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The Significance of 18 Weeks in Internet Business Reporting Research (IBR): A New Dimension in Data Collection Procedures

Siti Rosmaini Binti Mohd Hanafi
Accounting Department, Ajman University of Science and Technology, UAE

Mohd Ariff Bin Kasim*
Accounting Department, Ajman University of Science and Technology, UAE

Abstract

The present study intends to explore and ascertain the appropriate time interval in which the information on corporate website changes significantly. A sample of top 50 listed companies was drawn from five countries, namely the US, the UK, Singapore, Thailand, and Malaysia. The quality of the internet business reporting (IBR) practices is measured using the IBR quality (IBRQ) index as it permits relevant quantification. This study involves careful examination of the time interval data within 9 and 18-week intervals. Initial analysis revealed that there was no significant difference on the quality of IBR practices within 9 internet-weeks but significant changes for website financial content, website non-financial content, and total score of the IBRQ within 18 internet-weeks. Nonetheless, further analysis involving developed and developing countries as well as individual country revealed diverse results. The present study offers new insight that complements the existing body of knowledge. The present findings are unable to provide conclusive evidence that the information on corporate websites changed significantly after 18 weeks. Nonetheless, this study demonstrates longitudinal analysis of increasing important website data trends with relevance to IBR practices.

Key words: internet business reporting; internet financial reporting; internet disclosure practices; internet business reporting quality index

JEL classification: G39; M49

1. Introduction

The extent of internet business reporting (IBR) practices is measured by the quality of the information presented and the design of the corporate websites. The term quality reflects the comprehensiveness of the disclosure practices, which include but are not limited to the timeliness and usefulness of the information

*Correspondence to: Accounting Department, College of Business Administration, Ajman University of Science and Technology, 346 Ajman, United Arab Emirates. E-mail: m.ariff@ajman.ac.ae.

provided. Although every company that has a corporate website is considered to practice IBR, the significant element that differentiates the extent of the practices depends entirely on the quality of the corporate website. Louwers et al. (1998) indicated that a website is considered as a high-quality website if it is able to anticipate all the information required by the users in four key areas: breadth, depth, frequency, and timeliness.

Indeed, the rapid growth and development of the internet have provided tremendous benefits to society. The revolution of this technology, in particular, has significantly influenced companies' business and financial reporting practices and accounting communication. The latest statistics on global internet usage reported 528% growth from 2000 to 2011 (Internet World Stats, 2012). In fact, the growth rate is significantly higher in Asian and Middle Eastern regions and has been reported at 790% and 2,245%, respectively (Internet World Stats, 2012). The use of internet technology is overwhelming and a tremendous upsurge has occurred whereby it has become an inflection point for the business community as it changes the way in which information is disseminated to shareholders. With reference to this development, the US SEC proposed rules in 2008 to mandate the filing of annual reports and quarterly reports using the eXtensible business reporting language (XBRL). Indeed, since 1995, companies have started to disseminate their financial information through the World Wide Web.

The XBRL is an extension of Extensible Mark-Up Language (XML). Extensible is a useful feature that allows the user to use mark-up language in more than one way. The mark-up reflects that the XML provides definitions for text and symbols. The language implies that the XML is a method of presenting information with specific rules and formats. The XBRL is, then, a royalty-free, open-specification language for software that uses XML data tags to describe financial information for corporations (Khan, 2006). The XBRL enables various parties to enhance the creation, exchange, and comparison of business reporting information. Business reporting often includes financial statements, financial information, non-financial information, and regulatory filings, such as annual and quarterly financial statements. Furthermore, XBRL provides an efficient and reliable means of communicating financial information without changing existing standards or requiring the company to disclose any additional information beyond that in its current financial statement.

