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The impact of board and hotel characteristics on biodiversity reporting: Market diversification as a moderator

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The Impact of Board and Hotel Characteristics on Biodiversity Reporting: Market Diversification as a Moderator

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Abstract

Purpose – The aim of this study is to explain how board and hotel characteristics affect biodiversity reporting and to test the moderating effect of market diversification.

Design/methodology/approach – The annual reports of 105 hotels were examined for the period between 2016 and 2017 to analyse these hotels' biodiversity reporting using content analysis. The partial least squares technique was used to test the proposed relationships.

Findings – The results show that the number of board members who are also on the corporate social responsibility committee, number of board members who are in environmental organizations, the star rating of the hotel, hotel size, and hotel location have significant positive effects on the extent of biodiversity reporting. In addition, market diversification moderates positively the effects of number of board members with environmental experience and number of board members from environmental organizations on the extent of biodiversity reporting.

Practical implications – The results of the study will be useful in enabling hotel manager and investors to become knowledgeable about these aspects of boards, which lead to higher biodiversity reporting. This study can also inform policy-makers about the types of hotels that are less likely to disclose biodiversity reports and to develop effective enforcement of regulations.

Originality/value – These findings extend the literature on biodiversity reporting by exploring the importance of board and hotel characteristics on the extent of biodiversity reporting and testing the moderating effect of market diversification.

Keywords: Board Characteristics, Hotel Characteristics, Biodiversity Reporting, Market Diversification

Introduction

Biodiversity deterioration is considered as one of the most genuine existing threats to human life and economic development (Gaia and Jones, 2019; Skouloudis et al., 2019). Data from the World Economic Forum (2015) identifies the current accelerated rate of ecosystem breakdown and biodiversity destruction as one of the ten major factors of global risk. For that reason, stakeholders put pressure on companies to reduce their impact on biodiversity (Bhattacharyya and Yang, 2019; Shwairef et al., 2019). Stakeholders increasingly expect companies to
recognize their responsibilities towards the ecosystem and adjust their practices to mitigate the negative impacts of their operations and positively contribute to biodiversity (Ali et al., 2019; Chang et al., 2019). According to a review by Pricewaterhouse Coopers (PwC, 2010), although 89 of the 100 largest companies in the world disclosed sustainability reports in 2008, only 24 of these reports displayed the activities undertaken in accordance with diminishing the negative impact on biodiversity. Although the companies’ annual reports demonstrated an increase of environmental reporting, information regarding biodiversity effects was not extensively disclosed. As such, biodiversity reporting has received increasing attention from academicians in the last few years (e.g., Adler et al., 2018; Han et al., 2020; Skouloudis et al., 2019).

A number of studies on environmental reporting include biodiversity (e.g., Bebbington et al., 2008; Gallego-Álvarez and Ortas, 2017; Guenther et al., 2007). In these studies, biodiversity was considered as one category of environmental reporting and the focus was rarely on biodiversity disclosure. The limited studies on biodiversity disclosure have been focused on the extent of biodiversity reporting (van Liempd and Busch, 2013; Rimmel and Jonäll, 2013), developing tools for biodiversity reporting (Samkin et al., 2014), and exploring the strategies that companies adopt to validate their accountability for biodiversity (Boiral, 2016). Research on drivers of biodiversity reporting is limited in the literature. As such, the main aim of this study is to investigate the drivers of biodiversity reporting. The focus of this study is limited to the hotel industry, as although this industry is one of the world’s fastest growing sectors (Jeaheng et al., 2019) and imposes numerous impacts on biodiversity loss (Chung and Parker, 2010; Malik et al., 2016), it has received less attention than the mining, chemical, or manufacturing industries. Tourists threaten biodiversity by generating negative environmental externalities, ranging from greenhouse gas emissions to water pollution (Milder et al., 2016). The drivers of non-financial reporting can be categorized into two broad types, namely board characteristics (e.g., Rao and Tilt, 2016; Shwairef et al., 2019) and corporate characteristics (e.g., Chang et al., 2019; Ong and Djajadikerta, 2020). To develop a more comprehensive model, the impacts of both board and hotel characteristics on the extent of biodiversity reporting in the hotel industry were investigated in this study. The findings will enhance our understanding of the drivers of biodiversity reporting in the hotel industry and will be useful for policymakers who are concerned with the impact of the hotel industry on the erosion of biodiversity.

Research on drivers of non-financial reporting provides inconsistent results. For example, Giannarakis (2014) and El-Bassiouny and El-Bassiouny (2019) investigated the relationships between corporate characteristics and corporate social responsibility (CSR)
disclosure and found positive relationships between firm size and the CSR disclosure index. On the other hand, Dienes and Vetter (2016) found a negative relationship between firm size and CSR reporting. Furthermore, Mukherjee et al. (2010) and Skouloudis et al. (2019) found a non-significant relationship between company size and the extent of CSR disclosure. Conflicts in previous studies might be due to the differences in the samples from which they collected data. Consequently, testing the potential factors that may moderate the relationships between drivers and CSR reporting will extend the literature by explaining the potential reason for previous conflicts and resolve the inconsistent findings. However, there is a lack of research in the literature which tests potential moderators.

Market diversification is one of the factors that may moderate the relationships between drivers and CSR reporting. Market diversification is the ratio of international revenue to the total revenue of the company (Amran et al., 2015). Many studies have shown that a company’s degree of internationalization (the number of countries in which it operates) has a positive effect on its social responsibility and CSR reporting (Matuszak and Różańska, 2019; Wanderley et al., 2008). However, to date, no research has tested the moderating impact of market diversification in non-financial reporting studies. Hotels that operate internationally should meet the expectations of various customers and are more exposed to customer pressure to protect biodiversity. As such, the impacts of board and hotel characteristics on their decisions to disclose biodiversity practices are expected to be greater. For instance, the impacts of hotel brand on the extent of biodiversity is expected to be greater among hotels that operate internationally and have high market diversification, as neglecting to report biodiversity publicly may put the reputation of high equity brands at risk. Accordingly, a moderating effect of market diversification is proposed. This study aims to address the following research objectives.

1. To test the impacts of board and hotel characteristics on the extent of biodiversity reporting in the hotel industry.

2. To examine the moderating effect of market diversification on the impacts of board and hotel characteristics on the extent of biodiversity reporting.

The rest of this paper is organised as follows. Section 2 presents a literature review and Section 3 develops the conceptual framework and hypotheses of the study. Section 4 presents the details of the methods used in the study. The main results are discussed in Section 5, and we provide a summary of our results and conclusions in Section 6.
Literature Review

Biodiversity Reporting

Biodiversity is defined in various ways. For example, Waldman and Shevah (2000, p. 299) proposed a comprehensive definition that delineates biodiversity as “the variety among living organisms, their habitats and their biological ecosystems, comprising of the ecological and evolutionary processes in the natural environment”. Biodiversity commonly consists of species diversity and genetic diversity; it also encompasses the interactions between species and ecosystems (EEA, 2010). Biodiversity has been suggested as a fundamental element for the protection of the planet and particularly of the human beings that survive there (Jones and Solomon, 2013). Biodiversity directly benefits human beings in that it improves the quality and quantity of food and water. Biodiversity may also contribute to medical advancements by maintaining animal species and various forms of plant life that could have medicinal value (Jones & Solomon, 2013). Biodiversity may also indirectly contribute to humans’ well-being by supplying natural rather than artificial pollination and by maintaining a conduit that leads to climate balance (Jones & Solomon, 2013). Keeping in mind these advantages, the business sector is beginning to notice the opportunities and risks that are associated with loss of biodiversity (WBCSD et al., 2006; PWC, 2011). Cost-saving and investment opportunities, new markets and products, as well as new business, are amongst the opportunities that could be obtained from ecosystem and biodiversity services; while loss of these services leads to regulatory, reputational, operational, financial, legal, and product risks (F&C Asset Management, 2004; TEEB, 2010). However, referring to the scientific analysis published by the World Wild Fund for Nature (WWF), the extinction rate of current species is between 1,000 and 10,000 times greater than the rate of natural extinction (Adler et al., 2017). The main factors behind today’s loss of species are uncontrolled pollution, unfeasible utilization of resources – namely soil, wild flora and fauna, and water – the introduction of unusual and invasive species, transformation of natural areas to urban development, and farming (Atkins and Gräbsch, 2014). A total of 79,837 assessed species are now included in the IUCN Red List. It has been demonstrated that more than 80% of the evaluated species are enduring habitat degradation or loss and approximately 30% of them are exposed to extinction risk (Bebbington et al., 2008).

