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Website Quality of Listed Companies: A Comparison between SMES and Large Firms

(Full Paper)

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ABSTRACT

Websites are the main information source for investors, so the quality of companies' websites are vital. This study explores the website quality of listed companies in Thailand and draws a comparison between SMEs' and large firms' website quality. In total, concrete and overall objective measures of 271 listed companies (136 large firms from the SET market and 135 SMEs from the MAI market) are collected using a website evaluation tool called SEOptimer. Non-parametric statistics are employed for data analysis due to non-normality. Findings reveal the room for improving the website quality for both SMEs and large companies in each industry. SMEs significantly have lower website quality in terms of SEO, performance, social, security, and overall compared to large enterprises. This study presents the research opportunities to explore listed companies in other countries using other tools in the future and guides SMEs and large companies in Thailand to effectively improve their website quality from the reliable measures and practical suggestions.

Keywords: Website quality; website evaluation; SEOptimer; SMEs, large firms, Thailand.

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INTRODUCTION

A website is a platform that is crucial for information and transaction (Yang, Shi, Wang, & Yan, 2014). A business website represents an integral part of e-business strategy and elicits the impressions and reactions of stakeholders (Canziani & Welsh, 2016; Galati *et al.*, 2016; Pirchegger & Wagenhofer, 1999). It is also a market space that enables a company to conduct business, reach global audiences, and interact with its customers in innovative ways (Rasheed *et al.*, 2018; Sharma & Lijuan, 2015). Customers depend on the Internet to find product information and conduct a purchase electronically (Sharma & Lijuan, 2015). From their perspective, the successful website should meet their expectations and give them positive experiences, so companies should develop high-quality websites that provide better online experiences (Hasanov & Khalid, 2015; Sharma & Lijuan, 2015).

Website design determines the ability of a company to reap the benefits of the Internet. Poor website design such as usability could lead to poor corporate image and reputation (Canziani & Welsh, 2016; Sharma & Lijuan, 2015). Website quality drives online business, effective communications to customers, and Word-of-Mouth (WOM) and could lead to profitability from the retained customers (Biswas, Nusari, & Ghosh, 2019; Fatahi & Moosavi Bideleh, 2018; Yang *et al.*, 2014). The information richness, online service, easy to use, interactivity, web traffic, reliability reflect a website's effectiveness and are crucial for customers' purchase decisions (Sharma & Lijuan, 2015; Yang *et al.*, 2014). A website needs to possess these quality attributes since website quality is a measure for website design success (Galati *et al.*, 2016; Sharma & Lijuan, 2015). Consequently, website quality evaluation becomes more and more important (Yang *et al.*, 2014).

Websites have been evolved from reading information (Web 1.0) to executing mode/ semantic web (Web 3.0), making them complex nowadays (Rasheed *et al.*, 2018). However, without a significant programming ability, these websites are difficult to observe, leading to the need for an evaluation tool for more sophisticated websites (Canziani & Welsh, 2016). The SEOptimer is a Search Engine Optimization (SEO) audit tool, which can be used for detailed website analysis. It evaluates website quality using 100 website data points and provides clear and actionable recommendations for website owners and website designers to improve a website's effectiveness. The tool can be also accessed via the website. Not only a website's performance that can be explored, but also SEO, usability, social, security, and overall (Rasheed *et al.*, 2018; SEOptimer, 2020).

Small and Medium-sized Enterprises (SMEs) face various problems and challenges in the aspects related to financing, technology, managerial capabilities, skill development and productivity, international market access, and regulatory burdens compared to large firms (Wasiuzzaman, 2019). Due to these constraints, there were significant differences in website adoption rates between large firms and SMEs in the past and there still have SMEs in some sectors reluctant to adopt new technologies at the present (Galati *et al.*, 2016; Gemino, MacKay, & Reich, 2006). However, if they are willing to adopt new technologies,

