

Website Adoption Among Malaysian Architectural Firms: An Overview

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Abstract Website is a powerful tool in business today. In construction-related professional sector, website could be a platform for greener, effective communication and collaboration among team members as well as a tool for marketing. This paper is intended to provide an overview of website adoption among Malaysian architectural firms in terms of adoption rate, the profiles of adopters and non-adopters, determinants and inhibitions of the adoption. The questionnaire had been posted to randomly selected architectural firms throughout Malaysia, and then complemented by online survey. The response rate is 11.3% and the adoption rate among Malaysian architectural firms is 52.8%. Majority of the adopters are matured firms with more employees and high average commission, compared to non-adopters. Meanwhile, adopters' projects predominantly from private sector and mostly involved with overseas project. Furthermore, firm size and involvement with overseas project influenced the propensity to adopt this initiative. Finally, the hindrances of adoption is associated with perceived 'lack of IT expertise', 'sceptical on cost vs ROI' and 'lack of time'. The adoption of website could be a kick-start to grow and expand beyond local boundaries. This paper could be useful to indicate the current website adoption scenario among Malaysian architectural firms.

Keywords: Website adoption, architectural firm, adopters, non-adopters, determinants, inhibitions

Introduction

Architect is categorised as a professional profession, hence governed by Board of Architects Malaysia (BAM) and subjected to the rules and regulations determined by the body. In relation with advertising and marketing, architects shall follow the guidelines as stated in General Circular No 3/1997. Among others, all marketing or promotional activities “shall not in any way cheapen the image of or cause the profession to be discredit or ridicule by the public”[1]. To survive in the ever dense business environment, architect practices need to find a way to be visible among their competitors, and yet, strictly obligated to the BAM advertising and marketing regulations.

Architect practice is selling services and the intangible nature of service makes the promotion and advertising even more challenging. Website could be an answer to the marketing dilemma by architect practices. It could be more than just a shop window for a construction business and holds great entrepreneurial opportunities such as powerful branding and sustainable stakeholders’ loyalty if designed and managed effectively [2]. The advancement in web-based technologies enable website to be integrated with other software, hence expanding its purposes as communication and collaboration platform among project team members and reduce the impact of fragmentation in this industry. The scarcity of literature pertaining website adoption in construction related areas indicates that this area is not receiving sufficient attention from academicians in this field. Due to this constraint, most of the website adoption literatures have been derived from technology adoption such as IT, ICT and e-commerce among SMEs.

Benefits of Website

The precondition for success in today’s business world is the use of internet technologies and aligned it with its organisational goals [3]. Internet technologies have intrinsic characteristics that bring tremendous changes in conducting business; potentials to reduce costs of coordination, communication and information processing as well as able to reach a large number of potential clients [4]. Website is one of internet technologies and its adoption, especially in small businesses, takes the internet adoption to a higher level, regardless of the levels of website sophistication and its relevance to target customers [5]. Besides, adoption of e-business via website now is a low-price technology accessible to firms of any size, enabling smaller firms to be at par with their larger counterparts [6].

Construction project is highly dependent on efficient communication, collaboration and successful competence integration [7]. The utilisation of web technologies promotes coordination and collaboration among team members of a project [8]. It enables faster and more effective information transfer, hence offer unique opportunities for teamwork and workflow automation across the organisations boundaries. Furthermore, the adoption could lead to better communication and financial control, increase the quality and timeliness of documentation, speed of works, simpler and faster access to common data and decrease in documentation errors. Apart from that, website could also be utilised as a tool to create a powerful brand and as a marketing tool [2,9] because a strong online presence could enhance business performance [6,10] as well as it contributes to overall growth of firms [11]. Website adoption indicates strategic commitment to e-commerce and these initiatives improve firms’ competitiveness [12].

Characteristics of Website Adopters

Firm size is the most likely drivers of e-commerce commitment, hence translated into website development [13,5]. Larger firms favour early entry because more often than not, they enjoy quicker access to capital and skills as well as they have some built-in capabilities. Teoh and Pian[12] supported this finding as they too found that firm size has been substantially influenced the adoption of website as a strategic commitment to e-commerce.

Internet technologies such as website hold great promise in facilitating the internationalisation of small, knowledge-intensive firms [14]. It enables firms with limited resources to significantly reduce cost in communication because physical presence is no longer necessary for effective communication with clients globally. Besides, website is effective for marketing and information sharing, both locally and beyond [15].