Biodiversity protection should thus be a major concern for businesses, particularly in the tourism industry, which to a certain extent is reliant on the uniqueness of the environment’s natural beauty. If companies and their stakeholders are concerned about biodiversity, according
to legitimacy theory (Deegan, 2002), accountability theory (Gray, Owen, & Dams, 1996; Rob Gray, Kouhy, & Lavers, 1995) and risk management theory (Bebbington et al., 2008), they should report biodiversity issues to their stakeholders. In spite of the tourism industry’s high dependency on biodiversity, there is a dearth of scholarly studies on biodiversity reporting in this industry, while prior research has focused on the biodiversity reporting practices of companies in other industries (Rimmel and Jonäll, 2013; Boiral, 2016; Alder et al., 2018).

**Biodiversity Reporting in the Hotel Industry**

The hotel industry is considered as one of the fastest growing businesses in the world and plays a significant role in tourism, as large numbers of tourists are undertaking travel to distant locations. Furthermore, it is generally considered as a provider of economic and social advantages, as it provides a basis for job creation, experiences and knowledge-sharing, and business and leisure travel support. However, the key issues associated with the hotel industry are its abundant adverse impacts on the social, economic, and natural environments. Biodiversity loss, noise and air pollution, waste generation, change in climate, and eventually economic and social issues are examples of these negative effects (Grosbois, 2012). Large numbers of hotels are located close to natural and cultural heritage spots. For that reason, hotels draw the attention of many travellers, and this imposes a rising ecological footprint (Chung and Parker, 2010). Data from the study by Chung and Parker (2010) revealed that disregarding their operating size, resorts and hotels are large consumers of food, linen, energy, water, paper, cleaning materials, laundry, and other resources that generate water, noise, soil, and air pollution. Food packaging and food waste, heating and air-conditioning emissions, and grey water are additional impacts of these operations (Gray and Bebbington, 2001). As such, hotels have an impact on a wide range of different animal and plant species, and on the ecosystem, through the destruction of forest areas, environmental pollution, and utilization of natural resources (Malik et al., 2016).

Traditionally, the chemical, manufacturing, and mining industries have been widely regarded as heavy polluters, but lately the public and even consumers are expressing more concern about the negative impacts resulting from the hotel industry and are increasingly curious about knowing the strategies that hotels have undertaken to mitigate these issues (Mihalič et al., 2012). In response, biodiversity conservation has become an imperative action by various stakeholders and therefore has caused many hotels to react more transparently by revealing biodiversity information and being more accountable for their actions (Grosbois, 2012; Legrand et al., 2013). Like other businesses, the hotel industry is displaying progress in
the volume of its biodiversity reporting. Research has demonstrated that increasing numbers of hotels contribute to activities that are associated with biodiversity issues and increasingly communicate their achievements both to the general public and to customers. However, there is still very little biodiversity reporting in the hotel industry and much less attention has been devoted in the literature to the factors influencing such reporting; this issue is addressed in the present study.

Conceptualization and Development of Hypotheses

Based on the literature, the potential drivers of non-financial reporting can be categorized into two main types, namely board characteristics (e.g., Liao et al., 2015; Rao and Tilt, 2016) and corporate characteristics (e.g., Rahman et al., 2011; Ong and Djajadikerta, 2020). Drawing on agency theory, resource dependency theory and signalling theory, the impacts of both board and hotel characteristics on the extent of biodiversity reporting were investigated in this study. The previous studies on the impacts of board characteristics and corporate governance on non-financial reporting were reviewed and the most common significant factors were selected. Based on the reviewed literature, three board characteristics, namely the number of members of the board of directors (BOD) with environmental experience (Walls and Hoffman, 2013; Mertens et al., 2016), on CSR committees (Shaukat et al., 2016; Shwairef et al., 2019), and in environmental organizations (Carpenter and Westphal, 2001; Walls and Hoffman, 2013); and four hotel characteristics, including hotels’ brand name (Haddock-Fraser and Fraser, 2008; Amran et al., 2015), star rating (Tang et al., 2014), size (Aggarwal and Singh, 2019; Dias et al., 2019), and location (Vellecco and Mancino, 2010; Halkos and Skouloudis, 2017), were identified as potential determinants of biodiversity reporting. Accordingly, the impacts of these seven board and hotel characterises on the extent of biodiversity reporting were investigated in this study.

According to agency theory, managements choose to voluntarily disclose information to reduce agency costs (Jensen and Meckling, 1976). Providing information is one way to reduce agency costs (Broberg et al., 2010). Resource dependency theory indicates that the BOD is a strategic resource for a firm and enables managers to make effective decisions by providing guidance and resources (Pfeffer and Salancik, 1978). BOD members can provide a set of knowledge and skills derived from their experience (Kor and Sundaramurthy, 2009; Sánchez et al., 2017). BOD members with environmental experience and who are on the CSR committee or involved with an environmental organization have a better understanding of the importance of environmental practices and consequently integrate the environmental responsibilities into
decision-making (Shwairef et al., 2019; Tuggle et al., 2010). According to these two theories, BOD members with environmental knowledge provide guidance for managers and enable them to understand the importance of disclosing biodiversity practices in order to reduce agency costs. Signalling theory can explain the impacts of brand name, star rating, size, and location on the extent of biodiversity reporting. Signalling theory addresses the information asymmetry issue and “shows how asymmetry can be reduced by the party with more information signalling it to others” (Samaha and Khliif, 2016, p. 37). Reputed, high star-rated and large hotels signal their responsibility towards the environment to customers by communicating their biodiversity practices. This type of signalling can be effective, as it can be easily copied by hotels that do not have sufficient resources to implement biodiversity practices. Furthermore, we also proposed that market diversification moderates the impacts of the BOD and hotel characteristics on the extent of biodiversity reporting (Figure 1). Lack of accountability and transparency towards the impacts of operations on biodiversity have negative effects on the reputation and brand equity of hotels (Qoura and Khalifa, 2016). This effect is more prominent in hotels with high levels of internationalization, due to their proximity to the public eye (Subramaniam et al., 2020). Accordingly, it is expected that market diversification moderates the impacts of BOD and hotel characteristics on biodiversity reporting. The following sub-sections provide a brief review of the literature pertaining to each of these characteristics and market diversification. In addition, research propositions suggested by the literature are offered.

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**Number of BOD Members with Environmental Experience**

Hambrick (2007) notes that past experiences are fundamental cognitive elements through which information is processed and perceived. In reviewing the literature, it is found that board members filter information before communicating with the remaining employees. Thus, these manipulated data will lead to limited rationality and will unquestionably affect the way organizations interpret and respond to institutional pressures. Tuggle et al. (2010) highlighted the significant role of an experienced BOD, as their know-how and wisdom will pave the way to an understanding of the situation and to finding solutions for any problems related to the organization. Efficient decision-making and positive contributions to the organization are the
absolute advantages of a knowledgeable and experienced BOD. Battilana (2006) showed that a BOD that has vast knowledge and experience helps an organization to deviate from the usual norms. Balta et al. (2010) found the functional background of the BOD to be an important factor in their strategic decision-making process. Walls and Hoffman (2013) found that the past environmental experience of board members plays a critical role in allowing organizations to deviate positively in their environmental practices. As such, the greater the collective experience of the BOD on environmental issues, the more biodiversity-friendly decisions are expected. Hence, a positive relationship between the number of BOD members with environmental experience and the extent of biodiversity reporting is proposed in this study and the following hypothesis is developed:

H1. The number of BOD members of a hotel with environmental experience has a positive impact on the extent of biodiversity reporting.

Number of BOD Members on CSR Committee

Apart from supervision and making reports on CSR performance, the Conference Board of Canada (2008) draws our attention to the ability of the Board to instil CSR values in communicating the board’s commitment and development of the firm’s mission either externally or internally. It is thought that Board members with CSR committee experience play a prominent role in instilling CSR prospects into the company’s operations and strategic direction (Amran and Ooi, 2014). In the same vein, Shaukat et al. (2016) and Shwairef et al. (2019) argue that firms establish more comprehensive and proactive board CSR strategies when they engage with more CSR-oriented boards. According to Shwairef et al. (2019), the presence on the BOD of members with CSR committee experience leads to the integration of environmental responsibilities into decision making. As such, the extent of CSR reporting is affected by the presence of board members on the CSR committee. Therefore, appointing board members to CSR committees in organizations will lead companies to incline towards carrying out sustainability and biodiversity practices and eventually biodiversity reporting. Therefore, the following hypothesis is developed:

H2. The number of BOD members of the hotel on the CSR committee has a positive impact on the extent of biodiversity reporting.