they will be more flexible with a higher capacity to adapt and could be successful as same as large firms (Gemino *et al.*, 2006). The study of Heiens, Pleshko, and Ahmed (2019) believes that customer satisfaction levels will be higher for SMEs than for large enterprises. SMEs could try to be active and offer actual and meaningful information through fast supports on their websites (Constantinescu-Dobra, 2012). Moreover, newly established (small) companies such as startups connect to their customers using websites and social media platforms to provide the status quo of their campaigns and to fetch funding (Kaur & Gera, 2017). Additional websites could enhance startups' communication with stakeholders and could help them to extend their potential reputation and signal their quality. A homepage additional to the project page on the crowdfunding platform significantly increases the success of their projects (Beier & Wagner, 2015).

Although website quality evaluation has been studied in the literature, many of these studies are conducted using subjective measures, which are generally assessed based on the perception of end-users (Biswas *et al.*, 2019; Canziani & Welsh, 2016; Sastika, Suryawardani, & Hanifa, 2016; Sharma & Lijuan, 2015). An objectivity quality evaluation system is thus required to decrease the subjectivity and biases in human judgment in website quality assessment (Canziani & Welsh, 2016; Galati *et al.*, 2016). The study of Rasheed *et al.* (2018) suggests future research to evaluate the performance of websites in different domains using open source tools to investigate new important signals. The study of Yang *et al.* (2014) indicates that there is still much room to improve the website quality. The study of (Canziani & Welsh, 2016) supports the use of automated website evaluation tools to reduce the degree of raters' errors in website evaluation. Using automated tools such as Website Grader, SEOptimer, and Qualidator to evaluate websites could reveal the points to be improved and help website designers to enhance their websites to reach international standards (Khandare, Gawade, & Turkar, 2017). Scores from these website quality evaluation tools are also advantageous for website owners in terms of comparing their websites to industry standards and competitor websites (Canziani & Welsh, 2016).

Therefore, this paper tries to fill the research gap and answer the following research questions using an automated tool (SEOptimer) to evaluate website quality: (a) Do listed companies in different sizes (SMEs vs. large enterprises) perform differently in designing high-quality websites?; and (b) How are the website quality of the listed companies in the Stock Exchange of Thailand (SET) and Market for Alternative Investment (MAI) in each industry? According to The Stock Exchange of Thailand (n.d.), SET is a stock market for large companies, while MAI is a source of funding for SMEs.

LITERATURE REVIEW

Tarigan (2009) assessed user satisfaction and explore the website quality from the e-library users of the Stock Exchange of Thailand using WEBQUAL theory. End-users supported some degree of the positive relationship between WEBQUAL dimensions and their satisfaction. Constantinescu-Dobra (2012) examined websites of Romanian companies (SMEs and large companies) from top-hundred software, hardware, and IT distributor companies in terms of content, in-time communication tools, navigability, and styles in correlation with their marketing outcomes and size. Findings indicated a strong correlation between website content and companies' turnover, profits, and the number of employees and a positive correlation between interactivity and turnover. Galati *et al.* (2016) evaluated website quality of Italian wineries using the Web Assessment Index (WAI), compared e-commerce and e-marketing websites and verified the associations between website quality and business revenues and the characteristics of managers. The results pointed out that e-commerce websites had higher website quality than e-marketing websites. Business revenues and the educational level of managers positively affected companies' website quality. Canziani and Welsh (2016) reviewed websites of SMEs in winery tourism using automated website evaluation. An automated evaluation scoring system could discriminate best practice websites and other websites of wineries in the USA and North Carolina. Gawade, Raikar, and Chopade (2017) applied a set of automated tools that were Qualidator tool, Website Grader, and SEOptimer to evaluate agricultural sites, particularly their usability. Fatahi and Moosavi Bideleh (2018) examined the influence of financial service providers' website quality on customer responses among brokerages using the Stimulus Organism Response (SOR) paradigm. Findings showed that website quality determined customer responses. It significantly directly impacted customer perceived value and corporate reputation, which significantly increased customers' purchase intention and WOM. Rasheed *et al.* (2018) compared the website performance of five foreign and local universities using two SEO tools: Nibbler and SEOptimer, to reveal the strengths and weaknesses of these websites.