Most previous studies, such as those of Allam and Lymer (2003), Davey and Homkajohn (2004), Hamid (2005), Khadaroo (2005) and Bonson and Escobar (2006), have merely examined a snapshot of IBR practices. In these studies, the websites of the companies were examined only once throughout the study period. This study approach limits the ability to understand trends in the IBR practices over time. Moreover, published methods of data collection do not permit longitudinal study and are limited to simple cross-sectional study. In fact, there are diverse approaches to the data collection method itself: some studies collected their data within one month (Craven and Marston, 1999; Deller et al., 1999; Lybaert, 2002; Geerings et al., 2003; Khadaroo, 2005; Bonsón and Escobar, 2006; Celik et al., 2006) and others collected their data within three months (Allam and Lymer, 2003; Hamid, 2005; Hanafi et al., 2007; Khan, 2007; Alali and Romero, 2012). Moreover, in extreme cases, some studies expanded their data collection up to one year (Brennan and Kelly, 2000; Bollen et al., 2006). Deller et al. (1999) argued that the website

may change its content and layout without notice, and a one-month period for collecting data seems practical and feasible. Considering the dynamic nature of the information available on the internet, an appropriate time interval could improve the validity and comparability of the data collected. The main issue concerns the ideal time interval for data collection in this area of research. Thus, in an effort to achieve a high degree of temporal comparability and validity, the present study intends to explore and ascertain the appropriate time interval during which the information on corporate websites changes significantly.

The present study is unique among those in the existing literature in that it aims to explore and further refine the methodology applied in IBR studies. It focuses particularly on existing practices regarding the duration of data collection in this field of study.

2. Literature Review

Given the ever-increasing importance of internet technology in performing business operations and its apparent relevance to corporate reporting, it may not be surprising that business reporting on the internet is becoming a growing and popular research subject (Lybaert, 2002). Lymer (1999) substantiated that since 1995 many businesses have shown a serious interest in the use of the internet in their daily business activities. Since then, professional and academic studies about business disclosure have started to be published. Among the earlier studies produced between 1996 and 1999 are for instance those by Perravick and Gillett (1996), Flynn and Gowthorpe (1997), Lymer and Talberg (1997), and Hussey et al. (1999). However, most of these studies focused mainly on the existence of a website for the listed companies.

In 1998, the Association for Investment Management and Research undertook a research project to study the extent to which companies were adopting and using internet technology to provide information to the investing community. In their study, the analysts were required to rate the quality, timelines, and specificity of the information provided by the companies. Most of the analysts (i.e., 66%) reported that almost all the companies under review had corporate websites. Annual reports were found to be the most frequent type of information included in their corporate websites. The analysts also found that the corporate websites provided an accurate analysis of the companies. Lymer et al. (1999), in collaboration with the International Accounting Standard Committee, conducted a study to examine and explore the nature of the changes in IBR practices in 22 countries. Involved in that study were 660 companies (i.e., top 30 listed companies in 22 countries). The results showed that 86% of the companies had a website. They also indicated that even though companies in the other countries were not quite as advanced as those in the US, there was broad and deep adoption of the IBR practices among considerable numbers of companies. Nonetheless, there was substantial variation in the IBR practices among the countries.

Research involving developing countries, particularly those in South East Asia, is limited to the studies by Davey and Homkajohn (2004) and Khadaroo (2005). Davey and Homkajohn (2004) developed a new index with greater emphasis given to the content of the financial statement, which has been used to measure the quality of the financial reporting practices over the internet among the top 40 Thailand

companies. The results indicated that 8 out of 40 companies scored more than 50% and the highest score was 64%. This showed that Thai companies still lagged behind, and most companies did not seize the opportunity of technological advantages to add value to their financial reporting. Furthermore, variations in the quality of the internet financial reporting practices among Thai companies were particularly significant, since some companies provided a full set of financial information while others did not.

As the nature of information on websites is very dynamic, the Financial Accounting Standard Board (FASB, 2000) suggested that companies' websites should be reviewed in the shortest possible period. Thus, as a result of the dynamic changes, the FASB (2000) in its Business Reporting Research Project collected data for 100 companies within 1 day. To achieve this objective, they assembled a group of 17 research assistants to collect the data from 100 companies concurrently. If the data were not collected within the shortest possible time, they believed that by the time the researcher had completed the hundredth company, the data disclosed in the first company's website would have changed significantly.

The FASB (2000) suggested that 18 internet-weeks are equivalent to 1 normal year. This is because on the internet, things change quickly without notice; as such, the information on a company's website is expected to have changed significantly after an 18 week-interval (i.e., 1 normal year). In addition, Deller et al. (1999) argued that websites may change its content and layout without notice.