Number of BOD Members in Environmental Organization
Networking is considered as a critical factor in organizational fields, as it connects the company’s external and internal environment (Owen-Smith and Powell, 2004). It is thought that networks play a prominent role in accumulating information that will link different parts of the organization together (Salman and Saives, 2005) and disseminate the organizational practices across boundaries (Haunschild and Beckman, 1998). Previous studies have reported that in addition to connecting powerful stakeholders and maintaining their integrity and legitimacy in business, a board network creates a ground for organizations to benefit from expertise and guidance (Carpenter and Westphal, 2001; Westphal, 1999). Thus, as stated by Hillman et al. (2007), such a network creates a stream for sharing social environments where organizations pass on the importance of traditions among their network members. Westphal et al. (2001) found that networks also have a primary role in expressing organizational behaviour messages inside an organization, which lead to mirroring of each other’s processes and practices (Westphal et al., 2001). From the perspective of environmental issues, numerous groups with special interests, including activists, consumers, and non-governmental organizations, urge companies to adopt environmental practices voluntarily rather than following the mandatory legal regulations. Thus, organizations with board directors who have broad networks on environmental sustainability or biodiversity in particular are more likely to deviate positively towards disclosing voluntarily in biodiversity reporting. As such, the following hypothesis is developed:

H3. The number of BOD members of hotels in environmental organizations has a positive impact on the extent of biodiversity reporting.

Brand Name

It is unquestionable that brand is an essential factor in companies’ marketing of their offered services and products. According to Balmer (2010), brand is an aspect of corporate strategy. Previous research has shown that a brand name acts as assurance of the consistency, quality, and security of products and services (Werther and Chandler, 2005). The significance of this matter is its impact on consumers’ loyalty, which will translate into enduring support. In such a way, the company will benefit from an increased profit in the long term. As a result, companies make efforts to illustrate their brand image and preserve a favourable brand name in order to achieve competitive advantage over their rivals. In contrast to the advantageous impact of a good brand name, a damaged name will lead to customers’ loss of trust and interest towards the company. Therefore, companies seek to maintain an acceptable reputation and will defend their brand name to keep their legitimacy in the market. Previous research findings have
indicated that sharing precise information regarding companies’ operation and their management with customers will assist companies to achieve a satisfactory brand name (Mark-Herbert and Schantz, 2007). A positive relationship between voluntary disclosure and brand name has been reported in the past literature (Haddock-Fraser and Fraser, 2008). Therefore, a positive relationship is expected between the range of biodiversity reporting and the brand name. Hence, it could conceivably be hypothesized that:

H4. The brand name of a hotel has a positive impact on the extent of its biodiversity reporting.

**Star Rating**

In the hospitality literature, the quantity and quality of the facilities and services offered have the determinative role in hotel segmentation, which is generally expressed as star ratings (Ye et al., 2014). The star-rating classification is the most universally recognized hotel rating system (Martin-Fuentes, 2016). Berezan et al. (2014) found that hotel rating systems influence hotels to enhance the quality of their services and impact their environmental performance. Tang et al. (2014) found that the level to which environmental issues and practices are addressed is greater among hotels with higher star ratings. Narangajavana and Hu (2008) justified the relationship between environmental issues and hotels’ star rating through higher customers’ expectations that highly rated hotels will implement environmentally friendly practices and particularly conserve biodiversity. Therefore, the customers of higher star-rated hotels have higher expectations from hotels to adhere to biodiversity compliance and accountability in disclosures. As such, the following hypothesis is developed:

H5. The star rating of a hotel has a positive impact on the extent of its biodiversity reporting.

**Hotel Size**

There is a large body of literature concentrated on organization size, with special attention to environmental practices, assuming that there is a link between the size of the organization and environmental management, specifically biodiversity protection (Henriques and Sadorsky, 1999). Tagesson et al. (2009) argued that larger organizations have greater influence on the environment due to their visibility; the reasoning behind this notion is that larger organizations are thoroughly checked by stakeholders and are forced to provide more information, as due to scale economics, the costs related to publication and generation of corporate information are low. In addition, compared to small companies, larger ones are believed to require more external capital, which increases the likelihood of conflicts among debt holders, managers, and
shareholders; hence, they adopt disclosure policy to cut down monitoring costs and reduce information asymmetry (Dias et al., 2019; Alvarez et al., 2008). Besides, larger firms are recognized as industry leaders, hence making them ideal examples for smaller ones. In addition to applying formal management on biodiversity practices, larger companies are capable of investing in biodiversity protection due to the availability of vast resources (Dias et al., 2019). Consequently, larger companies are likely to step into biodiversity preservation practices, disclosure of their activities, and revealing their influence on the environment. Aggarwal and Singh (2019) found that larger companies tend to release more reports on environmental practices than smaller companies. According to the findings of previous studies, it is concluded that the larger the organization, the greater the extent of biodiversity reporting. Hence, the following hypothesis is developed:

H6. Hotel size has a positive impact on the extent of biodiversity reporting.

**Hotel Location**

Hotels’ geographical location is an important factor, as most hotels are located near natural conservation areas, including coastal and marine zones or forests, which have their own attractions (Shieh et al., 2012). Furthermore, some of the attractive locations for tourists are near protected zones that are hosts to great biological diversity (UNWTO, 2014). The degradation and pollution of natural resources caused by tourism activities are serious problems for these tourist destinations. According to the Convention on Biological Diversity (2004), the ecosystem is severely affected by the tourism industry’s waste disposal. This industry’s excessive consumption of local resources, use of non-durable goods, energy and water, and release of waste emissions into the air, water and soil cause natural resource depletion and the degradation of the environment, which affects tourism-rich areas (Vellecco and Mancino, 2010). The societies surrounding these areas are also affected by such environmental issues. As a consequence, hotels are forced by the stakeholders’ demands to be accountable for their activities, which have a negative impact on the environment and biodiversity. As such, a relationship is expected between hotel location and the extent of biodiversity reporting, and the following hypothesis is developed:

H7. The extent of biodiversity reporting is higher among hotels that are located in environmentally sensitive areas in comparison to non-environmentally-sensitive areas.
Market Diversification

Diversification broadly refers to the business strategy of allocating investments into different markets in order to reduce risk and to gain a bigger market share (Markides, 1995). The extent to which companies focus on international operations has a massive influence on the implementation and establishment of sustainable practices (Strike et al., 2006; Tulder & Kolk, 2001), as numerous studies have shown that internationalization (the number of countries in which one company operates) is positively related to companies’ engagement in practices associated with sustainability (Matuszak and Różańska, 2019; Wanderley et al., 2008). There are various explanations for this relationship that are mostly established on the grounds of international companies’ need to preserve their reputation regardless of the pressure that foreign market stakeholders exert on them (Delmas, 2003; Kolk and Perego, 2010; Zyglidopoulos, 2002). There is a consensus among scholars that besides keeping up a good image, companies are bound to the pressure that comes from stakeholders in foreign markets (Delmas, 2003; Kostova and Zaheer, 1999; Zyglidopoulos, 2002). Therefore, by having a broad range of activities across the world and achieving more market diversification, companies are obliged to bear in mind their exposure to vast numbers of customers with different cultures and backgrounds. Therefore, stakeholders’ demands and expectations are two principal factors that companies should consider while delivering and managing data transparency and disclosure. As such, it is expected that market diversification moderates the impacts of board characteristics and hotel characteristics on the extent of biodiversity reporting and the following hypotheses are developed:

H8. Market diversification moderates positively the effects of number of BOD members of a hotel (a) with environmental experience, (b) on the CSR committee, and (c) in environmental organizations on the extent of biodiversity reporting.

H9. Market diversification moderates positively the effects of a hotel’s (a) brand name, (b) type, (c) size, and (d) location on the extent of biodiversity reporting.

Methods

Measurement of Constructs

The study was focused on hotels in Malaysia, where the hotel industry is growing rapidly (Kasa et al., 2020), and as highlighted above, has a significant effect on biodiversity (Malik et al., 2016). Secondary data were used to measure the study variables. The secondary data were obtained from the annual reports of hotels listed in the Global Reporting Initiative (GRI) for
the period between 2016 and 2017. The current paper used content analysis by implementing a framework of biodiversity (14 items) developed by Samkin et al. (2014) and GRI guidelines (5 items) (GRI, 2011) to measure the extent of biodiversity reporting. Krippendorff (2004, p. 18) defined content analysis as a “research technique for making replicable and valid inferences from texts (or other meaningful matter) to the context of their use”. It involves “codifying qualitative and quantitative information into pre-defined categories in order to derive patterns in the presentation and reporting of information” (Eisenberg et al., 2004, p. 287). Content analysis has been used frequently to examine non-financial disclosures (e.g., Chang et al., 2019; Shwairef et al., 2019). By adding all the indicators, the Biodiversity Reporting Index (BRI) was determined. A score of one or zero is given to a hotel if respectively it reveals the information on its website, corporate social responsibility reporting or annual report or if it refuses to disclose an information item. The scoring system is based on the discovered evidence. A point will be given for any observed evidence for each item. For conversion of total scores into continuous data, the sum of all the scores is divided by 19 (the total number of items). The criteria used to measure biodiversity reporting are depicted in Table 1.