Barriers to Website Adoption

According to Walczuch et al. [16], small firms were not adopting the internet with the same speed of the larger firms, although it could offer many advantages to them. Small businesses perceived that the website would not lead to more efficiency or lower cost and not suitable for a particular business because they failed to see the direct benefits out of this initiative, therefore reluctant to invest time and money in an internet presence. In a developing country of Oman, Alkalbani et al. [17] found that lack of IT competent personnel, reluctance to change, security issues and financial constraints are the main barriers to adopt ICT in construction industry. Meanwhile, in Australian construction industry, limited resources in SMEs, lack of perceived return on investment on IT expenditure and lack of strategic planning are the organisational barriers for IT deployment [18].

Methodology

Postal and online survey had been utilised to gather data in this research. The sampling frame was obtained from the BAM website that governed the architectural practices in Malaysia. 320 registered firms out of 1376 firms were randomly selected and questionnaires were sent to them. Referring to the table of "Determining Sample Size from a Given Population" used by Krejcie and Morgan [19], for population number of 1300 to 1400, 297 to 302 of sampling units are sufficient for confidence interval of 95% with 3.5% margin of error. Furthermore, 95% confidence is the conventionally accepted level for most business research [20]. Nevertheless, a larger sample size is associated with better behaved solution [21]. Apart from that, the technique used in selecting the architectural firms was *systematic sample with a random start*[22]. This technique is more practical than simple random sampling in which the sampling interval; the k , is the standard distance between elements selected from a population for a sample.

The questionnaire reached the architectural firms nationwide by post. The questionnaire was designed to be answered by the top management personnel because the initiative to establish a website is more likely a decision of top management[23,24]. In effort to increase response rate, self-addressed envelope was enclosed in the postal survey and invitation to answer the survey online using KwikSurvey.com was sent to the respondents' e-mail. Respondents could choose to return the answered questionnaire either by post, online or 'scan and e-mail'. Despite of the convenience to send the answered survey, two reminders were sent by postal and online within four months of data gathering period. This research suffers a low response. Only 36 out of 320 questionnaires were returned, resulting in 11.3% response rate. Research involving construction professionals, more often than not, suffer a low

response rate. This problem is consistent with Bowen[25] that did research on quantity surveyor in South Africa, which obtained final response rate of 10.08% and Kiong[26] with 9% response rate. However, according to Oppeinham[27], it is considered adequate for a survey of this nature.

Findings

Demographic of the Respondents

Table 1 shows the details of the participating firms. Majority of the respondents are adopters (52.8%) and 72.2% of the survey were answered by the top management personnel in their respective firm. In terms of firm category, 47.2% of the responses came from body corporate firms.

Website Adoption	Adopter	52.8% (19)
	Non-Adopter	47.2% (17)
	TOTAL	100% (36)
Position	Top Management	72.2% (26)
	Manager	8.3% (3)
	Cost Engineer	19.5% (7)
	TOTAL	100% (36)
Firm Category	Sole Proprietorship	30.6% (11)
	Body Corporate	47.2% (17)
	Partnership	19.4% (7)
	Multi-Disciplinary	2.8% (1)
	TOTAL	100% (36)

Table 1: Respondents' Profile

Table 2 shows the intention of developing a website in the future among the website non-adopters. Majority (58.8%) would like to develop a website but still uncertain of the time while 23.5% are in the process of developing own website. Only 11.8% do not have the intention to develop a website for their firms. Meanwhile, the 19 missing cases represent the firms that own a website.

Item	Frequency	Valid Cases
Maybe, but uncertain of the time	10	58.8%
No intention of developing a website	2	11.8%
In the process of developing own website	4	23.5%
The website is ready but not yet launched	1	5.9%
Total	17	100.0%
Missing Cases	19	-
Total	36	-

Table 2: Intention of Developing Firms' Website in the Future

Characteristics of Adopter and Non-Adopter

Table 3 shows the details of adopter and non-adopter characteristics in five criteria namely firm age, firm size, average commission, source of project and involvement with overseas project. The mean value of firm age for adopters is 20 years while for non-adopters is 14 years. In terms of firm size, the average number of employee employed by adopters is 26 persons compared to 11 persons by non-adopters. Meanwhile, the mean of average commission shows a difference of RM4.7 million between adopters and non-adopters, which is RM15.7 million and RM11.0 million respectively. Apart from that, the source of project for adopters and non-adopters does not indicate remarkable difference because both predominantly from private projects. Obviously, majority of adopters have been involved with overseas project and majority of non-adopters have never been involved with overseas project.