HYPOTHESIS DEVELOPMENT

Website quality and its consequences

Websites are one of the online media campaigns, which play a crucial role in the business world (Sastika *et al.*, 2016). A website with well website design, usability, and SEO ensures customer success in looking for a company's information, goods, or services online (Rathi & Given, 2011). The perception of customers about website quality depends on website features that meet their needs such as appearance, navigation, well-organized and well-managed content display. Multiple dimensions of website quality are security, enjoyment, information quality, ease of use, and service quality. Website design is an important determinant to achieve website features and quality of services (Hasanov & Khalid, 2015). Website quality consists of both technical and service components, which are information, system, and service qualities (Chen, Huang, & Davison, 2017). Website quality dimensions consist of content, design, organization, and user-friendly (Hasanov & Khalid, 2015).

E-commerce website quality in terms of brand awareness, visitors scale, user experience, website speed, and interactivity generates profitability in terms of revenue and profit (Yang *et al.*, 2014). Website quality determines customers' purchase decisions (Biswas *et al.*, 2019; Yang *et al.*, 2014). Website quality (visual appeal, security, download delay, and navigability) significantly positively affects a customer's perceived product quality, which subsequently affects his/ her intention to purchase the product (Wells, Valacich, & Hess, 2011). Website quality (system quality, information quality, and service quality) significantly enhances customers' perceived value and corporate reputation, which have a positive effect on purchase intention (Fatahi & Moosavi Bideleh, 2018). Consumers' perception of website quality (usability and information quality) significantly influences their online shopping intention (Jones & Kim, 2010). Website quality in terms of website design, fulfillment/ reliability, customer service, and security/ privacy significantly indirectly impacts customers' purchase intention (Kim & Lennon, 2013).

Website quality significantly increases customer satisfaction that later significantly drives their purchase intention (Hasanov & Khalid, 2015). Website quality in terms of web layout, web information, customer service, fulfillment, and privacy are proposed to positively influence e-satisfaction (Ahmad, Rahman, & Khan, 2017). Usability, information quality, and service interaction quality have an impact on end-user satisfaction (Tarigan, 2009). Website design, service quality, information quality, ease of use, and process management are dimensions influencing consumer satisfaction (Yang *et al.*, 2014). In the Destination Marketing Organization (DMO) websites, website design quality (functional, emotional, symbolic dimensions) significantly positively related to relationship satisfaction, which significantly increases tourism customer e-loyalty (Tsai, 2017). Website service quality significantly improves the confirmation of customer expectations and in turn their satisfaction towards online shopping (Biswas *et al.*, 2019). The service quality of e-commerce websites significantly impacts user satisfaction (Sharma & Lijuan, 2015). Website quality directly affects customer loyalty (Sastika *et al.*, 2016). Information quality, system quality, and service quality of a seller's website are significantly positively related to the cognitive and structural capital between buyers and sellers, which later directly and indirectly reshape buyers' loyalty to sellers (Chen *et al.*, 2017).