In an attempt to follow the method suggested by the FASB (2000), Lybaert (2002) collected data on 188 companies within a short time interval of 14 days. On the other hand, Deller et al. (1999) proposed that, to achieve a high degree of temporal comparability, a 1-month study period was appropriate. This view was further supported by other researchers, who also used the 1-month period to review company websites, i.e., Craven and Marston (1999), Geerings et al. (2003), Khadaroo (2005), Bonson and Escobar (2006), and Celik et al. (2006). However, some researchers took 3 months, such as Allam and Lymer (2003), Hamid (2005), Khan (2007), and Alali and Romero (2012), and some took 1 year for their data collection, such as Brennan and Kelly (2000) and Bollen et al. (2006), to name just a few. Nonetheless, there are studies that did not sufficiently describe their approach to data collection, particularly the time interval for their data collection, such as Cho and Roberts (2010), AbuGhazaleh et al. (2012), Aslihan et al. (2012), and Mohammad and Alam (2012).

Apparently there has been no theoretical basis for deciding the period to assess companies' websites (Hamid, 2005). Interestingly, should the suggestion made by the FASB (2000) be valid, this may open a new dimension in this area of study that is presently limited to snapshot analysis. The future of IBR study could include a longitudinal study approach by examining the changing trends in IBR practices between years. With regard to existing studies in this area, most of them, for example Craven and Marston (1999), Deller et al. (1999), Geerings et al. (2003), Oyelere et al. (2003), Khadaroo (2005), and Bonsón and Escobar (2006), did not utilize longitudinal methods; instead, their data were collected at one particular point in time. It is expected that the quality of IBR practices will change significantly over the years. Thus, it is important to investigate whether there is a significant change in companies' websites within a time interval of less than 18 weeks. Thus, for the purpose of the present study, a 9-week interval is used to reflect a half year of the

18-week interval suggested by the FASB (2000). Therefore, it is hypothesized that (a) there is no significant difference in IBRQ scores in 9 internet-weeks and (b) there is a significant difference in the IBRQ scores in 18 internet-weeks.

3. Methodology

A sample of top 50 listed companies was drawn from 5 countries, namely the US, the UK, Singapore, Thailand, and Malaysia. The top 50 listed companies were selected as these companies are the 50 largest companies in their respective countries and are highly likely to have a web presence. Large companies often have more resources and become leaders in technological matters (Lymer et al., 1999). Such a selection was also consistent with Geerings et al. (2003), whose sample consisted of the 50 largest listed companies in Belgium, France, and the Netherlands, and with one of the biggest studies undertaken by Lymer et al. (1999), which made use of the 30 largest listed companies in 22 countries in Europe, Asia Pacific, North America, and South America. This is also consistent with the approach of studies in other countries in which the sample was based on the selection of the biggest companies (Perven, 2006). Moreover, a classic study by Roscoe (1975) suggested that the basic rule of thumb for determining an appropriate sample size is that it must be larger than 30. In fact, he also suggested that in the case in which the sample is divided into sub-samples (i.e., the US, the UK, Singapore, Thailand, and Malaysia), a minimum sample size of 30 for each category is necessary.

The list of the top 50 companies from the US was obtained from Fortune 500, which ranks companies based on their annual revenues. This was consistent with various studies involving US companies that utilized the Fortune listing, such as Pervan (2006). For the other countries, lists of such companies were obtained based on market capitalization. To obtain the companies' website addresses, the sources presented in Table 1 were used. The website addresses of the companies in the UK, Singapore, Thailand, and Malaysia were obtained through the link on their stock exchange websites. For the US companies, the website addresses were obtained from the CNN Money website. If a top 50 company did not have a web presence, the next immediate company was selected in order to maintain a sample of 50 companies. For example, if the company ranked number 50 did not have a web presence, the next immediate company that was ranked 51 would be considered.

