adoption of web-based marketing applications in their business.

Environment Characteristics

The environment characteristics of SMEs is formed by organizations providing similar products or services with the major suppliers, customers, and regulatory agencies, creating incentives and barriers to adoption and use (Fernando & Guy, 2005). Thus, the decision to adopt web-based marketing, rather than being a purely rational and internal decision, should also be induced by external pressures from competitors, customers and government.

Customer Pressure

External pressure, is primarily from customers, though suppliers and employees are also influencing factors to the successes or pitfalls of web-based marketing usage among SMEs. SMEs are adopting electronic technology as a means of communication and distribution under competitive pressure from suppliers and customers from developed countries (Ghosh, 1998).

Johnston and Wright (2004) also indicate that most e-business capabilities of SMEs in international supply chains are as a result of direct external pressure from their customers. Thus, many businesses will adopt web-based marketing applications in order to stay competitive, with either powerful customers

spurring them into action. The fear of being left behind by the competitors will also act as an incentive (Cross, 2000; Adshead, 2000).

Competitors Pressure

Environmental influences can also place sufficient pressure on SMEs to adopt various technologies. Strategically, if a competitor adopts the technology, it may be essential for other competing SMEs to do so if they are to remain viable within the industry sector (Lieberman & Asaba, 2005). Thus, the competitive environment in which a firm operates conceivably influences the firm's propensity to adopt web-based marketing.

Government Support

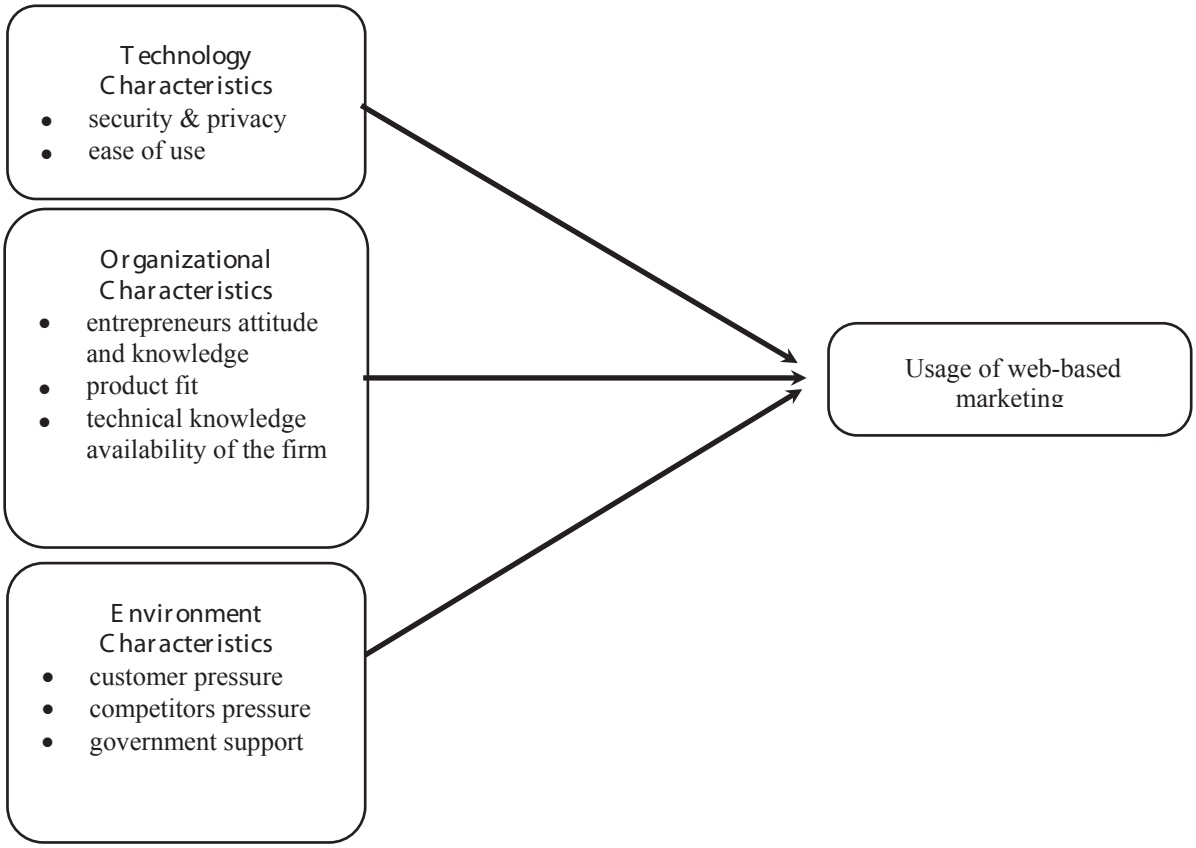
Government policy and regulation in ITs can both encourage or discourage the adoption of e-business. It is another important environmental characteristic for technology innovation. Ang and Pavri (1994) found that direct intervention by the government is an important factor in promoting technological innovation although the degree of influence on firms may vary between countries.