SMEs and Large Companies

Many large and small businesses utilize websites as media to promote their products or services (Sastika *et al.*, 2016). Therefore, website design becomes a mandatory criterion for those who come into play. However, SMEs tend to have higher learning curves and longer implementation timeframes due to their restricted time and resources (Canziani & Welsh, 2016). Changes in the banking system since the financial crisis in 2008 and SMEs' characteristics make SMEs difficult to gain bank financing, so they are hard to scale up their production, adopt new technologies, create product/ service innovation, and increase profitability (Spithoven, Vanhaverbeke, & Roijackers, 2013; Wasiuzzaman, 2019). Business revenue significantly positively affect its website quality, which positively associates with business success. In the winery industry, companies with the lowest revenues are less likely to effectively adopt web marketing strategies (Galati *et al.*, 2016). A bigger company could afford to manage itself, conduct marketing activities online, and has more achievements than smaller firms (Constantinescu-Dobra, 2012). There are several opportunities and concerns relating to company size (SMEs vs. large companies) such as lower upfront investment, business continuity, mobility, scalability, performance, perceived insecurity of cloud and deployment speed (Johansson, Alajbegovic, Alexopoulos, & Desalermos, 2014). SMEs differ from large firms in terms of financial and staffing resources, which impede their e-business strategies such as developing a good website and pushing it to be listed in the top search engine results (Rathi & Given, 2011). In the case of Austrian companies, the website quality scores significantly increase when the company sizes expand (Pirchegger & Wagenhofer, 1999). In the study of (Constantinescu-Dobra, 2012), IT SMEs (hardware, software, distributors) have fewer website quality scores in terms of content, handling, interactive, and layout compared to large companies. Based on these findings, the following hypotheses are explored.

Hypotheses:

- H1: There is a difference in the website quality score (SEO) of SMEs and large firms.*
- H2: There is a difference in the website quality score (Usability) of SMEs and large firms.*
- H3: There is a difference in the website quality score (Performance) of SMEs and large firms.*
- H4: There is a difference in the website quality score (Social) of SMEs and large firms.*
- H5: There is a difference in the website quality score (Security) of SMEs and large firms.*
- H6: There is a difference in the website quality score (Overall) of SMEs and large firms.*

RESEARCH METHOD



Figure 1. The result of a website's quality evaluation from SEOptimer.

Table 1. The conversion of grade to number

Grade	Score	Grade	Score	Grade	Score
A+	4.3	C+	2.3	E+	0.3
A	4	C	2	E	0
A-	3.7	C-	-1.7	E-	-0.3
B+	3.3	D+	1.3	F+	-0.7
B	3	D	1	F	-1
B-	2.7	D-	0.7	F-	-1.3

This work was a sub-project of the WEB ANALYZE SET project. This study collected data from listed companies in SET and MAI. According to The Stock Exchange of Thailand (n.d.), large companies in SET had more than 300 million baht in paid-up capital after Initial Public Offering (IPO), while SMEs in MAI had over 20 million baht in paid-up capital after IPO. A free automated website rating, SEOptimer, was applied to assess the website quality of each company. An automated website evaluation tool was believed to be a cost-effective and viable tool to complement the absence of objectivity and reliable raters and reduce the need for expert evaluators (Canziani & Welsh, 2016). The SEOptimer was available online (<https://www.seoptimizer.com/>). It evaluated various specifications of a website such as performance, mobile or User Interface (UI), social, and page analysis and gave clear recommendations to improve the website (Khandare *et al.*, 2017). The web crawler of SEOptimer accessed each homepage and sub-pages after a user inputted a company's URL and showed grades from A+ to F- regarding overall, SEO, usability, performance, social, and security respectively, as shown in Figure 1. Some companies' websites could not be evaluated since they had no content or had security mechanisms to reject SEOptimer's crawlers. These websites were removed from the analysis to prevent inaccurate results. This study employed quota sampling. There were companies in the SET market more than the MAI market. Hence, for the comparison purpose, all verified companies in the MAI market were included, whereas the highest-value companies in each group were selected.

DATA ANALYSES

As shown in Table 1, a specific number, adapting from the grade conversion of Berkeley (2020), was later assigned to all grades. The independent-samples t-test was planned to be used to test hypotheses in the first place. However, according to the Shapiro-Wilks test of normality, almost all variables in this study were not normally distributed. Also, Levene's Test of Equality of Variances indicated that the assumption of homogeneity of variances of website quality score (security) was broken. Two assumptions were violated, so a non-parametric test, Mann-Whitney U Test, was applied to test hypotheses instead of the independent samples t-test.