Table 1. Source of Companies' Website Addresses

No.	Country	Source	Link
1	US	Fortune 500	Via CNNMoney.com at: http://money.cnn.com/magazines/fortune/fortune500/2007/full_list/index.html
2	UK	London Stock Exchange	http://www.londonstockexchange.com/en-gb/ Email by: Historic Price Service at: products@londonstockexchange.com
3	Malaysia	Bursa Malaysia	http://www.bursamalaysia.com/website/bm/listed_companies/list_of_companies/
4	Singapore	Stock Exchange of Singapore	http://www.ses.com.sg/ Email by: Listing on SGX at listings@sgx.com
5	Thailand	Thailand Stock Exchange	http://www.set.or.th/en/ Email by: Technical Support at webadmin@set.or.th

In relation to the measurement, an index was used to measure the quality of the IBR practices in most existing studies. In spite of the contributions made by various existing indexes in measuring business reporting practices on the internet, those indexes also suffer from a number of drawbacks. Among the significant drawbacks of the existing indexes are no clear segregation between the assessment of financial data and the assessment of non-financial data (Hedlin, 1999; Oyelere et al., 2003; Davey and Homkajohn 2004; Marston and Polei, 2004; Trabelsi et al., 2004; Khadaroo, 2005; Aksu and Kosedag, 2006; Celik et al., 2006; Pervan, 2006). In addition, most indexes fail to consider website design as part of their measurement attribute (Ashbaugh et al., 1999; Oyelere et al., 2003; Hamid, 2005; Aksu and Kosedag, 2006; Bollen et al., 2006; Khan, 2007). The consideration of website design in any internet business reporting index is critical because a pleasant or friendly website design may stimulate full access to the information presented on the website. In addition, the existing indexes place greater emphasis on the financial content of the website but less on other information, particularly non-financial information, i.e., corporate governance reports, management team information, annual general meeting (AGM) information, and auditor information (Marston, 2003; Oyelere et al., 2003, Aksu and Kosedag, 2006; Momany and Al-Shorman, 2006; Khan, 2007). Moreover, existing indexes (Deller et al., 1999; Oyelere et al., 2003; Walden et al., 2003; Vasal and Srivastava, 2005; Pervan, 2006) limit the measurement attributes to stages one and two of the IBR practices proposed by Hedlin (1999). Hedlin reported that there are three stages of the development model of reporting via the internet. Stage one involves establishing a web presence, followed by stage two during which the internet is used as a medium to communicate financial information. Stage three signifies more advanced utilization of internet technology, which includes multimedia presentation, online share registering and voting in the AGM, online trading and marketing, as well as the use of the XBRL format for financial reporting.

In the present study, the quality of the IBR practices is measured using the IBRQ index to permit quantification of IBR quality (Hanafi and Ibrahim, 2011). The index was developed with the aim of overcoming the limitations in existing indexes (Hanafi et al., 2009). The IBRQ index is structured in two major parts. The first part measures the key factors of the website design, and the second part measures the content of the information disclosed on the companies' website. The detailed development procedures of the IBRQ index are described in a study by Hanafi and Ibrahim (2011). In assessing website design of a particular company, the IBRQ index identifies three key points to be taken into consideration, namely usability and accessibility, navigation, and timeliness. With reference to the website content, the index further classifies it into two broad categories, which are financial and non-financial data. The financial data attributes appear to fall into four main categories: financial statements, quarterly financial reports, financial highlights, and stock/shareholders' information. The non-financial data are further divided into six categories: general information about the company, the management team, corporate governance and committee of the board, corporate responsibility, online trading and marketing, and finally the auditor's and AGM information. The IBRQ index consists of 205 items, of which 34 items are used to measure website design; 11 out of these 34 items are used to measure usability and accessibility, 10 items are used to measure navigation, and 13 items are used to measure timeliness. The remaining 171

items of the 205 items are used to measure website content. Out of these 171 items, 100 items are used to measure financial data, while 71 items are used to measure non-financial data.

With reference to data collection procedures, two steps were involved. Step one involved the collection of data on the quality of the IBR practices. The total number of companies involved in the study was 250, consisting of 50 companies in each country. The stock exchange websites of non-US countries were used to locate the websites of the respective companies. For US companies, the website was traced through CNN Money. If there was no link available, other popular search engines, such as Yahoo and Google, were utilized. If there was a case in which the company's website failed to be located, especially for the Malaysian companies, the particular company was contacted by telephone to determine whether or not it had established a corporate website. For instance, one of the Malaysian listed companies, namely Batu Kawan, was contacted and it was confirmed that the company did not have a web presence at the time of data collection. Oyelere et al. (2003) identified this approach as an upgrading approach from the typical method of identifying a website through mere search engines. The website of each company was reviewed and the data were collected using the IBRQ index by assessing the visible information presented on the website.