CHARACTERISTIC		Adopter	Non-Adopter	Mean / Mode
FIRM AGE	Less than 5 years	15.8% (3)	35.3% (6)	Mean
	5 years and above	84.2%(16)	64.7%(11)	Adopter: 20 years Non-Adopter: 14 years
TOTAL		100.0% (19)	100.0% (17)	
FIRM SIZE	1-5 persons	5.3% (1)	11.8% (2)	Mean Adopter: 26 persons Non Adopter: 11 persons
	6-10 persons	5.3% (1)	41.2% (7)	
	11-15 persons	10.5% (2)	35.3% (6)	
	16-20 persons	15.8% (3)	5.9% (1)	
	> 20 persons	63.2%(12)	5.9% (1)	
TOTAL		100.0% (19)	100.0% (17)	
AVERAGE COMMISSION	< RM200,000	7.1% (1)	15.4% (2)	Mean Adopter: RM15.7 million Non-Adopter: RM11.0 million
	RM200,001-RM500,000	7.1% (1)	15.4% (2)	
	RM500,001-RM1,000,000	14.3% (2)	23.1% (3)	
	RM1,000,001-RM5,000,000	50.0% (7)	23.1% (3)	
	>RM5,000,000	21.5% (3)	23.0% (3)	
	TOTAL	100.0% (14)	100.0% (13)	
Classified information		26.3% (5)	23.5% (4)	
SOURCE OF PROJECT	All / Majority projects are from public sector	26.3% (5)	35.3% (6)	Mode Adopter: Private Non-Adopter: Private
	Equal portion of projects are from public & private sectors	21.1% (4)	23.5% (4)	
	All / Majority of projects are from private sector	52.6%(10)	41.2% (7)	
TOTAL		100.0% (19)	100.0% (17)	
INVOLVEMENT WITH OVERSEAS PROJECT	Yes	68.4%(13)	23.5% (4)	Mode
	No	31.6% (6)	76.5%(13)	Adopter: Yes Non-Adopter: No
TOTAL		100.0 % (19)	100.0% (17)	

Table 3: Profile of Website Adopter and Non-Adopter

Determinants of Website Adoption

Table 4 shows the results of the statistic tests to determine the significant difference and correlation strength between the five criteria and website adoption. The results show that firm size and involvement with overseas project have significant difference on website adoption. Then, correlation tests indicate that there are medium strength correlations between these

three criteria and website adoption respectively. On the other hand, firm age, average commission and source of project do not have significant differences on website adoption, therefore are not tested for correlation.

Variables	Significant Difference	Correlation Strength
Firm Age	Z= -1.330, p>0.05 (Not significant)	-
Firm Size	Z= -3.236, p<0.05** (Significant)	r(36) = -0.547*, p<0.05 (Medium strength)
Average Commission	Z= -0.906, p>0.05, p<0.05 (Not Significant)	-
Source of Project	$\chi^2(2, N=36) = 0.511$, p>0.05 (Not significant)	-
Involvement With Overseas Project	$\chi^2(1, N=36) = 7.255$, p<0.05** (Significant)	r(36) = 0.449*, p<0.05; (Medium strength)

Table 4: Determinants of Website Adoption

Inhibition Factors on Website Adoption

The ranking of inhibition factors on website adoption is shown on Table 5. ‘Lack of IT expertise’, ‘lack of time’ and sceptical on cost vs ROI’ are the top three factors in rank, followed by ‘unclear regarding cyber law’, ‘not lead to more efficiency or lower cost’ and ‘not lead to more commission’. Meanwhile, factors namely ‘afraid of organisational change’, ‘unaware of internet marketing practices’ and ‘never thought of having a website’ are the bottom three in the rank.

