International Journal of Engineering & Technology, 7 (4.35) (2018) 198-203

International Journal of Engineering & Technology

Website: www.sciencepubco.com/index.php/IJET

Research paper

Biodiversity Reporting Among Malaysian Companies: does the Risk Level Matter?

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Abstract

As Malaysia launched its National Key Economic Areas, biodiversity has been identified as one of the entry point projects for one of the sectors that will drive Malaysia towards high-income status i.e. tourism. Biodiversity, however, is facing a crisis, due to the development of business operation that has direct or indirect contribution to biodiversity loss. Despite the growing concern on biodiversity issue, previous studies have put more focus on general sustainability or environmental reporting issues. This paper aims to provide an analysis on the extent of biodiversity information disclosed by the top 100 Malaysian public listed companies and to see whether there is significant difference, in terms of reporting, between companies from different categories of biodiversity risk. The findings show 80 of the Malaysian companies disclose information regarding biodiversity with 'mission statement' being the highest reported biodiversity related item. There is also significant difference, in the context of biodiversity reporting, between companies from different categories of biodiversity risk. Further analysis shows companies with higher biodiversity risk (red-zone) provide more reports on biodiversity related information leading to a statistically significant difference from companies with lower biodiversity risk i.e. amber-zone and green-zone.

Keywords: *biodiversity; Malaysia; reporting; risk.*

1. Introduction

The launched of Malaysian National Key Economic Areas has seen tourism being identified as one of the 12 selected sectors that will drive Malaysia towards high-income status and global competitiveness. Malaysia's warm weather, eco-diversity and retail landscape has helped attract over 25 million tourist arrivals per year, contributing more than RM60 billion in receipts [1]. As part of the strategy to transform Malaysia into leading tourist destination, 12 entry point projects (EPP) are introduced. This include EPP 4.0 'Establishing Malaysia as Global Biodiversity Hub' that aims to develop Malaysia as a country that offers world's premium nature and eco-tourism destinations.

In the World Development Indicators (WDI)'s report, Malaysia has been reported as having one of the richest biodiversity of fauna and flora in the world, second only to Indonesia in South East Asia, despite having only 0.2 percent of the land mass of the world [2]. In another statistic published by WDI, Malaysia is ranked among the top countries that provide homes for several threatened species including mammals (ranked 4th) and higher plants (ranked 2nd) [3]. Species such as the proboscis monkey found only in the island of Borneo in Southeast Asia, the Malayan tiger that is exclusively found in Peninsular Malaysia, and the Sumatran rhinoceros that is believed to be found only in Malaysia, Brunei, and Indonesia are among few species that has the potential to attract lots of visitors to Malaysia.

Despite the glowing depiction of the rich biodiversity in Malaysia, there are less attractive aspects of it. As a country that is trying to move up the ladder to become a developed nation, Malaysia is facing loss of natural habitat and environmental degradation resulting from economic development. Palm oil industry in Malaysia, for example, has contributed to the land use change that spur the debate on environmental and social implications including the loss of biodiversity. Reference [4] estimates 50 percent of all palm oil expansion in Malaysian and Indonesia between year 1990 and 2005 has resulted in loss of natural rainforest. Malaysia, in particular, as reported in Food and Agriculture Organization of the United Nations statistic, converted at least 1,040,000 ha of forest accounted for 94 percent of the total extent of the nation's deforestation [5]. A review conducted by reference [6] shows a mean of 15 percent of species recorded in primary forest was also found in oil palm plantations indicating a loss of species if forest is converted into plantation.

As demand for land to accommodate palm oil industry as well other industries such as electricity and properties increase, a better understanding on how corporate strategies pertaining to biodiversity are incorporated is needed [6]. In the past few decades, companies have also been under increasing pressures from stakeholders to reduce their impacts on ecosystems by progressively making them as part of their key strategic variables that are notably disclose in their external reports [7]. As reporting becomes one of the mechanisms to measure companies' commitment to environmental issues, development of social and environmental accounting indicators has also been a matter of concern for more than 40 years [8]. Index developed by institutions and researchers such as the Global Reporting Initiative (GRI) Sustainability guideline of GRI, the Sustainability index of United Nations (UN), as well as index developed in accounting studies such as reference [9] and [10] were used by past researchers to evaluate the extent of sustainability reporting among corporate sectors (see for example reference [11]; [12]).