Table 2. Period of Data Collection

No.	Country	First Stage	Second Stage	Third Stage
1	US	10 companies/day = 5 days	10 co./day = 5 days	10 co./day = 5 days
2	UK	10 companies/day = 5 days	10 co./day = 5 days	10 co./day = 5 days
3	Malaysia	10 companies/day = 5 days	10 co./day = 5 days	10 co./day = 5 days
4	Singapore	10 companies/day = 5 days	10 co./day = 5 days	10 co./day = 5 days
5	Thailand	10 companies/day = 5 days	10 co./day = 5 days	10 co./day = 5 days
Total Days		25	25	25

Notes: Time lag between each stage: First stage to second stage was exactly 9 weeks or 63 days. First stage to third stage was exactly 18 weeks or 126 days.

This study involved a longitudinal approach whereby three periods of data on the companies' IBR practices were collected. Table 2 provides the details of the period of data collection in the three stages for the present study. The data collection period for each stage was determined based on the time lag suggested by the FASB (2000), in which 126 days or 18 internet-weeks are considered equivalent to 1 normal year. The sequence of data collection started with 50 companies in the US, the UK, Singapore, Thailand, and Malaysia. Consistent with Deller et al. (1999), who suggested that a period of 1 month was an appropriate period for the data collection process, the average number of companies collected within a day was 10 companies. The total number of days was limited to 25 days for all 5 countries.

The data entry process is critical in this study, in which the data collected via the IBRQ index were initially prepared in a booklet form for a manual data collection process. However, to preserve the accuracy and consistency of the data obtained through the manual process, the IBRQ index in the Excel format was developed. After the data had been gathered manually, they were transferred to or entered into the Excel template. Formulae were used to allow the index to calculate the score automatically. In order to validate the formulae, the IBRQ scores were

manually calculated and compared with the scores calculated automatically using the formulae embedded in the Excel template. Since this study involved a large amount of data, a few internal control measures were created to ensure data entry accuracy. These measures were embedded in the Excel template. The control measures were horizontally and vertically colored borders and pop-up measures. Horizontally colored borders were a control measure used to differentiate between each section of the IBRQ index, i.e., usability and accessibility, navigation, and timeliness. Vertically colored borders were a control measure used to differentiate every five companies to replicate similar formats to those that appeared in the IBRQ index booklet, i.e., every one booklet consisted of five companies. The third internal control mechanism was the "pop-up" message to detect errors in the data entered. For example, there were "pop-up" messages when the researcher wrongly entered data in a cell that was supposed to be left blank or when the data entered exceeded the specific range for a particular item. Furthermore, in order to facilitate a smooth data entry process, another mechanism offered by Excel, known as the freeze pane, was also utilized. After all the data had been entered into the Excel template, the total score and the score of each attribute were automatically calculated and transferred to the SPSS format for further statistical analysis.

By using these measures, this study managed to reduce errors in the data entry. For example, there were 205 items in the IBRQ index that were used as a basis of measurement for every company. The total number of companies involved was 250 and they covered the three stages of data collection, resulting in the total number of data entered in the Excel template for each stage being 51,250 items. During the data entry process, 197 errors were detected using the control measures. In sum, the data entry process consumed on average 6 minutes to enter the data into the Excel template for each company. The total number of hours spent on all the 250 companies at one stage of data collection was 25 hours, i.e., 6 minutes × 250 companies/60 minutes. There is a greater probability that the time taken for the data entry process would have been longer if the control mechanisms had not been embedded in the Excel template. Nonetheless, this is a crucial method for preserving the accuracy and the validity of the data.

4. Results

This section presents the results for the first and second hypotheses. The first hypothesis stated that there is a significant difference in the IBR practices in 9 internet-weeks. The second hypothesis stated that there is a significant difference in the IBR practices in 18 internet-weeks. The data for all the IBR variables failed to satisfy the normality criteria, which is most likely due to extreme values and the overlapping of two or more processes as data were collected at two time intervals. Thus, the hypotheses were tested using the Wilcoxon signed-rank test. Table 3 exhibits the p-value of the normality test, in which the IBR variables were not normally distributed (p-value < 0.05) for all the three stages of data collection.