RESULTS

There were 271 listed companies (136 large companies from the SET market and 135 small and medium-sized enterprises from the MAI market) from 8 industries which were Agro & Food Industry (AGRO), Consumer Products (CONSUMP), Financials (FINCIAL), Industrial (INDUS), Property & Construction (PROPCON), Resources (RESOURC), Services (SERVICE), and Technology (TECH). The average total stocks of large companies were 14,339,705 with the average value of SMEs were 345,893.15 billion baht, whereas the average total stocks of 3,628,231 with the average value of 5,099.36 billion baht. The industry with the highest average value in SET was financials and the industry with the highest average value in

MAI was agro and food. Figure 2 to Figure 7 shows the median value of website quality scores in each aspect for companies in each industry. Higher median values of website qualities in each industry are presented with black outlines.

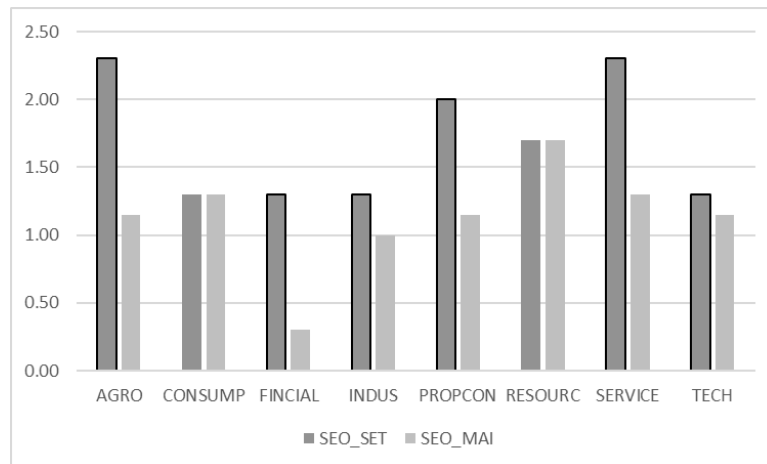


Figure 2. A chart showing median values of website qualities (SEO) of listed companies in SET and MAI

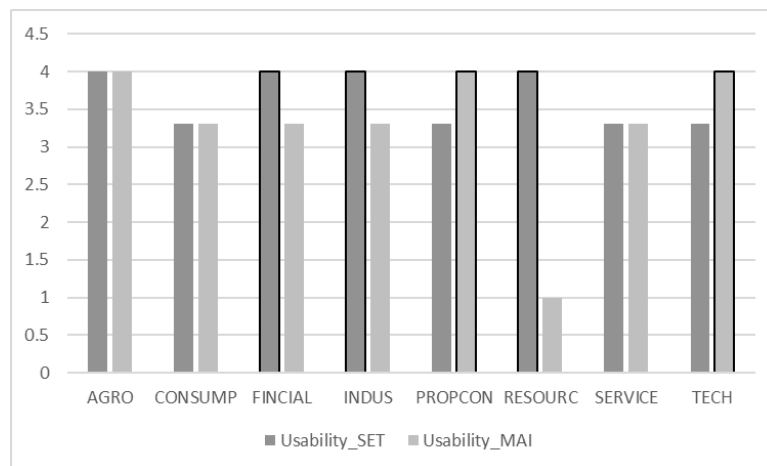


Figure 3. A chart showing median values of website qualities (Usability) of listed companies in SET and MAI