There is evidence to show that active intervention policies from the government such as incentives, financial and technological support has lowered the barrier to IT adoption among SMEs in the European Union and in South East Asia (Martin & Matlay, 2001).

Theoretical Framework and Hypotheses Development

This study adopts three groups of characteristics affecting the usage of web-based marketing as shown in Figure 2: ***technological characteristics, organizational characteristics and environment characteristics*.** Each of these three characteristics consists of several sub-factors. Technological characteristics consist of two sub-factors: security and privacy, and ease of use. Organizational characteristics reflect three aspects for influencing the usage of web-based marketing: entrepreneurs' attitude and knowledge, product fit, and technical knowledge availability of the firm. Environmental characteristics cover three sub-factors: customer pressure, competitors' pressure, and government support. The three characteristics of web-based marketing act as independent variables and can influence the usage of web-based marketing applications. Hence, a research model has been developed to fit the context of this study as shown in Figure 3.

FIGURE 3
THEORETICAL FRAMEWORK



In the present context of SMEs in Malaysia, the following hypotheses are also tested (Table 2):

TABLE 2
RESEARCH HYPHOTHESES

Hypothesis 1	Security and privacy have a positive effect on the usage of web-based marketing in SMEs.
Hypothesis 2	Ease of use has a positive effect on the usage of Web-based marketing in SMEs.
Hypothesis 3	Entrepreneur's attitude and knowledge has a positive effect on the usage of Web-based marketing in SMEs.
Hypothesis 4	Product fit has a positive effect on the usage of Web-based marketing in SMEs.
Hypothesis 5	Technical knowledge availability of the firm has a positive effect on the usage of Web-based marketing in SMEs.
Hypothesis 6	Customer pressure has a positive effect on the usage of Web-based marketing in SMEs.
Hypothesis 7	Competitor's pressure has a positive effect on the usage of Web-based marketing in SMEs.
Hypothesis 8	Government support has a positive effect on the usage of Web-based marketing in SMEs.

METHODOLOGY

This study seeks to explain the factors influencing the usage of web-based marketing among SMEs in Malaysia. A survey approach was employed to 200 SMEs in Penang, Malaysia that covers the three main economy segments; services, manufacturing, and agriculture. Penang was chosen in this study, as it is one of the most developed states in Malaysia after Kuala Lumpur the capital city of Malaysia. With a small area of 1031km, Penang has the highest urban population of 1,313,449 and beat the other states in Northern region.

The targeted respondents are owners of companies or top-level management team in SMEs who are either users or non-users of web-based marketing in their organization. From each industry, about 65 companies were randomly selected to participate in the survey. Data was collected by using three methods; mailing, online survey and telephone interview. The method applied was according to the respondents' preference for a particular mode of participation.