Table 3. Results of Normality Tests on the IBR Variables

Variables	Kolmogorov-Smirnov Test P-value		
	First Stage	Second Stage (9-Week Interval)	Third Stage (18-Week Interval)
Website Design	< 0.001	0.019	0.037
Website Financial Content	< 0.001	< 0.001	< 0.001
Website Non-Financial Content	0.006	0.010	0.001
Total Score of IBRQ	< 0.001	0.005	< 0.001

In assessing the significant changes in quality of the IBR practices within the 9 internet-week interval, the data obtained from the first stage were compared with the data gathered during the second stage. With reference to the second hypothesis, the results of the IBR quality gathered during the first stage were compared with those gathered during the third stage. The results are presented in Table 4. The comparison between the first and the second stage revealed that the p-value of all the IBR variables was more than 0.05, suggesting there was no significant difference between the IBR practices within 9 internet-weeks. This is evidenced by the fact that based on the overall analysis involving all 250 companies from 5 countries, the websites of the companies did not significantly change within the period of 9 internet-weeks.

Table 4. Comparison of IBR Quality between Stages*

Variables	First Stage and Second Stage	First Stage and Third Stage
	p-value	p-value
Website Design	0.407	0.478
Website Financial Content	0.321	0.004
Website Non-Financial Content	0.283	< 0.001
Total Score of IBRQ	0.115	< 0.001

Notes: * Wilcoxon signed-rank test.

Interestingly, the comparison between the first stage and the third stage reported significant changes for most of the IBR variables (i.e., a p-value of 0.004 for the website financial content, < 0.001 for the website non-financial content, and < 0.001 for the total score of the IBRQ). Nonetheless, the website design showed no significant changes between the period (i.e., a p-value of 0.478). Indeed, the present results support the second hypothesis with the exception of the website design.

In order to test the consistency of the results, further analysis was performed by categorizing the 250 companies based on the status of their country: either developed or developing. This analysis aimed to explore further the nature of the results among the companies in the developed and developing countries. Companies in the US, the UK, and Singapore were classified as being from developed countries, while companies in Thailand and Malaysia were classified as coming from developing countries. A similar statistical test was performed (i.e., the Wilcoxon signed-rank test). Table 5 exhibits the result of this analysis. As presented in the third column of Table 5 for both Panel A and Panel B, all variables reported a p-

value > 0.05. Thus, there was no evidence of significant change in the IBR practices within 9 internet-weeks for all the companies in the developed and developing countries. An interesting pattern of results was found for the second hypothesis. Panel A of Table 5 shows no significant changes for website financial content (p-value = 0.669), website non-financial content (p-value = 0.513), and total IBRQ score (p-value = 0.998). Nonetheless, the results indicated significance changes for website design (p-value = 0.004). Conversely, the pattern of results for companies in developing countries was consistent with results of the overall analysis in Table 4. Hence, mixed results were revealed between companies in the developed and developing countries. The existence of mixed results between companies in the developed and developing countries demands further analysis involving individual countries to broaden the perspective.

Table 5. Comparison of IBR Quality between Stages*

Panel A: Comparison between Stages for Developed Countries

Status	Variables	First Stage and Second Stage	First Stage and Third Stage
		p-value	p-value
Developed Countries	Website Design	0.172	0.004
	Website Financial Content	0.233	0.669
	Website Non-Financial Content	0.083	0.513
	Total Score of IBRQ	0.970	0.998

Panel B: Comparison between Stages for Developing Countries

Status	Variables	First Stage and Second Stage	First Stage and Third Stage
		p-value	p-value
Developing Countries	Website Design	0.429	0.025
	Website Financial Content	0.415	< 0.001
	Website Non-Financial Content	0.092	< 0.001
	Total Score of IBRQ	0.322	< 0.001

Notes: * Wilcoxon signed-rank test.