Please Insert Table 1 here

Walls and Hoffman (2012) provide in-depth analysis to evaluate the number of BOD with environmental experience; in their study, data consisting of biographical information on BOD members, specifically those related to their education background, professional achievement, and employment history, were assessed. By taking advantage of the board biodata, the existence of knowledgeable, experienced, and intelligent CSR committee members in a company’s BOD was determined (Amran et al., 2014). BOD members who were also members of environmental organizations or Non-Government Organizations (NGOs) were identified through other positions in the present or the past (Walls & Hoffman, 2012). Data from several studies have identified that brand name is regarded as brand status: the hotel has a brand name that is identifiable to the end-consumers, which is measured as an indicator of the identifiable presence of the hotel and its services among consumers (Haddock-Fraser and Fraser, 2008; Haddock-Fraser and Tourelle, 2010). Following Awang et al. (2008), the hotel star rating is determined based on whether it is 5-star, 4-star, 3-star and so on. It is also important to understand that the number of employees will change from normal to peak season;
hence, instead of employee numbers, the number of rooms is used to determine hotel size (Awang et al., 2008). The recent study by Tang et al. (2014) showed that a hotel’s location can be classified by learning whether it is established in an environmentally sensitive district (e.g. highlands or coastal areas) or a non-environmentally sensitive zone (towns or cities). Subsequently, the ratio of international revenue to the hotel’s total revenue was adopted as an index for determining market diversification (Amran et al., 2013).

**Procedures and Data Collection**

The present research considered all hotels around the world as the study population, with reference to Green Hotel Associations and Global Reporting Initiative (GRI) data and the hotels’ websites (Statatista, 2017). This study conducted comprehensive research on data that were derived from the annual reports of 105 hotels. Content analysis was used to categorize texts according to the presence of previously defined words or groups of subjects that form meaningful categories. Referring to earlier studies, content analysis has been used as an empirically valid method to describe the stages of biodiversity disclosure that are presented by the companies (Nijkamp et al., 2008; Samkin et al., 2014). Information can be examined in a systematic, objective and trustworthy way by using content analysis, as this method arranges both quantitative and qualitative data into a systematic code of pre-defined classifications. In this study, certain keywords, such as “conservation”, “environmental”, “corporate social responsibility”, “flora and fauna”, and “biodiversity”, were investigated to uncover biodiversity information in CSR and annual reports. Moreover, information was categorized by implementing scores of 1 and 0: the former represents the existence of information related to biodiversity and the latter indicates an absence of such information. Apart from the strategy stated earlier, the current study employed a keyword search to find biodiversity reporting across an extensive range of resources, including formal documents of accountability, including environmental, annual, and sustainability reports. The findings of past studies suggest that the annual report is a valuable and appropriate intermediary in evaluating accountability discharge (Samkin and Schneider, 2010). Furthermore, this paper examined hotels’ websites to identify any previously developed reports on biodiversity, any publications among hotels concerning the biodiversity issue, and any formulated plans, strategies, or policies related to biodiversity management and the development of biodiversity reports. In this study, following Shwairef et al. (2019), two coders rated the reports and no significant differences were found between their ratings.
Analysis
To test the research model, the partial least squares (PLS) technique of structural equation modelling using SmartPLS Version 3.0 was used, which is considered the most appropriate approach due to the exploratory nature of the study (Hair et al., 2011). This technique involves a two-step approach to data analysis, whereby the first step analyses the measurement model and the second step assesses the structural relationships among the latent constructs (e.g., Iranmanesh et al., 2017; Zailani et al., 2019). As the model is formed with observed variables, validity and reliability tests are not required. Thus, as suggested by Ghozali and Latan (2012), the structural modelling is carried out directly.

Results
Descriptive Analysis
The latest annual reports of 105 hotels or hotel groups, between 2015 and 2016, were examined in this study. The Global Reporting Index website was the resource where many of the annual reports were listed. Moreover, hotels’ own websites also presented some of these reports. A descriptive analysis of the discrete variables of the study is provided in Table 2. The descriptive analysis of the continuous variables is provided in Table 3, which indicates that the extent of biodiversity reporting in the hotel industry is still low.

Assessment of Structural Model
The proportion of the variance explained determined the accuracy of the model’s predictions, where the $R^2$ value of the extent of biodiversity reporting was 0.328. To test the hypotheses, non-parametric bootstrapping was applied (Wetzels et al., 2009). The results indicated that number of board members on the CSR committee ($\beta = 0.113$, $p<0.05$), number of board members in environmental organizations ($\beta = 0.261$, $p<0.01$), star rating of hotel ($\beta = 0.127$, $p<0.05$), hotel size ($\beta = 0.119$, $p<0.01$) and location of hotel ($\beta = 0.415$, $p<0.001$) have
significant positive effects on the extent of biodiversity reporting. The impacts of the number of board members with environmental experience ($\beta = 0.039, p>0.05$) and the brand name of the hotel ($\beta = -0.060, p>0.05$) are not significant. Thus, H2, H3, H5, H6, and H7 are supported, whereas H1 and H4 are not supported. With respect to moderating effects, the results showed that marketing diversity moderates the impact of the number of board members with environmental experience ($\beta = 0.163, p<0.05$) and the number of board members in environmental organizations ($\beta = 0.194, p<0.01$) on the extent of biodiversity reporting. As such, H8a and H8c were supported, whereas H8b, H9a, H9b, H9c, and H9d were not.

Figure 2 illustrates that the number of board members with environmental experience has a negative effect on the extent of biodiversity reporting among hotels with low market diversification and a positive effect among those with high market diversification. Furthermore, although the number of board members in environmental organizations has a positive effect on the extent of biodiversity among hotels with high market diversification, it mostly has no effect among hotels with low market diversification.

Discussion
In this study, the impacts of board and hotel characteristics on the extent of biodiversity reporting were investigated. Furthermore, the moderating effect of market diversification was tested. The results show that the number of board members on the CSR committee, the number of board members in environmental organizations, the star rating of the hotel, hotel size, and location of the hotel have significant positive effects on the extent of biodiversity reporting. Furthermore, market diversification has a positive moderating effect on the impacts of number of board members with environmental experience and number of board members in environmental organizations on the extent of biodiversity reporting.
The impact of the number of board members with environmental experience on the extent of biodiversity reporting was not supported. This is somewhat surprising, as the results of many studies have shown that the board’s past experience has a substantial impact on the organizational interpretation towards institutional pressures, which will eventually encourage them to be more responsive towards reporting (Tuggle et al., 2010; Balta et al., 2010). A potential reason for the non-significant relationship might be that in comparison to other industries, including the mining, chemical, and manufacturing industries, the hotel industry is considered to be less polluting. Therefore, consumers still demonstrate fewer concerns about the hotel industry’s negative impacts on the environment, which lead to less customer pressure. Therefore, board members’ past environmental experience, as a driver of organizational interpretation towards institutional pressures, shows no significant effect on the extent of biodiversity reporting. According to Skouloudis et al. (2019), the determinants of biodiversity reporting are dependent on situational factors within the sector of operation. As such, the less polluting nature of the hotel industry and consequently the lower level of pressure from customers cause a non-significant relationship between the number of board members with environmental experience and the extent of biodiversity reporting. In this case, improving customers’ knowledge and awareness towards numerous impacts of the hotel industry on biodiversity loss may lead to higher customer pressure, and consequently board members with environmental experience will play a more active role and will advise hotels’ top management to be responsive toward biodiversity reporting.

The impacts of both the number of board members on the CSR committee and the number of board members in environmental organizations on the extent of biodiversity reporting were significant, which is consistent with the findings of Amran et al. (2014) and Carpenter and Westphal (2001), who found that board members with experience of CSR committees and environmental organizations play a vital role in ensuring that the CSR perspective is instilled in an organization’s strategic direction and operations. This means that hotels with more board members who are oriented toward CSR and environmental issues develop a more proactive strategy towards biodiversity. However, our findings show that the mean value for the number of board members on CSR committees and environmental organizations was less than one person. Considering the important roles of number of board members on CSR committees and environmental organizations in enhancing biodiversity reporting and the low numbers of such members on hotels’ boards, forming a board with more members from CSR committees and environmental organizations is beneficial to hotels, since
it indicates the importance of biodiversity issues to the top managers and provides a base to integrate biodiversity with the overall management of operations.

The findings show a non-significant relationship between brand name and the extent of biodiversity reporting, which is not consistent with the findings of Haddock-Fraser and Fraser (2008), who found brand image to be a positive driver of voluntary disclosure. The potential justification of this non-significant relationship is that brand name was measured based on customers’ ratings of hotel service. As the hotels’ environmental practice is not part of this evaluation, a one-star hotel can also achieve a strong brand image due to the value for money of its provided service. Therefore, brand name cannot be a significant predictor of biodiversity reporting. To address this issue, hotel booking websites should consider hotels’ environmental practices as a part of their service evaluation, which will push hotels to consider the impacts of their activities on the environment and use biodiversity reporting as a tool to demonstrate their accountability for biodiversity.