The survey consists of four different sections. The first section measures the SMEs current web-based marketing practices (electronics marketing, electronic advertising, customer support service, order delivery, and payment system) in their organizations. Section 2 identifies factors influencing the usage of web-based marketing applications as derived in theoretical framework of this study. Section 3 would measure the benefits gained from the usage of web-based marketing. These include increase in market share, increase in profit, increase in productivity, reduce in operating cost, increase in ROI, improved customer services, increased accessibility to the end-users, increased responses from end-users, increased efficiency in dealing with suppliers, enhancement of company brand, increased customer loyalty, and improved business processes flow. Section 4 gathers information the profile of the SMEs (industry sector, numbers of years established, ownership of the organization, number of employees, paid-up capital, annual sales turnover, IT investment, total number of IT, and types of web-based marketing training available).

The questionnaire was adapted from previous literature (Sulaiman, 2000; Liew, 2001) and from the National Productivity Corporation 2000. A five-point Likert scale of measurement was used to collect the data related to all constructs of the research model.

Goodness of Measures

To ensure the goodness and correctness of the data, principal components factor analysis with Varimax rotation was conducted on 8 constructs of this study, namely security and privacy, ease of use, entrepreneurs attitude and knowledge, product fit, technical knowledge availability of the firm, customer pressure, competitors pressure, and government support. While the Kaiser-Meyer-Olkin (KMO) measures the sampling adequacy (MSA), Bartlett's test of sphericity, and anti-image correlation were used to verify the assumptions underlying the factor analysis.

The results of the factor analysis show six factors which are depicted in Table 3. Factor 1 refers to entrepreneurs' attitude and knowledge, factor 2 defines customer and competitor pressure, factor 3 comprises three items for ease of use, factor 4 consists of government support and factor 5 covers security and privacy. Factor 6 refers to the extent of technical knowledge of the firm. However, two items under product fit have a tendency to be grouped under entrepreneurs' attitude and knowledge. Similarly, items in customer and competitors' pressure appear in one factor loading only. This indicates that technical knowledge availability of the firm has a positive effect on the usage of Web-based marketing in SMEs. In addition, customer and competitor's pressure also has a positive effect on the usage of web-based marketing in SMEs.

TABLE 3
RESULTS OF FACTOR ANALYSIS

	Component						
	1	2	3	4	5	6	Communalities
Security and privacy (item 1)	.239	-.218	.302	.032	**.855**	.123	.944
Security and privacy (item 2)	.154	-.311	.267	.100	**.856**	.121	.949
Ease of use (item 1)	.260	-.152	**.853**	.018	.259	.126	.902
Ease of use (item 2)	.387	-.159	**.817**	-.048	.164	.141	.892
Ease of use (item 3)	.246	-.295	**.782**	-.005	.205	.168	.829
Entrepreneur's attitude and knowledge	**.711**	-.107	.331	.045	.261	.287	.779
Entrepreneur's attitude and knowledge	**.890**	-.079	.182	-.081	.087	.107	.857
Entrepreneur's attitude and knowledge	**.801**	-.159	.211	.050	.235	.223	.818
Entrepreneur's attitude and knowledge	**.897**	-.125	.162	-.025	-.044	.022	.849
Entrepreneur's attitude and knowledge	**.789**	-.138	.158	.078	.130	.200	.729
Technical knowledge of firm (item 1)	.225	-.198	.128	.063	.070	**.915**	.953
Technical knowledge of firm (item 2)	.365	-.208	.262	.041	.188	**.806**	.932
Customer and competitor's pressure	-.127	**.902**	-.121	.042	-.228	-.117	.912
Customer and competitor's pressure	-.137	**.909**	-.157	.058	-.147	-.182	.928
Customer and competitor's pressure	-.136	**.950**	-.125	.040	-.121	-.099	.963
Customer and competitor's pressure	-.110	**.875**	-.162	.087	-.069	-.067	.822
Government support (item 1)	-.009	.082	.008	**.979**	.036	.056	.969
Government support (item 2)	.029	.086	-.025	**.978**	.058	.025	.970
Eigenvalue	3.97	3.76	2.57	1.97	1.89	1.83	
Percentage Variance (88.86%)	22.08	20.91	14.30	10.92	10.48	10.17	

Reliability Analysis

Reliability analysis was conducted on all variables to ensure internal consistency of the items before computing them into a different variable. Table 4 depicts all Cronbach's Alpha values are within the acceptable range (greater than or equal to 0.60) for all the constructs (Hair et al., 2005).