Table 6. Comparison of IBR Quality by Country*

Panel A: Comparison between First Stage and Second Stage

Variables/Country	US	UK	Singapore	Thailand	Malaysia
			p-value		
Website Design	< 0.001	0.582	0.004	0.494	< 0.001
Website Financial Content	< 0.001	0.063	0.902	0.426	< 0.001
Website Non-Financial Content	0.048	0.173	0.211	0.482	< 0.001
Total Score of IBRQ	< 0.001	0.622	0.073	0.086	< 0.001

Panel B: Comparison between First Stage and Third Stage

Variables/Country	US	UK	Singapore	Thailand	Malaysia
			p-value		
Website Design	< 0.001	0.003	0.017	0.487	< 0.001
Website Financial Content	0.010	0.003	0.262	0.397	< 0.001
Website Non-Financial Content	0.102	0.186	0.002	0.001	< 0.001
Total Score of IBRQ	0.001	0.132	0.082	0.114	< 0.001

Notes: * Wilcoxon signed-rank test.

The country-based analysis revealed that companies in the US and Malaysia reported significant changes in the quality of their IBR practices even within 9 internet-weeks. Conversely, companies in the UK, Singapore, and Thailand demonstrated no significant changes in the quality of their IBR practices. With reference to the US and Malaysia, this is indeed a new pattern of results that

contradicts the overall results and the analysis involving developed and developing countries. Panel A of Table 6 depicts these results. In addition, Panel B of Table 6 depicts the results of the country-based analysis comparing the quality of the IBR practices between the first stage and the third stage. A diverse pattern of results was attained, with the exception of companies in Malaysia, which reported significant changes for all the IBR variables (p-value < 0.05). The companies in the US reported significant changes for the website design (p-value < 0.001), website financial content (p-value = 0.010), and total IBRQ score (p-value = 0.001). However, no significant result was reported for the website non-financial content (p-value = 0.102). With regard to companies in the UK, no significant changes were reported for the website non-financial content (p-value = 0.186) and total IBRQ score (p-value = 0.132). With a similar pattern of results to the previous analysis, the website design and website financial content revealed significant changes with p-values of 0.003 each. Unlike their counterparts in the UK, the companies in Singapore reported significant changes in the website design (p-value = 0.017) and website non-financial content (p-value = 0.002). No significant changes were reported for the website financial content (p-value = 0.262) and total IBRQ score (p-value = 0.082). In contrast to the companies in the US, the companies in Thailand reported no significant changes for all the IBR variables, with the exception of the website non-financial content (p-value = 0.001).

5. Discussion

Three steps of analyses were performed in this study to examine the time interval in which the quality of the IBR practices changed significantly. The first step involved an overall analysis, followed by the country's status and individual countries. The result of the overall analysis seems to support both hypothesis 1 and hypothesis 2. Hence, this result is consistent with the findings of the FASB (2000), which indicated that the information on a company's corporate website could change significantly in 18 internet-weeks. With regard to the website design, which reported no significant changes, there is a possibility that companies tend to maintain the design of their corporate website for a longer period of time before deciding to upgrade it. Frequent changes to the design of the website could complicate the users' ability to access the desired information via a particular company's corporate website.

These results are critical and substantiate the findings of the FASB (2000), which stated that 18 internet-weeks are equivalent to 1 normal year during which companies' websites were expected to change significantly after the 18-week interval. Moreover, this study, coupled with those of the FASB, justified the argument as well as the methodology utilized in data collection by Craven and Marston (1999), Deller et al. (1999), Geerings et al. (2003), Khadaroo (2005), Bonsón and Escobar (2006), and Celik et al. (2006). At the same time, those studies (Brennan and Kelly, 2000; Allam and Lymer, 2003; Hamid, 2005; Bollen et al., 2006; Hanafi et al., 2007; Khan, 2007) that performed their data collection for more than 1 month may be subject to criticsm, particularly due to the bias element in the data collection. For instance, in the case in which data were collected from 100 companies within 3 months or 1 year, by the time the researcher completed the hundredth company, the data collected on the first company may have changed

significantly. It is possible that the first company had improved its disclosures and the utilization of more advanced internet technology by the researcher failed to incorporate these changes. The data would then be used for analysis and unfortunately conclusions drawn from these results.