Even though there is an extensive and growing body of researches that examine companies' reporting of sustainability information, there has been little focus being made on the specific issue of biodiversity. In certain cases, the term biodiversity has not even be

included as part of the reporting items. Taking into consideration the importance of corporate sectors' role in sustaining biodiversity in Malaysia and the lack of focus on biodiversity issue in previous sustainability and environmental literature, this paper aims to examine the following two research questions:
RQ1: What is the extent of biodiversity reporting by top Malaysian public listed companies?
RQ2: Is there any significant difference between companies from different categories of biodiversity risk in the reporting of their biodiversity information?
The study is crucial for several reasons. This study will be among the first attempts in providing evidence on the extent of biodiversity reporting in Malaysia. In doing so, it adds to the body of knowledge, which had, so far, placed greater emphasis on the reporting of general environmental information. It also contributes in providing insight on how companies' biodiversity risk plays (or not) significant role in companies' decision to invest in biodiversity related incentives. Finally, the findings will also provide a signal to the policy makers to revisit the existing requirements for biodiversity reporting in Malaysia, which will eventually help to improve the overall biodiversity-related policies.

The remaining sections of the paper are structured as follows. Section 2 provides the discussion of related literature and hypotheses development. Section 3 presents the research methods. Section 4 discusses the findings. Section 5 concludes the paper.

2. Literature Review

2.1. Scope of Biodiversity and its Relation with Business

The GRI defines biodiversity as:
[…] variability among living organisms from all sources and the ecological complexes of which they are part, ranging from birds in the air, fish in the sea, and micro-organisms in the soil to genetic variety within agricultural crops and diversity of ecosystems [13, p. 7].
The International Union for Conservation of Nature (IUCN) and the UN Global Compact (UNGC) provide a much general definition of biodiversity by defining it as:
The diversity of genes, populations, species, communities and ecosystems that underlies all ecosystem processes [14, p. 22].
Despite minor differences in the words used, this definition highlights two important issues: (i) the importance of variability in ensuring the ecosystem is functioning effectively and serves it duties to organizations and society as a whole [13] and (ii) the issue of diversity should not be limited to the preservation of particular endangered species or threatened [8].
Given the possibility of looking at biodiversity from either broad or narrow perspective, researchers may choose to limit or not limit their research to specific area of diversity. A study conducted by reference [15], for example, analyse the suitability of a marine site in Sabah, Malaysia, to be declared as being protected from fishing and other extractive use using a Protected Area Suitability Index (PASI) developed through a combination of fishermen' preferences and conservation criteria. In another study conducted in Finland, by reference [16], an assessment regarding both specific/direct and indirect impact of building electricity transmission line is made. The study has taken a much general approach by evaluating the impact assessment process of the transmission line on the protected flying squirrel as well as the general ecologically effect surrounding the transmission sites.
Despite the possibility of focusing on a more specific issue of biodiversity, it may be difficult to limit businesses to protecting a specific type of biodiversity area or species. As argued by reference [17], biodiversity to many companies do not necessarily relate to specific species but to the overall economic value of natural ecosystem that involves a complex interaction between several species, which are now facing growing risk of biodiversity loss. The fact is businesses rely on biodiversity, either directly or indirectly, for their present and future operations, regardless of their size, industry or location [13]. This usage, however, comes with a price. A report produced by The Economics of Ecosystem and Biodiversity (TEEB), for example, provides a detail illustration on how industries such as the food industry has benefited from the ecosystem but has also, in return, negatively impacted the land and water resources [18].
Given the potential impact, direct or indirect, of business activities on biodiversity, a full reliance on the environmentalist to ensure the biodiversity loss is controlled is no longer the option. What used to be perceived as constraint on companies' activities imposed by external environmental may now need to be internally incorporated into the companies' business strategies [19]. Reference [20] asserts that a company will be at risk of facing legitimacy threat if any changes made are not communicated particularly to the legitimacy-conferring stakeholder groups. Given the extent of companies' reliance on natural resources to operate their businesses and the interdependency between human being and the ecosystem, companies now have a contract not only with their shareholders but also with the public at large. This contract is called a social contract where a company is now being given additional responsibility to not only making profit but doing it legitimately by making sure it operates within the limit imposed by society to ensure the continuous access to the resources [21].
In accordance to [22], if a company perceives it has breached the social contract or its legitimacy is in question, a number of combative strategies can be applied [22]: First, a company can seek to close the legitimacy gap by making relevant internal adjustment and then communicate these adjustments to shift the expectations of relevant members of the public; Second, a company may opt for not making any internal adjustment and instead seeks to demonstrate the appropriateness of its activities through educating the public; Third, instead of making internal adjustment or changing public's expectations, the company can choose to be more manipulative by deflecting public's attention from the original issues of concern to other issues; Finally, a company can seek to adjust societal expectations of its performance rather than making internal adjustment to close the legitimacy gap. Looking at the four combative strategies outlined by [22], it is apparent that regardless whether the strategy is to do internal adjustment or to educate the public, one of the mechanisms that can be used to ensure any legitimacy threat has been effectively managed is to publicly report the information, which is often achieved through the medium of company reports [23].