The results confirm the positive relationship between star ratings and the extent of biodiversity reporting, which is consistent with the findings of Tang et al. (2014), who reported a positive relationship between hotels’ star ratings and the extent to which they addressed environmental issues and practices. As the customers of hotels with high star ratings have higher expectations regarding the implementation of environmentally friendly practices, hotels report biodiversity to show customers that they conserve biodiversity in their practices. As such, hotels with high star ratings should go beyond the financial frame and provide information on the impacts of their activities on animal and plant species to depict their responsibility toward biodiversity (Tommasetti et al., 2020).

The study illustrates that hotel size has a positive explanatory power regarding the extent of biodiversity reporting, suggesting that larger hotels provide more biodiversity information in their disclosures. This result is in line with the findings of Aggarwal and Singh (2019), who found positive relationships between firm size and environmental reporting. As larger hotels are under pressure from stakeholders (Tagesson et al., 2009) and need more external funds than smaller ones (Álvarez et al., 2008), they develop biodiversity disclosure to avoid regulation and absorb more funds. Furthermore, the larger hotels have more financial and non-financial resources and consequently are able to invest in biodiversity protection practices (Dias et al., 2019). As such, the policymakers should play an important role and motivate small and medium hotels, which have fewer resources and encounter less pressure from customers, to invest in biodiversity protection and publicly disclose biodiversity practices by using both incentive and punishment approaches.
Hotels’ geographical location is the factor that has the strongest effect on the extent of biodiversity reporting. This means that hotels located close to natural conservation areas are more likely to report on biodiversity in comparison to those in urban areas. Tourist activities in coastal and marine zones or forestry areas cause serious problems for the environment (Vellecco and Mancino, 2010). As such, customers expect more environmental accountability from hotels in environmentally sensitive areas, and these hotels have more reason to signal good environmental performance through biodiversity reporting. Accordingly, the extent of biodiversity reporting is higher among hotels located close to natural conservation areas in comparison to those in urban areas.

According to the results of this study, market diversification moderates positively the impacts of the number of board members with environmental experience and number of board members in environmental organizations on the extent of biodiversity reporting. Board members with broad past environmental experience, based on their knowledge on the benefits and loss of environmental reporting, decide not to publicly disclose biodiversity practices when the hotel allocates investments into one or a few markets due to the reduced legal, regulatory, operational, reputational, market, product and financial risks. As such, the number of board members with environmental experience has a negative effect on the extent of biodiversity reporting. On the other hand, board members with environmental experience understand the importance of biodiversity reporting for hotels that operate internationally due to the need to maintain their reputation (Kolk and Perego, 2010) and the fact that they are facing higher pressure from customers from different cultures and backgrounds. Halkos and Skouloudis (2017) stated that people from different national terrains have different cultures and emphasis on various CSR aspects. Therefore, managers of hotels with high levels of internationalization should enhance their awareness of cross-country differences (Halkos and Skouloudis, 2016) and report biodiversity practices publicly to meet the expectations of their customers in countries whose cultures place emphasis on mitigating the negative effects of operations on biodiversity. Board members in environmental organizations also better understand the importance of biodiversity reporting for hotels that operate internationally, which leads to positive relationships between the number of board members in environmental organizations and the extent of biodiversity reporting among hotels with high market diversification.

Conclusion
The loss of biodiversity as the result of human activities is one of the greatest threats to the global environment (Skouloudis et al., 2019; Syarifuddin and Damayanti, 2019). The hotel
industry is one of the fast-growing industries that negatively affect a wide range of animal and plant species (Malik et al., 2016). This has led to growing pressure from stakeholders on hotels to disclose the impacts of their operations on biodiversity. Accordingly, this study aimed to investigate the drivers of hotels’ biodiversity reporting. The findings of the study revealed that the extent of biodiversity reporting was affected by the number of board members who were on the CSR committee and were members of environmental organizations, and by the hotels’ star rating, size, and location. Furthermore, the impacts of number of board members with environmental experience and in environmental organizations on biodiversity reporting were positively moderated by market diversity.

Understanding the impacts of board and hotel characteristics on the extent of biodiversity reporting has important theoretical and practical implications. From a theoretical perspective, this study contributes to the biodiversity literature by testing the factors that may affect the extent of hotels’ biodiversity reporting. The results revealed that the number of board members on the CSR committee and in environmental organizations, and hotels’ star rating, size and location, positively influenced the extent of hotels’ biodiversity reporting. The inconsistency between these results and the findings of studies in other industries confirms that determinants of biodiversity reporting are dependent on the environmental situation of the sectors in which firms operate and consequently that the proposed conceptual framework of this study should be tested in various industries. Furthermore, the study extends the literature on drivers of non-financial reporting by testing the moderating effect of market diversification. The results show that market diversification moderates positively the impact of number of board members with environmental experience and number of board members in environmental organizations on the extent of biodiversity reporting. It suggests market diversity as a factor that can explain the variety of results in the studies on drivers of non-financial reporting.

From the practical perspective, the results of this study will help hotel managers to understand those board and hotel characteristics that have effects on the extent of biodiversity reporting. We offer some clues as to when such actions are substantive rather than symbolic: appointing directors who have environmental experience and are members of environmental organizations is necessary if a hotel has high market diversification. Furthermore, appointing directors who are on CSR committees is essential for hotels regardless of market diversification. The findings also have implications for policymakers, suggesting that they should develop strict regulations on biodiversity reporting and monitor the biodiversity disclosure of hotels which are small, have low star ratings, and are located in less
environmentally sensitive areas, as they are least likely to disclose adequately the impact of their business operations on biodiversity. Large and high-star hotels and those located close to natural conservation areas are under pressure from their customers to protect biodiversity and publicly disclose their biodiversity practices. Accordingly, the government should play a critical role and expose pressure on those hotels that receive less pressure from customers.

The aim of the present study is considered to have been successfully achieved. Nevertheless, limitations should be raised, which can be addressed in future studies. First, the results of this study show a non-significant relationship between the number of board members with environmental experience and the extent of biodiversity reporting, which is inconsistent with previous studies. Future studies could compare the impact of this factor between the hotel industry and the manufacturing industry to illuminate the importance of the extent of the particular industry’s effect on the environment on board members’ decisions to report biodiversity. Second, content analysis has its limitations. Driving keywords for the content analysis from Samkin et al.’s (2014) framework of biodiversity and GRI guidelines is not free of risk, as the guidelines might not capture all of the relevant biodiversity aspects. Third, the sample for this study was limited to the hotel industry: future studies should test the model from this study in other industries. Skouloudis et al. (2019) showed that the extent of biodiversity reporting is dependent on the sector of operation.

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Figure 1. Conceptual Framework

**Board Characteristics**
- Number of BOD with Environmental Experience
- Number of BOD in CSR Committee
- Number of BOD in Environmental Organization

**Hotel Characteristics**
- Brand Name
- Star Rate
- Hotel Size
- Hotel Location

Biodiversity Reporting in Hotel Industry

Market Diversification

Figure 2. Moderating Effect of Market Diversification
### Table 1. Index assessing the extent of biodiversity reporting

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The role that the organization plays in restoring national or international biodiversity, including vision, mission and strategy statements.</td>
</tr>
<tr>
<td>2</td>
<td>Description of the current status of biodiversity and/or issues affecting biodiversity</td>
</tr>
<tr>
<td>3</td>
<td>Description of the value and importance of biodiversity, including reasons why biodiversity should be restored or maintained</td>
</tr>
<tr>
<td>4</td>
<td>Identification of any targets/ objectives/ outcomes/ aims the organization has in relation to planned biodiversity-related actions, projects and research</td>
</tr>
<tr>
<td>5</td>
<td>Reference to how the organization plans to fund any biodiversity actions, plans, research or projects including details of funds available</td>
</tr>
<tr>
<td>6</td>
<td>Biodiversity background reports, fact sheets on regional biodiversity, information brochures on topic such as pest and weed management, information on species and other general biodiversity-related information</td>
</tr>
<tr>
<td>7</td>
<td>Reference to any frameworks, databases or methods of measuring the status of biodiversity or the numbers of species</td>
</tr>
<tr>
<td>8</td>
<td>Discussion of any actions, projects and programmes that the organization has conducted or overseen, including the purpose or objective(s) of the actions, projects or programmes</td>
</tr>
<tr>
<td>9</td>
<td>Description of any community programmes or business partnerships that the organization has entered into for the purpose of raising awareness of, or restoring or maintaining biodiversity</td>
</tr>
<tr>
<td>10</td>
<td>Description of any contribution the organization has made at national and/or international conventions, conferences, and forums including contributions to reports, legislation, and national procedures</td>
</tr>
<tr>
<td>11</td>
<td>General information concerning biodiversity</td>
</tr>
<tr>
<td>12</td>
<td>Evaluation of any actions taken by the organization in the interest of restoring or maintaining biodiversity, including discussion on specific outputs/ outcomes achieved</td>
</tr>
<tr>
<td>13</td>
<td>Reference to the cost of any actions, projects and research or the identification of how the action, project or research was funded</td>
</tr>
<tr>
<td>14</td>
<td>Discussion of any potential projects, actions or plans to be carried out in the future as a result of past performance</td>
</tr>
<tr>
<td>15</td>
<td>Location and size of land owned, leased, managed in or adjacent to, protected areas and areas of high biodiversity value outside projected areas.</td>
</tr>
<tr>
<td>16</td>
<td>Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.</td>
</tr>
<tr>
<td>17</td>
<td>Habitats protected or restored</td>
</tr>
<tr>
<td>18</td>
<td>Strategies, current actions, and future plans for managing impacts on biodiversity</td>
</tr>
<tr>
<td>19</td>
<td>Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.</td>
</tr>
</tbody>
</table>