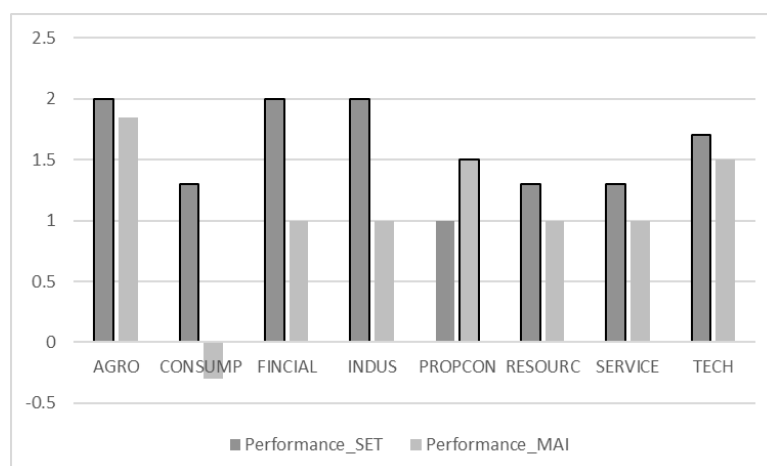


Figure 4. A chart showing median values of website qualities (Performance) of listed companies in SET and MAI

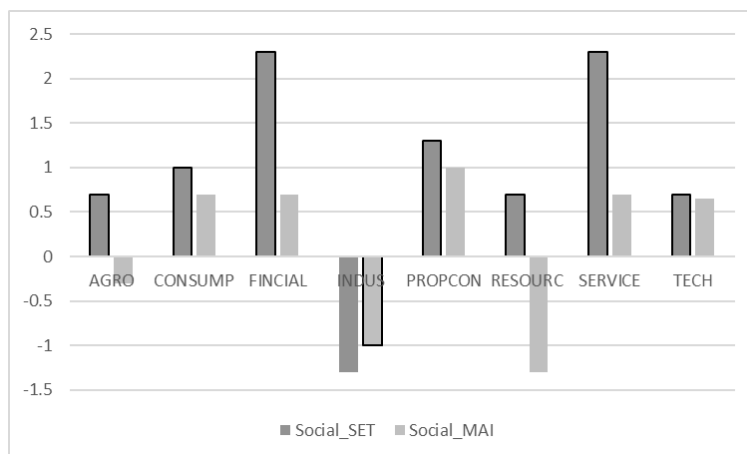


Figure 5. A chart showing median values of website qualities (Social) of listed companies in SET and MAI

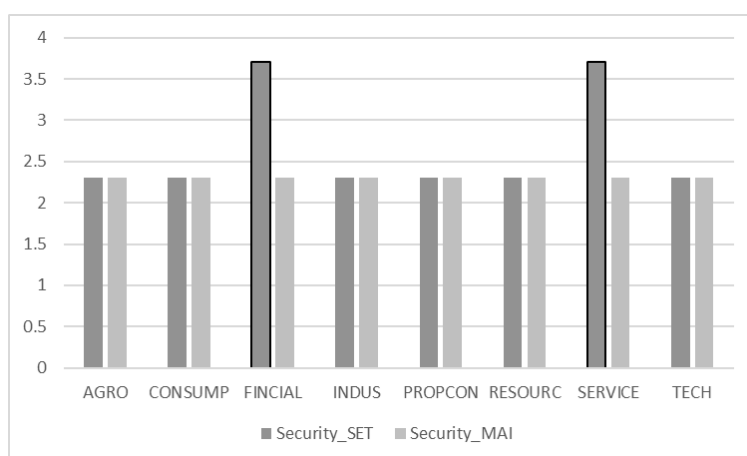


Figure 6. A chart showing median values of website qualities (Security) of listed companies in SET and MAI

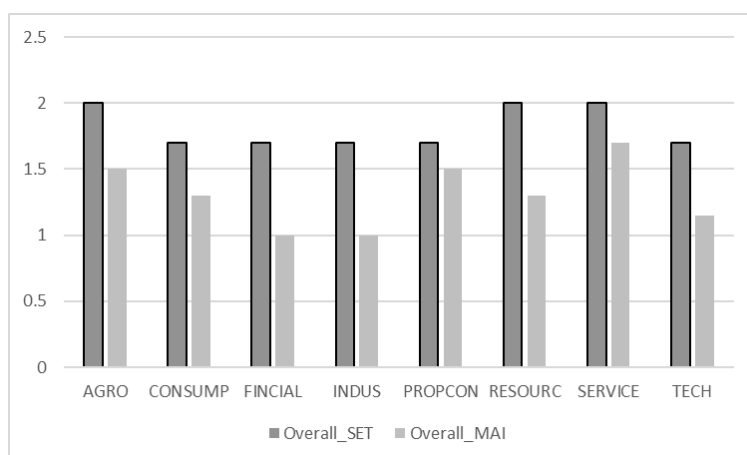


Figure 7. A chart showing median values of website qualities (Overall) of listed companies in SET and MAI