TABLE 4
SUMMARY OF RELIABILITY ANALYSIS

Variables	Number of Items	Item deleted	Cronbach's Alpha
Security & privacy (S&P)	2	-	0.95
Ease of use (EOU)	3	-	0.92
Entrepreneur's attitude and knowledge (EAK)	5	-	0.92
Technical knowledge of firm (TKF)	2	-	0.93
Customer and competitor's pressure (CCP)	4	-	0.96
Government support (GS)	2	-	0.96

FINDINGS

The software application of SPSS (Statistical Package of Social Science) version 16.0 was used for data analysis. Findings are presented in the sequence of descriptive analysis, hypothesis testing and multiple regression analyses to evaluate the significant interaction between the variables towards the usage of web-based marketing.

Profile of the Respondents

A total of two hundred questionnaires were delivered to SMEs of which 151 were completed and returned giving a response rate of 76 percent to be used for further analysis. Results indicate that 60.9% of them were the owners of their companies and the remaining 39.1% were employees of the companies. Majority of them (82.8%) were from top management, and the remaining 17.2% were from middle management level. Nearly 80.1% of the respondents played an integral role in the company decision-making process and in the adoption and utilization of web-based marketing.

More than 50% of the SMEs in Penang indicated a low usage of web-based marketing applications (such as e-marketing, e-advertising, e-customer support service, e-ordering and delivery, and payment system) in their business activities. In addition, less than 50% of the SMEs realized the benefits gained from the adoption of web-based marketing into practices, such as increased market share, productivity, accessibility to customers, feedback from customers and suppliers, and improved customer service.

Hypotheses Testing

The correlation results are depicted in Table 5. The inter-correlations among all the variables were found to be significant ($p<0.01$) except government support (GS). The standardized coefficient (β values) for the correlation relationship between security and privacy (S&P) and ease of use (EOU) was 0.60. This value ($\beta = 0.45$, $p<0.01$) also applied to the correlation relationship between security and privacy (S&P) and entrepreneur's attitude and knowledge (EAK). The relationship between security and privacy (S&P) and the entrepreneur's attitude and knowledge (EAK) was significantly represented by the standardized coefficient of 0.60 ($\beta=0.60$, $p<0.01$). Furthermore, the results also suggest that S&P, EOU, EAK, and TKF are positively correlated with usage of Web-based marketing (usage).

TABLE 5
CORRELATION ANALYSIS

	S&P	EOU	EAK	TKF	CCP	GS	Usage
Security and privacy (S&P)	1.00						
Ease of use (EOU)	0.60**	1.00					
Entrepreneur's attitude and knowledge (EAK)	0.45**	0.60**	1.00				
Technical knowledge of firm (TKF)	0.42**	0.49**	0.55**	1.00			
Customer and competitor's pressure (CCP)	-0.47**	-0.44**	-0.34**	-0.40**	1.00		
Government support (GS)	0.09	-0.02	0.02	0.08	0.13	1.00	
Usage of Web-based marketing (usage)	0.54**	0.44**	0.27**	0.31**	-0.60**	-0.06	1.00

*** p<0.01*

Multiple Regression

Regression tests were run to determine the relationship between security and privacy, ease of use, entrepreneurs' attitude and knowledge, technical knowledge of firm, customer and competitor's pressure, government support towards usage of web-based marketing.

The regression tests had presented a strong inference with R square of 0.45. Subsequently, this translated into a 45% variation of usage of Web-based marketing can be explained by security. The adjusted R square value is 0.43. The Durbin-Watson value of 1.85 was confined to the acceptable range, which indicates that there was no autocorrelation of error term. Multicollineraity problems did not exist as the variance inflation factor (VIF) values were below 10 and the condition indices were below the safety limit of 30.