Further analysis by categorizing the companies into developed and developing countries reported a somewhat different pattern of results. Companies in the developed countries were found to have no significant changes in the quality of their IBR practices for both 9 and 18 internet-weeks. These are indeed new findings that contradict those found in the overall analysis as well as the findings by the FASB (2000). The implication of this result further justifies the data collection procedure utilized by Allam and Lymer (2003) and Alali and Romero (2012), who collected their data within 3 months in their studies. Indeed, the present findings also suggest that the data collection procedure involving developed countries could be performed for a maximum of 18 internet-weeks. In accordance with the results of the overall analysis, the results of companies in the developing countries validate the finding by the FASB (2000) as well as the data collection approach utilized by Hamid (2005) and Khan (2007). Unlike developed countries, the data collection period for developing countries should be less than 18 internet-weeks. This is because, based on the present results for developing countries, the quality of the IBR practices changed significantly during the 18 internet-weeks.

Moreover, the detailed individual country analysis exposed more complicated and mixed results. Though the previous two analyses reported no significant changes in the quality of the IBR practices for 9 internet-weeks, the companies in the US and Malaysia reported significant changes. This is indeed contradictory to the results found in the overall and country status analysis. Even so, a consistent pattern of results (i.e., no significant changes to the quality of their IBR practices) was reported for companies in the UK, Singapore, and Thailand. With regard to the 18 internet-weeks analysis, once again, the companies in the US and Malaysia reported significant changes for all IBR variables. The companies in the UK, Singapore, and Thailand reported no significant changes in the total IBRQ score. The companies in Singapore and Thailand reported no significant changes in their website financial content. Furthermore, the companies in the US, the UK, Singapore, and Malaysia reported significant changes in their website design. Remarkably, these forms of results were not apparent during the overall analysis involving all 250 companies.

6. Conclusion

The present nature of studies on IBR practices is limited to snapshot analysis or cross-sectional studies. The finding by the FASB (2000) served as the basis for evaluating the time interval during which the information on corporate websites changes significantly. Interestingly, at the initial stage, the results of the present study corroborate those findings by the FASB (2000) that information on corporate websites changes significantly within 18 internet-weeks. Indeed, at the initial stage of analysis, it is true that no significant changes were detected in the quality of the IBR practices within 9 internet-weeks. Moreover, the suggestion that 1 internet-year equals 18 normal weeks is fully substantiated on the basis that information changes considerably. Nevertheless, further analysis of the country status and individual countries revealed more complicated and seemingly contradictory findings. The

previous claims regarding 18 internet-weeks seemed less conclusive as there were also companies in developed countries that reported no significant changes in the quality of their IBR practices even after an 18-week interval. The results also indicated that there are companies with significant changes in the information on their website within the 9-week interval.

7. Research Implication and Future Study

The present study offers a new insight that complements the existing body of knowledge, particularly regarding the appropriate period to be utilized for data collection. For instance, some IBR studies currently fail to give special emphasis to the time interval in their data collection. In fact, no longitudinal study that is consistent with the time period suggested by the FASB (2000) has been conducted. In this study, the time lag between each stage of data collection was carefully controlled to ensure that it was exactly 18 weeks, as suggested by the FASB (2000). This study, however, did not test the specific time intervals during which the information started to change significantly; instead, it was limited to the two time intervals of 9 and 18 weeks. There is a possibility that the information could change during a 10-week interval instead of an 18-week interval.

This study offers a new paradigm concerning the duration of data collection in IBR studies. Generally, the duration of data collection for all sampled companies must not surpass 18 weeks. However, with reference to companies in Malaysia and the US, the duration of data collection should not exceed 9 weeks. This is mainly due to the fact that the information on the websites of companies in these two countries change significantly within 9 weeks. Thus, the public relations officers of companies in Malaysia and the US must ensure that their corporate websites are updated within a 9-week interval in order to deliver the latest information to their stakeholders, in order to lead them to make sound investment decisions.

Future research should consider investigating the specific time interval during which information starts to change significantly on corporate websites. Nonetheless, the findings of this study could serves as broad guidance for future studies in this field of research. Generally, future studies must seriously consider the time interval for their data collection. The present study suggests that the data collection interval for developed countries, specifically the US, the UK, and Singapore, could be a maximum of 18 weeks, while data collection for developing countries, specifically Malaysia and Thailand, should take place in less than 18 weeks. The present study offers mixed results concerning the time interval in which the quality of the IBR practices begins to change significantly. Indeed, the results of this study offers new insights that create a new opportunity for more studies to explore further the exact and specific time intervals during which the quality of the IBR practices starts to change significantly. A conclusive time interval is critical to permit longitudinal studies, particularly on the trends in IBR practices.

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