### Table 2. Descriptive Analysis of the Discrete Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Star Rate</td>
<td>1-2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>3-4</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>66</td>
</tr>
<tr>
<td>Brand</td>
<td>Not Established</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Established</td>
<td>87</td>
</tr>
<tr>
<td>Hotel Size</td>
<td>Less than 200 rooms</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>More than 200 rooms</td>
<td>89</td>
</tr>
<tr>
<td>Hotel Location</td>
<td>Environmentally Sensitive Area</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>Non-Environmentally Sensitive Area</td>
<td>72</td>
</tr>
<tr>
<td>Market Diversification</td>
<td>No</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>55</td>
</tr>
</tbody>
</table>
Table 3. Descriptive Analysis of the Continuous Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of BOD with Environmental Experience</td>
<td>0.00</td>
<td>3.00</td>
<td>0.820</td>
<td>0.565</td>
</tr>
<tr>
<td>Number of BOD in CSR Committee</td>
<td>0.00</td>
<td>9.00</td>
<td>0.910</td>
<td>1.623</td>
</tr>
<tr>
<td>Number of BOD in Environmental Organization</td>
<td>0.00</td>
<td>3.00</td>
<td>0.780</td>
<td>0.475</td>
</tr>
<tr>
<td>Biodiversity Reporting Index</td>
<td>0.00</td>
<td>1.00</td>
<td>0.185</td>
<td>0.280</td>
</tr>
</tbody>
</table>

Table 4. Path Coefficients and Hypothesis Testing

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Relationships</th>
<th>Path Coefficients</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1</td>
<td>ENVEXP → BRI</td>
<td>0.039</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H2</td>
<td>CSRCOM → BRI</td>
<td>0.113*</td>
<td>Supported</td>
</tr>
<tr>
<td>H3</td>
<td>ENVORG → BRI</td>
<td>0.261**</td>
<td>Supported</td>
</tr>
<tr>
<td>H4</td>
<td>BRAND → BRI</td>
<td>-0.060</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H5</td>
<td>STAR → BRI</td>
<td>0.127*</td>
<td>Supported</td>
</tr>
<tr>
<td>H6</td>
<td>SIZE → BRI</td>
<td>0.119**</td>
<td>Supported</td>
</tr>
<tr>
<td>H7</td>
<td>LOCATION → BRI</td>
<td>0.415***</td>
<td>Supported</td>
</tr>
<tr>
<td>Moderating Effect of Market Diversification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>MARKETDV → BRI</td>
<td>0.085</td>
<td></td>
</tr>
<tr>
<td>H8a</td>
<td>MARKETDV*ENVEXP → BRI</td>
<td>0.163*</td>
<td>Supported</td>
</tr>
<tr>
<td>H8b</td>
<td>MARKETDV*CSRCOM → BRI</td>
<td>0.046</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H8c</td>
<td>MARKETDV*ENVORG → BRI</td>
<td>0.194**</td>
<td>Supported</td>
</tr>
<tr>
<td>H9a</td>
<td>MARKETDV*BRAND → BRI</td>
<td>-0.037</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H9b</td>
<td>MARKETDV*STAR → BRI</td>
<td>-0.063</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H9c</td>
<td>MARKETDV*SIZE → BRI</td>
<td>0.073</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H9d</td>
<td>MARKETDV*LOCATION → BRI</td>
<td>0.009</td>
<td>Not Supported</td>
</tr>
</tbody>
</table>

Note. *p<0.05; **p<0.01; ***p<0.001
Dear Prof. Hasan Fauzi,

We thank the reviewers for their constructive criticism and positive review. We also thank you for giving us the opportunity to strengthen our paper and resubmit it. We have included the responses to the reviewers’ comments below. Also, we have highlighted the changes to the manuscript in blue.

Kind regards,
Mohammad

Reviewer(s)’ Comments to Author:

**Reviewer: 1**

Recommendation: Major Revision

Comments:
The manuscript is up-to-date, makes an interesting contribution and feels as something to build on.

Thanks.

However, there is room for improvement of the manuscript and here are some changes which must be made before publication:

Thank you very much for taking your valuable time to provide constructive comments on our manuscript. We have addressed your comments as follows:

The structure of the paper needs attention and the usual rule (introduction-rationale-need for the work/research questions, background-literature review, approach-methods-research performed, results, discussion and then conclusions/concluding remarks) should be followed more closely to facilitate the flow of the paper.

Thanks.
The highlighted structured more closely followed in the revised version.

In introduction section, the research questions of the study were added as follows:

This study aims to address the following research objectives.
1. To test the impacts of board and hotel characteristics on the extent of biodiversity reporting in the hotel industry.
2. To examine the moderating effect of market diversification on the impacts of board and hotel characteristics on the extent of biodiversity reporting.

Conclusion section was added in the revised version.
Please develop further/expand your discussion of findings perhaps by drawing on relevant studies and in relation with prior MDPI's-Sustainability SRJ literature - develop further and expand your final section of concluding remarks;

The discussion and conclusion sections were improved using recent and relevant studies specially the ones that published in Sustainability (MDPI) and Social Responsibility Journal.

Incorporate research and policy recommendations in the final conclusion section. Cite (primarily) in these final-most critical sections of your manuscript relevant papers published in the Journal you submitted your work to (in order to provide some sort of continuity of the specific research string).

Thanks. The conclusion section was added and research and policy contributions of the study were discussed. We incorporate research and policy recommendations as follows:

Understanding the impacts of board and hotel characteristics on the extent of biodiversity reporting has important theoretical and practical implications. From a theoretical perspective, this study contributes to the biodiversity literature by testing the factors that may affect the extent of hotels’ biodiversity reporting. The results revealed that the number of board members on the CSR committee and in environmental organizations, and hotels’ star rating, size and location, positively influenced the extent of hotels’ biodiversity reporting. The inconsistency between these results and the findings of studies in other industries confirms that determinants of biodiversity reporting are dependent on the environmental situation of the sectors in which firms operate and consequently that the proposed conceptual framework of this study should be tested in various industries. Furthermore, the study extends the literature on drivers of non-financial reporting by testing the moderating effect of market diversification. The results show that market diversification moderates positively the impact of number of board members with environmental experience and number of board members in environmental organizations on the extent of biodiversity reporting. It suggests market diversity as a factor that can explain the variety of results in the studies on drivers of non-financial reporting.

From the practical perspective, the results of this study will help hotel managers to understand those board and hotel characteristics that have effects on the extent of biodiversity reporting. We offer some clues as to when such actions are substantive rather than symbolic: appointing directors who have environmental experience and are members of environmental organizations is necessary if a hotel has high market diversification. Furthermore, appointing directors who are on CSR committees is essential for hotels regardless of market diversification. The findings also have implications for policymakers, suggesting that they should develop strict regulations on biodiversity reporting and monitor the biodiversity disclosure of hotels which are small, have low star ratings, and are located in less environmentally sensitive areas, as they are least likely to disclose adequately the impact of their business operations on biodiversity. Large and high-star hotels and those located close to natural conservation areas are under pressure from their customers to protect biodiversity and publicly disclose their biodiversity practices. Accordingly, the government should play a critical role and expose pressure on those hotels that receive less pressure from customers.

We reviewed and cited the related articles that published in “Social Responsibility Journal”.

More references to recent & relevant literature/empirical studies could increase the quality of the research paper and provide a much clearer message to the reader - these may help you
building your explanatory arguments/further discussion of the findings which need to be extended.

Thanks. Recent and relevant literature were reviewed and used in entire manuscript. The discussion was improved using the recent literature.

You may draw critical insights related to your findings from the cultural/institutional terrains in relation to sustainability management and nonfinancial (biodiversity) accounting and reporting. In this respect, consider the following as useful in gaining additional insights, in refining your concluding remarks/discussion points, & to be included in your reference material:


Thanks for recommending the above articles. We went through the articles and used them in entire article.

The introductory/opening section should communicate a little clearer the literature gaps, as well as the study's aims & objectives in order to facilitate the flow of the study.