2.2. Biodiversity Reporting

With the growing use of corporate report as one of the mechanisms for companies to legitimise their action, it lead to an apparent link between accounting research and legitimacy theory that mainly revolves around the annual report [24]. A number of past studies on social and environmental reporting (SER), particularly, have embraced this view on legitimacy theory to examine voluntary reporting of public listed companies as a method that companies use to respond to the pressure resulting from the social contract [25]. These SER studies have been conducted on companies report ranging from annual report (see for example reference [26]; [27]; [28]) to a combination of several types of reporting medium such as annual report, news article, stand-alone report, and website (see for example reference [29]; [30]; [31]). The growing popularity of SER based studies around the world also means a similar pattern can be seen in Malaysia with large number of studies being conducted using either annual report or website. Studies conducted by reference [32], [33], and [34] are among studies that incorporate SER as part of their research objectives.
Despite the growing number of SER literature, much of the focus so far has been on the large area of SER that normally focus on, but not limited to, corporate responsibilities to the environment,

communities, and employees. In most cases, the term biodiversity has rarely being included in the index. Reference [8] further argues with a big area of SER that companies have to cover, the term 'sustainability' has been vaguely used. Therefore, there is a need for a much critical analysis of SER that can show whether or not companies might actually take a narrow economic and instrumental approach to the environment [8]. A number of researchers such as reference [35] and [36] propose for a more in-depth study of a particular environmental issues to enable a better understanding on that specific issue.

Biodiversity reporting is one of the many specific environmental issues that has not been given much attention into. Unlike carbon reporting that has recently being given greater attention, there has been much lesser number of studies being conducted on biodiversity reporting. One of the few earliest biodiversity reporting studies is reference [37] that analyses the sustainability (or equivalent) reports of the largest 100 companies listed on the United Kingdom (UK) and German stock exchanges to gauge the extent to which they are reporting biodiversity-related information. Other recent studies conducted are reference [8] and [38] looking at the biodiversity reporting of Sweden and Denmark, respectively.

To the knowledge of this paper, there has been no study conducted in Malaysia that look at much detail analysis of biodiversity reporting among Malaysian companies. This issue is crucial considering Malaysia has signed for the UN Convention on Biological Diversity, a convention that commit all signatories to take a dramatic step forward in the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources. One of the actions taken by Malaysian government is to establish Malaysian Clearing House Mechanism (MyCHM), a portal that provide mechanism for an efficient exchange of information between involved person and institutions as well as venue for local and international to access the state of biodiversity in Malaysia.