A Mann-Whitney U test revealed that there was a significant difference ($U = 6600.0, p = 0.000$) between the website quality (SEO) of large firms compared to SMEs. The median of large firms' website quality (SEO) was 1.7 compared to 1.0 for small and medium-sized companies. The median of website quality (Usability) in large firms and SMEs were 4.0 and 3.3. The distribution in two groups did not differ significantly ($U = 8146.5, p = 0.100$). A Mann-Whitney test also showed that the website quality (Performance) was greater for large companies ($Mdn = 1.7$) than for SMEs ($Mdn = 1.0$), $U = 7642.0, p = 0.017$. A Mann-Whitney test indicated that there was a statistically significant difference between the website quality (Social) of large firms ($Mdn = 0.7$) and SMEs ($Mdn = 0.7$), $U = 7283.0, p = 0.003$. A Mann-Whitney test pointed out that website quality (Security) was greater for large companies ($Mdn = 2.3$) than for SMEs ($Mdn = 2.3$), $U = 7286.5, p = 0.001$. Large companies also had the higher mean ranks in both website quality (Social) and website quality (Security) compared to SMEs, which could be considered as having a higher website quality in terms of social and security. For the overall website quality, website quality (Overall) scores in large companies ($Mdn = 1.7$) were statistically significantly higher than small and medium-sized companies

($Mdn = 1.3$), $U = 6075.0$, $p = .000$. Hence, there was enough evidence to reject null hypotheses of $H1$, $H3$, $H4$, $H5$, and $H6$ respectively (p -value < 0.05).

DISCUSSION AND IMPLICATIONS

Findings conform to the proposed hypotheses and their supports in the HYPOTHESIS DEVELOPMENT section, revealing the room for improvement in the website quality for both SMEs and large enterprises. This study presents the research opportunities for academics from using automated evaluation tools and objective measures instead of subjective measures, which possibly generate biases from human raters. Human rater bias could impact decisions about website quality (Canziani & Welsh, 2016). Objective measures from standard tools not only create reliable scores and sound suggestions but also help in the comparisons between a company's website quality and competitors or between a company's website quality and the industry benchmark. Besides, an online website quality evaluation tool helps to decrease programming efforts due to web evolution from static medium to semantic medium (Rasheed *et al.*, 2018) and supports companies with limited resources e.g. SMEs in website quality evaluation. Using automated evaluation methods are effective and are also suggested to be applied in various business sectors (Canziani & Welsh, 2016).

The findings could be used for the website management practices of listed companies, both SMEs and large enterprises, which are believed to have moderate resources for enhancing their websites. In the big picture, although SMEs have more agility than large firms, large companies have better website qualities than SMEs in almost all aspects, except usability in PROPCON & TECH, performance in PROPCON, and social in INDUS. However, because both SMEs and large companies are choices for stock market investors, SMEs have to enhance their website qualities for competitiveness. According to SEOptimer (2020), SMEs should improve their SEO by 1) adding a title tag with 10 – 70 characters and a meta description tag in the page heading, 2) using header tags with consistency keywords and adding more content particularly images with ALT attributes in the body content, 3) managing number of backlinks, on-page links, and broken links and using human/ search engine readable URLs, 4) avoiding no-index tag and no-index header, and 5) creating a robots.txt file to provide instructions for search engines and XML sitemaps and using analytic tools and schema.org (a structured data markup). To improve their performance, SMEs should 1) optimize their webpage speed, 2) decrease their page's file size to be around 5 MB per page, 3) remove unnecessary files to be downloaded from web servers or combine files like styles and scripts where possible, 4) beware of JavaScript errors, 5) enable GZIP compression, 6) format and compress images, 7) minify JavaScript and CSS files, 8) remove deprecated HTML tags, and 9) avoid inline style coding practices in HTML code.