Thanks. In the revised version the literature gaps were discussed in a clearer way. Furthermore, the objectives of the study were added as follows:

This study aims to address the following research objectives.

3. To test the impacts of board and hotel characteristics on the extent of biodiversity reporting in the hotel industry.

4. To examine the moderating effect of market diversification on the impacts of board and hotel characteristics on the extent of biodiversity reporting.

The references in introduction section were updated.

Concluding remarks – authors must elaborate much more on what is their contribution to the literature as well as on opportunities for future research. Questions that need to be answered: Why your study is important? and how it extend so existing knowledge on the issue/topic? Conclusions need to be written in a clear and coherent manner and draw the main lessons from the paper. I suggest you to concentrate on the description of the implications of the work, the main findings and its potential replicability - empirical investigation. Furthermore, limitations of the study need to be outlined to a greater extent, and so are any potential connections between your study and specific aspects of the Journal’s scope.
Thanks. According to the highlighted comments, the implications and limitations of the study were extended as follows:

Understanding the impacts of board and hotel characteristics on the extent of biodiversity reporting has important theoretical and practical implications. From a theoretical perspective, this study contributes to the biodiversity literature by testing the factors that may affect the extent of hotels’ biodiversity reporting. The results revealed that the number of board members on the CSR committee and in environmental organizations, and hotels’ star rating, size and location, positively influenced the extent of hotels’ biodiversity reporting. The inconsistency between these results and the findings of studies in other industries confirms that determinants of biodiversity reporting are dependent on the environmental situation of the sectors in which firms operate and consequently that the proposed conceptual framework of this study should be tested in various industries. Furthermore, the study extends the literature on drivers of non-financial reporting by testing the moderating effect of market diversification. The results show that market diversification moderates positively the impact of number of board members with environmental experience and number of board members in environmental organizations on the extent of biodiversity reporting. It suggests market diversity as a factor that can explain the variety of results in the studies on drivers of non-financial reporting.

From the practical perspective, the results of this study will help hotel managers to understand those board and hotel characteristics that have effects on the extent of biodiversity reporting. We offer some clues as to when such actions are substantive rather than symbolic: appointing directors who have environmental experience and are members of environmental organizations is necessary if a hotel has high market diversification. Furthermore, appointing directors who are on CSR committees is essential for hotels regardless of market diversification. The findings also have implications for policymakers, suggesting that they should develop strict regulations on biodiversity reporting and monitor the biodiversity disclosure of hotels which are small, have low star ratings, and are located in less environmentally sensitive areas, as they are least likely to disclose adequately the impact of their business operations on biodiversity. Large and high-star hotels and those located close to natural conservation areas are under pressure from their customers to protect biodiversity and publicly disclose their biodiversity practices. Accordingly, the government should play a critical role and expose pressure on those hotels that receive less pressure from customers.

The aim of the present study is considered to have been successfully achieved. Nevertheless, limitations should be raised, which can be addressed in future studies. First, the results of this study show a non-significant relationship between the number of board members with environmental experience and the extent of biodiversity reporting, which is inconsistent with previous studies. Future studies could compare the impact of this factor between the hotel industry and the manufacturing industry to illuminate the importance of the extent of the particular industry’s effect on the environment on board members’ decisions to report biodiversity. Second, content analysis has its limitations. Driving keywords for the content analysis from Samkin et al.’s (2014) framework of biodiversity and GRI guidelines is not free of risk, as the guidelines might not capture all of the relevant biodiversity aspects. Third, the sample for this study was limited to the hotel industry: future studies should test the model from this study in other industries. Skouloudis et al. (2019) showed that the extent of biodiversity reporting is dependent on the sector of operation.

Carefully check the references, so as to make sure they are all complete and follow the Guidelines to Authors.
The references were checked and followed journal guideline.

Finally, when you submit the corrected version, please do check thoroughly, in order to avoid grammar, syntax or structure/presentation flaws. Make sure you retain a formal/academic-specific style of presenting your work throughout the text - (if necessary) please seek for professional English proofreading services or ask a native English-speaking colleague of yours in order to refine and improve the English in your paper.
Thanks. The revised version of the article was edited by a native speaker.

Additional Questions:
1. Originality: Does it add to the subject area/body of knowledge in any way?: Yes

Thanks.

2. Analytical rigour: Does the article demonstrate soundness in the way it has been researched and/or argued?: Yes

Thanks.

3. Clarity and readability: Is attention paid to clarity of expression and readability? Points to note: sentence structure, jargon, acronyms.: Yes

Thanks.

4. Research applications: Does the article suggest areas for further research? Or practical implications - are implications for practitioners clearly drawn out?: Yes

Thanks.

5. Internationality: Will the article be of interest to an international audience?: Yes

Thanks.
Reviewer: 2

Recommendation: Major Revision

Comments:
Please check comment number1 and attachment.

Thank you very much for taking your valuable time to provide constructive comments on our manuscript. We have addressed your comments as follows:

Additional Questions:
1. Originality: Does it add to the subject area/body of knowledge in any way?: Ok. Needs improving the arguments of why the hotel sector is used, the board and hotel characteristics are determinants of biodiversity reporting and the diversification market can moderate the relationship? strong arguments are needed to justify that moderating is needed in the current study (solution)

Thanks. The arguments on selecting hotel sector was improved as follows:

Furthermore the arguments on selecting board and hotel characteristics as drivers of biodiversity reporting and moderating effect of diversification were strengthen in introduction as follows:

A number of studies on environmental reporting include biodiversity (e.g., Bebbington et al., 2008; Gallego-Álvarez and Ortas, 2017; Guenther et al., 2007). In these studies, biodiversity was considered as one category of environmental reporting and the focus was rarely on biodiversity disclosure. The limited studies on biodiversity disclosure have been focused on the extent of biodiversity reporting (van Liempd and Busch, 2013; Rimmel and Jonäll, 2013), developing tools for biodiversity reporting (Samkin et al., 2014), and exploring the strategies that companies adopt to validate their accountability for biodiversity (Boiral, 2016). Research on drivers of biodiversity reporting is limited in the literature. As such, the main aim of this study is to investigate the drivers of biodiversity reporting. The focus of this study is limited to the hotel industry, as although this industry is one of the world’s fastest growing sectors (Jeaheng et al., 2019) and imposes numerous impacts on biodiversity loss (Chung and Parker, 2010; Malik et al., 2016), it has received less attention than the mining, chemical, or manufacturing industries. Tourists threaten biodiversity by generating negative environmental externalities, ranging from greenhouse gas emissions to water pollution (Milder et al., 2016). The drivers of non-financial reporting can be categorized into two broad types, namely board characteristics (e.g., Rao and Tilt, 2016; Shwairef et al., 2019) and corporate characteristics (e.g., Chang et al., 2019; Ong and Djaadjikerta, 2020). To develop a more comprehensive model, the impacts of both board and hotel characteristics on the extent of biodiversity reporting in the hotel industry were investigated in this study. The findings will enhance our understanding of the drivers of biodiversity reporting in the hotel industry and will be useful for policymakers who are concerned with the impact of the hotel industry on the erosion of biodiversity.

Market diversification is one of the factors that may moderate the relationships between drivers and CSR reporting. Market diversification is the ratio of international revenue to the total revenue of the company (Amran et al., 2015). Many studies have shown that a company’s degree of internationalization (the number of countries in which it operates) has a positive effect on its social responsibility and CSR reporting (Matuszak and Różańska, 2019;
Wanderley et al., 2008). However, to date, no research has tested the moderating impact of market diversification in non-financial reporting studies. Hotels that operate internationally should meet the expectations of various customers and are more exposed to customer pressure to protect biodiversity. As such, the impacts of board and hotel characteristics on their decisions to disclose biodiversity practices are expected to be greater. For instance, the impacts of hotel brand on the extent of biodiversity is expected to be greater among hotels that operate internationally and have high market diversification, as neglecting to report biodiversity publicly may put the reputation of high equity brands at risk. Accordingly, a moderating effect of market diversification is proposed.

There are three main reasons for selecting hotel industry:
1. This industry has substantial negative effect on biodiversity.
2. The industry is fast growing and consequently its effect on biodiversity will be more in future.
3. The study on non-financial (e.g., biodiversity) reporting is limited in the literature and most of the studies have focused on mining, chemical, or manufacturing industries.

To support the moderating effect of market diversification. Initially, we explained its logic and later provide an example (hotel brand) to clarify it.

2. Analytical rigour: Does the article demonstrate soundness in the way it has been researched and/or argued?: In the literature review section:
In the literature review, every underpinning theory you are using, you need to explain thoroughly the logic underlying the study. This section and Method section should be the detail of what you briefly explain in the Occupying a niche (solution).
⇒ I don’t see your discussion in the Literature Review section on how your proposed theoretical foundation (undermining theory):
⇒ You should thoroughly discuss the underpinning theories using the following flow: Check the attachment.