Reference [11] is one of the few Malaysian-based studies found to have included biodiversity reporting in their analysis. This in mainly due to the adoption of the GRI Sustainability Reporting Guideline, currently known as GRI standards, as the instrument used to content analyse the companies report. Unfortunately, while biodiversity has been included in their analysis, evaluating the extent of biodiversity reporting is not their main objective and the study only includes one Malaysian company i.e. Petronas. Nonetheless, the use of GRI guideline is a good stepping stone as it is a guideline recommended by UN Global Compact for biodiversity reporting. In the case of Malaysia, however, while companies are encouraged to utilise the GRI guideline, it is not a framework that is widely used.

Taking into consideration the importance of biodiversity issue in Malaysia and the lack of focus on biodiversity reporting per se, it is the objective of this study to evaluate the extent of biodiversity reporting among Malaysian companies and how companies, when categorized into different biodiversity risk zone, will demonstrate (or not) differences in the extent of biodiversity information that they report.

3. Research Methodology

In this paper, biodiversity reporting is analysed on the top 100, by market capitalisation, Malaysian public listed companies. Only 100 of the largest Malaysian companies were chosen consistent with the proposition made by reference [23] that large companies have higher possibility to be more progressive and innovative to produce this type of reporting due to larger financial resources. The final sample consist of 99 top capitalisation companies listed on the Malaysian stock exchange i.e. the Bursa Malaysia. One company has been excluded due to non-availability of the reports.

For the 99 companies included in the sample, annual reports for year 2016 were investigated. It is decided that, at the point when the analysis was conducted, only few companies have published their annual report for year 2017. Furthermore, if the company had any additional stand-alone non-financial statements such as the corporate social responsibility or sustainability reports, those reports were examined as well for the year 2016. Taking into consideration that it is not compulsory for Malaysian companies to produce a stand-alone sustainability report and the fact that biodiversity reporting is still at voluntary stage, the information can be found anywhere in the annual report or in the stand-alone report. Therefore, both medium of reporting will be analysed.

Table 1: Industry Types and No. of Companies Based on Risk Zone

Industries	Risk Level	No. of companies
Construction & Building Materials; Electricity; Food & Drug Retailers; Food Producers & Processors; Forestry & Paper; Leisure & Hotels; Mining; Oil & Gas; Utilities	Red-zone (High Risk)	43
Beverages; Chemicals; Financial Services; General; Retailers; Household Goods & Textiles; Personal Care & Household Products; Pharmaceuticals &; Biotech; Support Services; Tobacco; Transport	Amber-zone (Medium Risk)	38
Aerospace & Defense; Automobiles & Parts; Diversified Industrials; Electronic & Electrical; Equipment; Engineering & Machinery; Health; Information Technology Hardware; Media & Entertainment; Software & Computer Services; Steel & Other Metals; Telecom Services	Green-zone (Low Risk)	18

In classifying each company according to their biodiversity risk, this paper has adopted an approach similar to reference [8] i.e. the adoption of the three F&C risk-level categories (red-zone, amber-zone and green-zone). To the knowledge of this paper, the risk categories produced by reference [17] is the most commonly referred risk categories and contains a comprehensive description as well as cases to illustrate how a methodology was developed to assign the biodiversity risk level for each sector represented [8]. Despite the fact that the three categories were developed for sectors available in London Stock Exchange, it is expected that each sector listed in the three categories possess similar feature to its counterpart in another continent. A company that is in properties sector in UK is expected to have similar features to another company that is also in property sector in Malaysia. Therefore, it is concluded that current categorisation is sufficient to categorise the 99 Malaysian companies.