To improve the social aspect, SMEs should 1) link their websites with their Facebook pages, Twitter, Instagram, YouTube, and LinkedIn, 2) add Facebook Open Graph tags and Twitter Cards, and 3) use Facebook Pixel to track users. For security, SMEs should 1) enable SSL, 2) redirect their page to the HTTPS version, 3) prevent malware attacks, and 4) remove email addresses in plain text on webpages. Although the usability of SMEs' websites is not significantly lower than large companies' websites. They can improve their webpages' usability by 1) optimizing users' experiences (page renders) on different devices such as PCs, mobile phones, and tablets, 2) utilizing mobile viewpoints to ensure page content sizes for different devices, 3) removing Flash content and iFrames, 4) specifying a favicon, 5) using proper text size on their pages for all devices, and 6) expanding Tab targets to be larger for better user experiences.

Comparing between SMEs and large firms, almost all SMEs should actively improve their website qualities. Breaking into the industry level of large companies, the Agro & Food Industry (ARGO) focuses on SEO, usability, performance, and overall. Financials (FINCIAL) are remarkable in terms of usability, performance, social, and security, whereas Industrial (INDUS) is outstanding in usability and performance. Resources (RESOURC) perform well in usability and overall, while Services (SERVICE) are excellent in SEO, social, security, and overall. Large firms in Consumer Products (CONSUMP), Property & Construction (PROPCON), and Technology (TECH) still have more rooms to improve their website qualities using the above suggestions. Considering each website quality, all large companies give an important on website usability. Large firms in some sectors i.e., financials and services are highly concerned about security. However, large companies in every industry still have more rooms to enhance their SEO, performance, overall, and particularly social qualities.

For SMEs, the Agro & Food Industry (AGRO) is good in usability, performance, and security. SMEs in Consumer Products (CONSUMP), Financials (FINCIAL), and Industrial (INDUS) perform well in security. Property & Construction (PROPCON) is outstanding in usability, social, and security. Resources (RESOURC) are distinguished in SEO and security, whereas Services (SERVICE) are notable in security and overall. Technology (TECH) is marked in usability and security. Considering each quality aspect, SMEs in almost all sector except RESOURC give an importance on usability and security. Nevertheless, SMEs in every industry should improve their SEO, performance, overall, and especially social qualities.

CONCLUSION AND RECOMMENDATIONS

Investors search for company-related information from the company websites. The purposes of this paper are thus to explore the website quality of listed companies both SMEs and large enterprises in Thailand using a website evaluation tool, SEOptimeter and compare the website quality between SMEs and large firms. The findings suggest the improvement of website quality, particularly SMEs, in various industries. Using an automated tool in the context of listed company websites show the usefulness of website evaluation tool to technically assess website quality in multiple aspects (SEO, usability, performance, social, security, and overall) and to give practical guidelines for website owners and developers.

LIMITATIONS AND FUTURE RESEARCH

This study primarily focuses on assessing websites, especially in the technical aspects, so the study does not reflect the users' or investors' perceptions of website quality. There are some restrictions on reported information from the free services of the SEOptimizer. Future work, therefore, could additionally explore more results from the paid services. Furthermore, this paper use samples from listed companies in Thailand only. Future research should investigate the website quality of companies in other countries and deeply examine in some company types such as export companies and some industries such as tourism that use websites as the main channel to communicate globally. Future research should also develop local and global benchmarks for each industry. There are various automated website evaluation tools available, for instance, Website Grader and Qualidator (Gawade *et al.*, 2017; Khandare *et al.*, 2017). Future research should conduct the comparative analysis of website quality for companies in each industry using these tools to suggest the best tool to be applied.

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