Thanks. You referred to an attachment. However, we didn’t receive any attachment with the comments. We try our best to enrich the discussion on the proposed framework. I hope it will be in satisfactory level. We explained the way that conceptual framework was developed and constructs were selected. Furthermore, the proposed relationships were supported based on agency theory, resource dependency theory and signalling theory as follows:

Based on the literature, the potential drivers of non-financial reporting can be categorized into two main types, namely board characteristics (e.g., Liao et al., 2015; Rao and Tilt, 2016) and corporate characteristics (e.g., Rahman et al., 2011; Ong and Djajadikerta, 2020). Drawing on agency theory, resource dependency theory and signalling theory, the impacts of both board and hotel characteristics on the extent of biodiversity reporting were investigated in this study. The previous studies on the impacts of board characteristics and corporate governance on non-financial reporting were reviewed and the most common significant factors were selected. Based on the reviewed literature, three board characteristics, namely the number of members of the board of directors (BOD) with environmental experience (Walls and Hoffman, 2013; Mertens et al., 2016), on CSR committees (Shaukat et al., 2016; Shwairef et al., 2019), and in environmental organizations (Carpenter and Westphal, 2001; Walls and Hoffman, 2013); and four hotel characteristics, including hotels’ brand name (Haddock-Fraser and Fraser, 2008; Amran et al., 2015), star rating (Tang et al., 2014), size (Aggarwal and Singh, 2019; Dias et
al., 2019), and location (Vellecco and Mancino, 2010; Halkos and Skouloudis, 2017), were identified as potential determinants of biodiversity reporting. Accordingly, the impacts of these seven board and hotel characterises on the extent of biodiversity reporting were investigated in this study.

According to agency theory, managements choose to voluntarily disclose information to reduce agency costs (Jensen and Meckling, 1976). Providing information is one way to reduce agency costs (Broberg et al., 2010). Resource dependency theory indicates that the BOD is a strategic resource for a firm and enables managers to make effective decisions by providing guidance and resources (Pfeffer and Salancik, 1978). BOD members can provide a set of knowledge and skills derived from their experience (Kor and Sundaramurthy, 2009; Sánchez et al., 2017). BOD members with environmental experience and who are on the CSR committee or involved with an environmental organization have a better understanding of the importance of environmental practices and consequently integrate the environmental responsibilities into decision-making (Shwairef et al., 2019; Tuggle et al., 2010). According to these two theories, BOD members with environmental knowledge provide guidance for managers and enable them to understand the importance of disclosing biodiversity practices in order to reduce agency costs. Signalling theory can explain the impacts of brand name, star rating, size, and location on the extent of biodiversity reporting. Signalling theory addresses the information asymmetry issue and “shows how asymmetry can be reduced by the party with more information signalling it to others” (Samaha and Khelif, 2016, p. 37). Reputed, high star-rated and large hotels signal their responsibility towards the environment to customers by communicating their biodiversity practices. This type of signalling can be effective, as it can be easily copied by hotels that do not have sufficient resources to implement biodiversity practices.

Furthermore, we also proposed that market diversification moderates the impacts of the BOD and hotel characteristics on the extent of biodiversity reporting (Figure 1). Lack of accountability and transparency towards the impacts of operations on biodiversity have negative effects on the reputation and brand equity of hotels (Qoura and Khalifa, 2016). This effect is more prominent in hotels with high levels of internationalization, due to their proximity to the public eye (Subramaniam et al., 2020). Accordingly, it is expected that market diversification moderates the impacts of BOD and hotel characteristics on biodiversity reporting.

The methodology section was extended as follows:

The study was focused on hotels in Malaysia, where the hotel industry is growing rapidly (Kasa et al., 2020), and as highlighted above, has a significant effect on biodiversity (Malik et al., 2016). Secondary data were used to measure the study variables. The secondary data were obtained from the annual reports of hotels listed in the Global Reporting Initiative (GRI) for the period between 2016 and 2017. The current paper used content analysis by implementing a framework of biodiversity (14 items) developed by Samkin et al. (2014) and GRI guidelines (5 items) (GRI, 2011) to measure the extent of biodiversity reporting. Krippendorff (2004, p. 18) defined content analysis as a “research technique for making replicable and valid inferences from texts (or other meaningful matter) to the context of their use”. It involves “codifying qualitative and quantitative information into pre-defined categories in order to derive patterns in the presentation and reporting of information” (Eisenberg et al., 2004, p. 287). Content analysis has been used frequently to examine non-financial disclosures (e.g., Chang et al., 2019; Shwairef et al., 2019). By adding all the indicators, the Biodiversity Reporting Index (BRI) was determined. A score of one or zero is given to a hotel if respectively it reveals the information on its website, corporate social responsibility reporting or annual report or if it
refuses to disclose an information item. The scoring system is based on the discovered evidence. A point will be given for any observed evidence for each item. For conversion of total scores into continuous data, the sum of all the scores is divided by 19 (the total number of items). The criteria used to measure biodiversity reporting are depicted in Table 1.

3. Clarity and readability: Is attention paid to clarity of expression and readability? Points to note: sentence structure, jargon, acronyms. Ok, still needs improving in some part. Thanks. The revised version of the article was edited by a native speaker.

4. Research applications: Does the article suggest areas for further research? Or practical implications - are implications for practitioners clearly drawn out?: Improve.

The practical implications and future studies section were improved in the revised version of the article as follows:

From the practical perspective, the results of this study will help hotel managers to understand those board and hotel characteristics that have effects on the extent of biodiversity reporting. We offer some clues as to when such actions are substantive rather than symbolic: appointing directors who have environmental experience and are members of environmental organizations is necessary if a hotel has high market diversification. Furthermore, appointing directors who are on CSR committees is essential for hotels regardless of market diversification. The findings also have implications for policymakers, suggesting that they should develop strict regulations on biodiversity reporting and monitor the biodiversity disclosure of hotels which are small, have low star ratings, and are located in less environmentally sensitive areas, as they are least likely to disclose adequately the impact of their business operations on biodiversity. Large and high-star hotels and those located close to natural conservation areas are under pressure from their customers to protect biodiversity and publicly disclose their biodiversity practices. Accordingly, the government should play a critical role and expose pressure on those hotels that receive less pressure from customers.

The aim of the present study is considered to have been successfully achieved. Nevertheless, limitations should be raised, which can be addressed in future studies. First, the results of this study show a non-significant relationship between the number of board members with environmental experience and the extent of biodiversity reporting, which is inconsistent with previous studies. Future studies could compare the impact of this factor between the hotel industry and the manufacturing industry to illuminate the importance of the extent of the particular industry’s effect on the environment on board members’ decisions to report biodiversity. Second, content analysis has its limitations. Driving keywords for the content analysis from Samkin et al.’s (2014) framework of biodiversity and GRI guidelines is not free of risk, as the guidelines might not capture all of the relevant biodiversity aspects. Third, the sample for this study was limited to the hotel industry: future studies should test the model from this study in other industries. Skouloudis et al. (2019) showed that the extent of biodiversity reporting is dependent on the sector of operation.

Furthermore, the implications of the results for practitioners were discussed in more details in discussion section as follows:

The results confirm the positive relationship between star ratings and the extent of biodiversity reporting, which is consistent with the findings of Tang et al. (2014), who reported
a positive relationship between hotels’ star ratings and the extent to which they addressed environmental issues and practices. As the customers of hotels with high star ratings have higher expectations regarding the implementation of environmentally friendly practices, hotels report biodiversity to show customers that they conserve biodiversity in their practices. As such, hotels with high star ratings should go beyond the financial frame and provide information on the impacts of their activities on animal and plant species to depict their responsibility toward biodiversity (Tommasetti et al., 2020).

The study illustrates that hotel size has a positive explanatory power regarding the extent of biodiversity reporting, suggesting that larger hotels provide more biodiversity information in their disclosures. This result is in line with the findings of Aggarwal and Singh (2019), who found positive relationships between firm size and environmental reporting. As larger hotels are under pressure from stakeholders (Tagesson et al., 2009) and need more external funds than smaller ones (Álvarez et al., 2008), they develop biodiversity disclosure to avoid regulation and absorb more funds. Furthermore, the larger hotels have more financial and non-financial resources and consequently are able to invest in biodiversity protection practices (Dias et al., 2019). As such, the policymakers should play an important role and motivate small and medium hotels, which have fewer resources and encounter less pressure from customers, to invest in biodiversity protection and publicly disclose biodiversity practices by using both incentive and punishment approaches.

5. Internationality: Will the article be of interest to an international audience?: Not yet. Emerald has partnered with Peerwith to provide authors with expert editorial support, including language editing and translation, visuals, and consulting. If your article was rejected, or had major revisions requested on the basis of the language or clarity of communication, you might benefit from a Peerwith expert’s input. For a full list of Peerwith services, visit: https://authorservices.emeraldpublishing.com/
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Thanks. The revised version of the article was edited by a native speaker.