TABLE 6
RESULT OF MULTIPLE REGRESSIONS

Variable	Standardized Coefficient -ß
• Security and privacy • Ease of use • Entrepreneur's attitude and knowledge • Technical knowledge availability of the firm • Customer and competitor's pressure • Government Support	0.30 ** 0.12 -0.07 -0.00 -0.43 ** -0.03
R^2 Adj R^2 R^2 Change Sig.F Change Durbin Watson	0.45 0.43 0.45 0.00 1.85

*** p<0.01*

The multiple regression analyses also indicate that the following tested variables were highly significant at p<.01 - a 99% degree of confidence. The beta value (standardize coefficients) of security and privacy (β=.30), indicates that the independent variables are positively related to usage of web-based marketing. Although customer and competitor's pressure were found to be significant, the negative sign of Beta value (β= -.43) indicates that the hypothesis was not supported. In addition, as per the results depicted in Table 5, entrepreneur's attitude and knowledge, technical knowledge of firm, and government support were not found to be significant. Hence, only hypothesis 1 was accepted. Hypotheses 2, 3, 4, 5 and 6 were rejected.

DISCUSSION

The present study attempts to identify the determining factors influencing the usage of web-based marketing applications among small and medium enterprises in Penang. The hypotheses were developed to identify the relationship between security and privacy, ease of use, entrepreneur's attitude and knowledge, technical knowledge of firm, customer and competitor's pressure, and government support towards usage of web-based marketing.

The study found that most SMEs in Penang have applied some form of web-based marketing applications into their businesses, but the usage level was not high. The majority of SMEs only used the basic applications of the web-based marketing such as e-mail and static website. Indeed, the usage of advanced applications like online payment system, order processing as well as EDI is at a relatively low

level. Hence, more efforts are needed to help and encourage SMEs in Penang to adopt web-based marketing, particularly the more advanced applications.

Another strong factor that may hinder their adoption is a low level of understanding towards the benefits of web-based marketing. For example, more than 50 percent of the SMEs indicate that they did not realize web-based marketing could improve their overall performance and profitability (increase in profit, increased in ROI, operating cost reduction, and improve business process flow). This clearly shows that in order for SMEs to adopt web-based marketing into their business, they require to have a certain level of understanding about the benefits, which in turn lead to their positive attitude and intention to use the applications.

Security and privacy appear to be the most significant factors that would influence the adoption of web-based marketing among SMEs in Penang. This is in line with findings from various other researchers (Pallab & Paul, 1996; Cloete et al., 2002). According to Gefen, Straub and Karahana (2003), the issues of security has not been fully established for trading over the Internet. Although currently two systems are employed to handle secured online transactions, namely Secure Sockets Layer (SSL) developed by Netscape and Secure Electronic Transactions (SET) developed by major credit companies, and they have not provided complete solutions to online security and trust issues. Cooper (1997) and Daniel (1999) also found that the important factor affecting the acceptance and adoption of new innovations is the level of security or risk associated with it. Hence, the higher the SMEs perceptions that web-based marketing is less secured than face-to-face business transactions (especially involving money), the lesser the chance of adoption would be.

Even though, 'ease of use" factor does not show any significant influence on the usage of web-based marketing, there might be some explanation for this non-significant finding. In comparison to large corporations, SMEs do not have the knowledge and the resources to adapt their systems to react flexibly to new business requirements like process changes or integration of new trading partners (Raymond et al., 2005). It is understood that SMEs need an easy to use and self-explained business tool to handle the complexity of the web-based marketing applications. However, training and coaching for SMEs would be one of the solutions to encourage the use of web-based marketing and then, the concern about ease of use of the system might not be an obstacle for using the application. In addition, there are many vendors in the market who are able to provide support and outsourcing jobs for SMEs. Furthermore, according to Liu et al., (2003) and Hernandez et al., (2008), a person will reject even a lesser complexity of technology, if he could not see the usefulness of it. Hence, understanding the usefulness or importance of web-based marketing to their business needs to be established at an early stage, before adoption of the facility can take place in SMEs.