Inhibition Factors	Mean (Standard Deviation)	Rank
Lack of IT expertise	3.59 (1.06)	1
Lack of time	3.53 (1.07)	2
Sceptical on cost vs ROI	3.53 (1.07)	2
Unclear regarding cyber law	3.47 (0.94)	4
Not lead to more efficiency or lower cost	3.41 (1.18)	5
Not lead to more commission	3.41 (1.06)	6
Doubtful regarding e-transaction security	3.41 (0.94)	7
Have other priorities	3.35 (0.86)	8
Doubtful regarding the security of personal / confidential information	3.41 (0.87)	9
High maintenance cost	3.18 (1.02)	10
High initial cost	3.12 (1.11)	11
Troublesome to have website and to maintain it	3.06 (1.03)	12
Technically too complicated	2.88 (1.11)	13
Not suitable due to nature of business	2.76 (0.97)	14
Sceptical of technology change	2.71 (1.05)	15
Sufficient number of clients	2.65 (0.99)	16
Clients not using the internet	2.59 (1.12)	17
Never thought of having a website	2.47 (0.87)	18
Unaware of internet marketing practices	2.47 (0.87)	18
Afraid of organisational change	2.41 (1.00)	20

Table 5: Inhibition Factors on Website Adoption

Discussion

The Rate of Website Adoption

The rate of website adoption among Malaysian architectural firms is 52.8%. This percentage shows an encouraging increment where in 2002, the adoption rate in Malaysian construction industry at large was 24% [28] and in 2007, the adoption rate among Malaysian quantity surveying firms was 19.2% [29] and increased to 27.6% in 2013 [30]. Furthermore, Alam and Ahsan [31] argued that the website adoption rate among Malaysian SME service firms was at 9.4% in 2007. The pace of adoption is relatively fast among architectural firms and this trend contradicts Alam and Ahsan [31] statement that the Malaysian SMEs are slow in adopting a website for businesses. In comparison, website adoption in architectural practices in Western Cape has been increasing from 17.5% in 2000 to 42.6% in 2012 [32]. Meanwhile, the e-commerce adopters in Singapore have been reached 52.8% in 2004 [24]. In Netherland,

Walczuch et al. [16] stated that 21% of Dutch small firms have had a website and this figure would be increasing as the upgrading of internet access was in progress.

Fierce competition in the construction service sector due to liberalisation and globalisation could have been the push factors to encourage the practitioners to rethink their strategies to be competitive and more visible in the ever dense market. Construction-related-service market is not only flooded with new entries from local fellows but also receive entrance from highly competitive companies from overseas [33]. Website is a multi-purpose tool that enable small firms to be at par with their larger counterparts [16]; a showcase of firm image and reputation[34], could be integrated with other applications and serves as a project collaboration platform [8], as well as an effective medium for communication[35]. Somehow, by having a website, the firms convey message to the potential clients that they are technology savvy and up-to-date with the current trend in doing business[5,13].

The Profile of Website Adopters and Non-Adopters

In order to understand the website adoption trend among the Malaysian architectural firms, preliminarily, it is useful to comprehend the adopters and non-adopters profiles. In this research, data regarding firm age, firm size, average commission, source of project and involvement with overseas project are selected to depict the profiles.

The result shows that the adopter firms have been existed longer in practice, they have a larger pool of resources in terms of manpower and financial, their source of projects is predominantly from private sector and majority have been involved with overseas project (see Table 3). In comparison, the non-adopter firms are younger firms with smaller pool of staff and financial resources and majority have never been involved with overseas project. In terms of firm age, this finding is consistent with Hoskisson et al. [36] that found more established firms are more effective in exploiting the identified opportunities while younger firms are more effective in identifying opportunities and producing radical innovations. Furthermore, by reckoning the entrepreneurial opportunities offered by the website, the larger firms could have more capabilities and resources to utilise the website for the benefits of their firms. This finding is consistent with Teo et al. [37] findings that firms with larger pool of staff and higher annual revenue are associated with the adoption of e-procurement. The advantages in resources especially manpower and financial enable larger firms to allocate more skills and higher budget on their IT initiatives to ensure its effectiveness. Besides, they have a greater need to keep ahead in technologies advances to remain competitive compared to the smaller firms.

Malaysian architectural firms rely on predominantly private projects, regardless they have a website or not. However, according to Shaarani and Aziz[30], majority of adopters among cost engineering firms in Malaysia have their project source predominantly from both public and private sources while the non-adopters depend on public projects. Apart from that, majority of adopter firms have been involved with overseas project compared to non-adopters firms and this indicates that having a website could be a strategic move for expanding beyond local boundaries. Since an excellent track record is the most important factor relative to internationalisation [38], website is an effective tool to canvass the firms' track record as well as firms' image and reputation globally. This advantage could have been fully utilised by the adopter firms to market their service and project their firms' image, hence increase the chances to be shortlisted by clients in other countries.