Table 1 provides a list of industries according to their F&C biodiversity risk level and the categorization of the 99 companies. From the 99 companies, 48 companies are under the red-zone category indicating a high level of biodiversity risk, 38 companies in amber-zone category with medium level of biodiversity risk, and the remaining 11 companies are considered as possessing lower biodiversity risk as they are grouped under green-zone.

In content analysing the reports, this paper utilised the following key terms, all of which can be associated to biodiversity and except for last two terms, have been applied by other three biodiversity reporting studies (see reference [8]; [38]; [37]): "biodiversity", "habitat", "eco-system", "conservation", "preservation", "restoration", "species", "flora", "fauna", "wildlife," "marine life", "maritime life", "forest", "animal". The last two terms are added after taking into consideration that deforestation and endangered animals are among popular biodiversity issues faced by Malaysia.

Similar to the approach taken by [37] and [38] all information found to be associated with biodiversity will be classified into the following categories: "scene setting", "species related", "social engagement", "performance evaluation", "risk", "internal management", and "external report". Table II provides detail illustration on what is expected from each category.

3. Findings

Table 2 shows the distribution of the biodiversity information found in companies report. Based on the distribution, category that records the highest number of companies reporting biodiversity information is "scene setting' with item "mission statement". 80 out of 99 companies state their intention to protect the biodiversity which is later being transformed into various biodiversity related activities. It is important to highlight that information on biodiversity normally comes as part of companies aim to help sustain the environment. In most cases, companies have chosen to include biodiversity as part of their strategic sustainability goal together with other sustainability issues such as human rights and economic equality.

When it comes to information regarding specific species, despite the existence of over 50 near threatened to critically endangered species in Malaysia, only 34 companies provide specific information on their effort to protect those species. From these 34 companies, 6 companies have explicitly highlighted their concern on IUCN Redlist. For example, one of the company disclosed in their annual report their employee engagement in the tiger conservation effort. Other than tigers, other species that have received special attention from the companies are the endangered bird species such as Nordmann's Greenshank and Lesser Adjutant, sun bears and proboscis monkeys.

Table 2: Total number of companies reporting according to biodiversity categories

Categories	*n*
Scene setting:	
Definition of biodiversity	2
Biodiversity related mission statement	80
Species related:	
Site-specific related to biodiversity	45
Specific species	34
Biodiversity Surveys	6
IUCN Redlist	6
Social engagement:	
Partnership on biodiversity	41
Awards relation to biodiversity	9
Stakeholder engagement on biodiversity issues	60
Performance evaluation:	
Biodiversity target and performance	20
Biodiversity performance	44
Costs relating to biodiversity	11
Risk:	
Assessment of biodiversity risk	27
Risk management to mitigate biodiversity risk	54
Incidence which impact (or not) biodiversity	25
Materiality of biodiversity risk	35
Internal management:	
Biodiversity action plan	7
Specific officer on biodiversity	1
External reports:	
Reference to GRI	28
Other external reporting guideline	5
Total Score	540
Average score (Total score/No. of Biodiversity Item)	27

As far as social engagement is concerned, 60 of the companies, making it the second highest item being highlighted, have reported some form of engagement with their stakeholders which normally involve the local communities and their own employees. However, for collaboration, the number is slightly lower as only 41 companies disclose information regarding their collaboration with other organisation. For example, one of the companies disclose information regarding their collaboration with the Green Connection Aquarium, Sabah Wildlife Department, and the UK Television show Paul Ogrady's Animal Orphans as part of their program to release a sub-adult green turtle (Chelonia mydas). Despite the long list of awards that Malaysian companies normally disclose in their report, only 9 companies disclose awards or prizes gained due to their effort in sustaining the biodiversity or the ecosystem. Taking into consideration that award is a potential mechanism to increase companies' good reputation if it is disclose, the fact that is it not disclosed can indicate the possibility that the company is yet to receive one.