The entrepreneur's attitude and knowledge are found to have no impact on usage of web-based marketing among SMEs in Penang. This finding is inconsistent with previous studies. This could be due to the fact that the development of web-based infrastructure at SMEs level is at a new stage of implementation in comparison to large companies. In addition, the level of understanding and practices of web-based marketing is very low among the SMEs which in turn, leads to low level of exposure to and knowledge of the technology. This may hinder the management teams to make a right decision either to adopt or reject the technology.

Similarly, the technical knowledge of the firm to do business over the internet was not seen to have any significant effect on the usage of web-based marketing. According to Koh and Maguire (2004), the ability of a firm to conduct business in a complex environment is dependent on their knowledge, skills and techniques to handle that particular environment. In order for SMEs to overcome these constraints, which could impede the adoption of web-based marketing, an outsourcing activity may be carried out as the best solution for lack of technical knowledge.

Customer and/or competitor's pressure was not an important factor in influencing the usage of web-based marketing. This finding was similar in nature to the research of Jeon et al., (2006), where customer and competitor factors turned out to be unessential for the basis of a web-based marketing adoption. This is because the switching behavior among customers in SMEs is very high due to product availability,

variety, promotion and prices. Most of the customers will switch to the competitors if the price is cheaper or if the great promotion is greater.

Finally, this study also shows no impact between the government supports such as incentives, training and infrastructure and usage of web-based marketing in SMEs. A possible reason for this finding is that most of the SMEs in Penang are family-oriented businesses. However, government can still play a key role in the development of web-based marketing in Malaysia by providing the telecommunication infrastructure, institutional support, and especially by giving official status to electronic transactions and documents.

Limitations

In general, this study provides insight on the importance of factors influencing the usage of web-based marketing in small and medium enterprises in Penang. The majority of SMEs are concerned with security issues and ease of use of this new technology. Therefore, these distinct findings have implications in providing guidance on practical applications of web-based marketing in SMEs and in developing adoption models. At the same time, it will help the government to plan effective strategies to promote greater adoption of web-based marketing for SMEs in Malaysia. However, several limitations need to be acknowledged.

The small sample size of 151 SMEs may affect the generalizability of the findings in this study. This is because the scope of the study was confined to the state of Penang rather than the whole of Malaysia. Therefore, caution is needed before extrapolating these findings to the whole country.

This study also did not include the motivating factors in assessing the usage level of web-based marketing. The motivating factors might have such a strong positive influence on the usage of the technology that they might offset the negative influence of the limiting factors.

Lastly, the findings in this study depend on the honesty of the respondents. It is known that individuals would agree more on socially desirable answers and disagree more with socially undesirable answers rather than fully and truly express this feelings and opinions. Thus, there is a possibility that the true picture of the scenario might not be captured.

Future Research

Future research could extend to include moderating factors that minimize the confounding effects. Furthermore, future research should also include all the motivating factors of web-based marketing so that the results of statistical analyses will be more holistic and comprehensive. In addition, to enhance the findings of this research, future research should improve the theoretical model by incorporating other relevant independent variables and dependent variables based on new findings from the latest literature at the time. Lastly, governments or universities could formally be involved in future research to enable a nationwide survey to be conducted in order to provide a better representation of the population and a larger sample size.

CONCLUSIONS

This study demonstrates the determining factors for the usage of web-based marketing applications among SMEs in Penang. The findings of the research conclude that technological security and privacy are the important elements in the usage of web-based marketing.

Consequently, these findings may give an empirically justified foundation for the government to develop strategies for encouraging the usage of web-based marketing in SMEs. By understanding the determinant factors, appropriate actions can be taken to increase the usage of web-based marketing among SMEs in Malaysia. Utilizing the Internet as a marketing tool is something that businesses today must consider. Whether a company is large or small, if it is not using or seriously considering the usage of the Internet as a marketing avenue in the near future, it will be at a competitive disadvantage over time.

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