The Determinants of Website Adoption

Statistic results show that, out of five determinant variables tested, two variables positive for significant differences namely firm size and involvement with overseas project, while firm age, average commission and source of project are not significant (See Table 4). The significant variables also tested for correlation strength and each has medium strength correlation with the adoption of website initiative.

The propensity to adopt a website is associated with large firms, indicated by the number of employees and internationalisation move. This finding is consistent with other research in most ICT and IT adoption and internationalisation of service firms [37,39,40]. In order to grow and expand overseas, website could have been an important tool, initially for marketing and reputation exposure, then as a communication platform and collaboration stage for all team members in a project. Furthermore, the adoption of website is also associated with higher average commission. Possibly, website could be the kick-start in firm growth; easily spotted via search engine, convincing reputation displayed on the website and easily contacted via email or by telephone.

Inhibition Factors on Website Adoption

As mentioned above, more than half of Malaysian architectural consultants have been utilising website for business and more than 80% of the non-adopters are either in the process of developing their own website or at least have the intention of doing so. This indicates that Malaysian architectural firms recognised the entrepreneurial opportunities offered by website. Nevertheless, the current overall non-adoption rate is still relatively high (47.2%).

The adoption of website among architectural firms in Malaysia have been hindered by the “lack of IT expertise”, “lack of time” and “sceptical on cost versus return on investment” are the major concerns that hampering the intention of non-adopter firms to develop a website for their firms. These findings are consistent with other researches[16,17,18]. Previous study by Mui et al. [28] showed that ‘time consuming’ and ‘high initial cost’ are the major factors that hindered the website adoption initiatives in Malaysian construction industry. Eventhough ‘time constraint’ is still a relevant factor, high initial cost is no longer a major concern to adopt a website.

The concerns pertaining to website adoption are relevant as majority of non-adopter firms are small in size, therefore constraint in resources especially manpower and financial are inherent with them. The absence of in-house IT expertise hinder the adoption because website establishment needs maintenance and hiring extra IT staff or outsourcing the website needs could mean extra cost for the firm. This finding is not far different from other researches as Alkalbani et al. [17], Kiong [26], Sulaiman [41], Love et al. [42] and Khatibi et al. [43] too found out that insufficient skill in IT hindered the adoption of website or e-commerce for their business. Lack of time to manage the website is another issue in adopting a website due to the small number of employees, but hiring IT staff to manage the website will incur extra cost in operation. More often than not, the existing employees have their hands full with the core business and having a website might be seen as unnecessary extra load to the employees.

Inability to measure the tangible benefits especially in terms of financial out of the initiatives increased the perceive ‘sceptical on cost versus return on investment’. Small firms need to be extra careful with their financial budget and physical evidence on financial returns has always been the major consideration before making any decision on innovation adoption initiatives.

Summary And Management Implication

The website adoption rate in Malaysian architectural firms is 52.8%, and this figure will likely to increase in the nearest future as almost 30% is developing a website for their firms and 60% have the intention to develop own website. In terms of profiles, majority of the adopter have been in business longer than the non-adopter firms, have a bigger pool of employees, enjoy higher commission and have been involved with overseas project compared to non-adopter firms. Moreover, website adoption initiative is associated with larger firms and involvement with overseas project. On the other hand, non-adopter firms perceive that website adoption initiative is hindered by the 'lack of IT expertise', 'lack of time' and 'sceptical on cost vs ROI'.

This study could be an indicative guideline for Malaysian architectural firms to decide on website adoption for business. The adoption of website is associated with larger firms and internationalisation. These indicate that website could have been one of the influences that speed up business growth and expansion beyond the local boundaries. At the very least, the adoption of website could be a virtual brochure for firms to market their services locally and globally.

Conclusion

Combination of click-and-brick promises huge entrepreneurial opportunities for business including knowledge-intensive services like architectural services and Malaysian architectural firms are relatively fast in embracing the opportunities. Eventhough the benefits are intangible and difficult to measure, they remain optimistic over the initiative. Nevertheless, majority of adopter firms enjoy business growth, higher commission and have been involved with overseas project. Website is a medium that is relatively cheap, multi-purpose and able to reach potential clients around the globe in seconds. Therefore, developing a website should be one of the strategic business moves that might be kick-start to business expansion and prosperity.

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