The performance evaluation category shows another lower than average score as two of the items only score 20 and 11 respectively. The analysis shows that companies prefer to discuss what they have achieved throughout the year but less incline in sharing information regarding their target or cost spent to help preserve/conserve/restore the biodiversity. The risk category demonstrate fairly well score with 54 companies provide information on risk management framework related to environmental issues which also include issues related to biodiversity. As far as materiality is concerned, 35 companies provide information on how they perceive the materiality of biodiversity issue but only 25 companies provide specific incidence that have impacted their companies' operation. Since this paper only focus on quantity of information, no differentiation has been made between negative and positive information. Therefore, it is important to highlight that while companies disclose information on materiality of biodiversity or the impact of biodiversity, their analysis may conclude that their operation will impose no significant risk or impact to biodiversity i.e. immaterial.

The internal management category shows the lowest score among biodiversity categories with only 7 companies report information regarding their biodiversity action plan (BAP). Additionally, only 1 company explicitly discloses name of specific officer in charge of biodiversity related issues. The company has established a biodiversity team headed by a manager to mainstream environmental concerns into the companies' standard operating procedures. Note, however, the lack of initiative to assign a specific officer to look at biodiversity issue may also means companies are asking all of their business units/ employees to look at the issue of biodiversity. One of the companies, for example, due to the nature of its sector, have demonstrated that most of its business units are committed in preserving and protecting biodiversity while performing its business operation. On the other hand, if the company perceives their activities have the possibility of contributing to biodiversity loss, setting up a special biodiversity team will demonstrate their greater commitment to biodiversity conservation.

The last category of the analysis is external reporting i.e. the application of GRI standards or any other relevant guideline in disclosing information regarding biodiversity. As expected, since the usage of GRI is not mandatory in Malaysia, only 28 companies disclose the application of items listed under the GRI standards. As illustrated in section 2 of this paper, GRI is one of the institutions that specifically include biodiversity as one of their items. Therefore, it is expected that companies utilising the GRI standards will provide a description on how their companies response to each of the relevant indicator listed in the standards.

Table 3: Kruskal-Wallis Rank

Industry_Type		N	Mean Rank
Bio_Extent	1.00	43	62.98
	2.00	38	45.50
	3.00	18	28.50
	Total	99	

Table 4: Kruskal Wallis Test Statistics[a]

	Bio_Extent
Chi-Square	19.946
Df	2
Asymp. Sig.	0.000
a. Grouping Variable: Industry_Risk_Type	

Table 3 and 4 show the results for a non-parametric kruskall wallis test conducted on the extent of biodiversity reporting and the categories of companies' biodiversity risk level. Each company is assigned a biodiversity risk level (red-zone – 1; amber-zone – 2;

green-zone - 3) depending on the type of industry that they are in. The main objective of this test is to see whether or not there are significant difference between companies from three different categories of biodiversity risk level. As shown is Table 3 and 4, there is a statistically significance difference (p=0.000) in the extent of biodiversity reporting between companies from the three categories of biodiversity risks. The mean rank score for companies from risk level 1 (red-zone) is 62.98 while risk level 2 (amber-zone) and 3 (green-zone) scores 45.50 and 28.50 respectively. While it is expected that there should be a significant difference between the three groups, the results, however, do not provide information on where the difference lies.

Table 5: Post Hoc Test of Kruskall Wallis

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.
3 – 2	17.000	8.187	2.076	0.038	0.114
3 – 1	34.477	8.033	4.292	0.000	0.000
2 – 1	17.477	6.371	2.743	0.006	0.018

A post hoc test of kruskall wallis, as illustrated in Table 5, shows a pairwise comparison between each category of biodiversity risk. The results provide supporting evidence that the difference actually lies in biodiversity risk level 1 i.e. red-zone. As these companies are grouped under red zone with more likelihood to be exposed to biodiversity risk and where the risk is likely to be significant, it is expected that these companies to disclose more information related to biodiversity. With significant value 0.000 and 0.018, the extent of biodiversity reporting for companies in biodiversity risk level 1 (red-zone) is statistically difference from companies in risk level 2 (amber-zone) and 3 (green-zone). These results provide an indication that companies currently operate under red zone are aware about the impact of their operation to biodiversity and are showing to the public, through their reporting, that they are contributing back to the environment particularly on biodiversity related matters. Note that there is no significant difference between risk level 2 and 3 (p=0.114) indicating no difference between these two groups when it comes to the extent of biodiversity reporting. These two groups of companies are considered as less likely to be exposed to biodiversity risk as compared to companies from the red-zone.

4. Conclusion

The objectives of this paper is to provide an analysis on the extent of biodiversity information disclosed by the top Malaysian public listed companies and to see whether there is significant difference, in terms of reporting, between companies from different categories of biodiversity risk. The findings show 80 out of 99 companies provide report on biodiversity information with 'mission statement' having the largest number of companies reporting. With 80 companies providing some form of reporting related to biodiversity either in their annual report or stand-alone report, this shows that companies are making an effort to contribute to the issue of biodiversity even though their operation may not have a direct impact to biodiversity loss. From the legitimacy perspective, they simply disclosing what the society is expecting them to do since they have the resources. While the involvement may not directly related to their internal operational, the companies may perceive that the internalisation of external issue could potentially add value to the company's reputation. However, from another perspective, society is also expecting companies to be accountable when their operation is jeopardising the whole eco-system and they are expected to come up with mechanism to mitigate this impact. This expectation is answered through the kruskall wallis test which shows that there is significant difference, in terms of biodiversity reporting, between companies from different categories of biodiversity risk. The findings provide further evidence that companies from biodiversity risk level 1 (red-zone) is actually contributing more in biodiversity related issues with not only higher mean score, but the score is also significantly difference from companies with risk level 2 (amber-zone) and 3 (green-zone). This paper contributes in terms of issue, literature review, and analysis. Biodiversity is one of the issues being highlighted under environmental issues. Although SER is an emerging issue, a specific discussion on biodiversity reporting is still lacking. Taking into consideration that Malaysia has recently included biodiversity as one of their EPPs and the interdependence of human being with biodiversity, a detail analysis on this issue is a welcoming sight. For the first time to our knowledge, a study on biodiversity reporting is conducted within the context of Malaysian public listed companies. This will provide a more specific and up-to-date discussion to the existing SER literature. Although this paper is exploratory and descriptive, the analysis provides more insight on what and how Malaysian companies report their biodiversity-related information.

There are some limitation to this paper. First, due to non-availability of other type of categorisation, this paper utilises the F&C risk categorisation that is originally designed for private sectors in UK. While it is expected that each sector, regardless of its geographical location, should have similar feature, a risk categorisation based on Malaysian environment will help to provide confirmation on the findings produced by this paper. Second, this paper relies on content analysis in evaluating each of the 99 companies' report. While every measure has been taken to make the analysis more objective, the use of content analysis itself will always involve judgments being made by coders. Therefore, there will always be the possibility that another coder will interpret particular biodiversity information differently. Lastly, given that only 99 companies are analysed may not be sufficient to generalise the findings of this paper to other Malaysian companies. However, the findings do provide an overview on what is currently happening, as far as biodiversity reporting is concerned.

Future research on biodiversity reporting could strengthen the analysis with a more comprehensive empirical testing looking at factors influencing companies' decision to invest in biodiversity related issues. The number of companies analysed can also be increased to provide findings that can be generalised to all Malaysian companies. In addition, so far the focus is on what companies have disclosed in their report for one particular year and limited to only annual and stand-alone reports. A longitudinal study or a study that looks at website reporting are among other approaches that researchers can choose. A different perspective of analysis such as obtaining the view of the preparer could also provide further explanation on why companies choose to disclose or not to disclose certain type of information."

Acknowledgement

Authors of this paper wish to acknowledge the support given by the Universiti Tenaga Nasional (The National Energy University) and its Innovation & Research Management Center (iRMC) for their continuous support in making sure this research achieves its objective. This project is funded by the Universiti Tenaga Nasional under project code: 10289176/B/9/2017/11.

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