

An Examination of the Factors Influencing the Green Initiative and Competitiveness of Private Higher Education Institutions in Malaysia

(Kajian terhadap Faktor-faktor yang Mempengaruhi Inisiatif Hijau dan Daya Saing Institusi Pendidikan Tinggi Swasta di Malaysia)

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ABSTRACT

This study is set to examine factors that influence private higher educational institutions' (PHEIs) participation in the green initiative and how the green initiative impacts on the competitiveness of PHEIs. Researchers developed a framework that addressed top management support, government support, stakeholder pressure, faculty support, and regulation compliance as factors influencing competitiveness, and the mediating role of the adoption of green initiatives on the above relationship. Few studies had been conducted to test the applicability of the above framework in the Malaysian context. A self-administered questionnaire was given to 452 PHEIs in Malaysia, and the data collected was analyzed using SmartPLS software. Findings revealed that top management support, government support, faculty support, and stakeholder pressure played an important and significant role in influencing the competitiveness of PHEIs and the adoption of green initiative did mediate the above relationship. Regulatory compliance was not significant in influencing the green initiatives. Additionally, green initiative was found to mediate the relationship between the influencing factors and competitiveness. Theoretical and practical implications of the findings were discussed, and suggestions for future study were given.

Keywords: Green initiatives; competitiveness; support, private higher educational institutions, regulation compliance.

ABSTRAK

Matlamat utama penyelidikan ini adalah untuk mengkaji factor-faktor mempengaruhi inisiatif hijau dan daya saing di kalangan Institusi Pendidikan Tinggi Swasta (IPTS) di Malaysia. Penyelidik telah membina satu kerangka yang melibatkan sokongan pengurusan atasan, sokongan pihak kerajaan, tekanan pihak berkepentingan, sokongan fakulti, pematuhan peraturan, inisiatif hijau dan daya saing. Kajian ini juga bertujuan menguji sama ada inisiatif hijau merupakan perantara antara faktor-faktor tersebut dengan daya saing. Terdapat kajian yang terhad untuk kerangka tersebut dalam konteks Malaysia. Sebanyak 452 soal-selidik telah diedar ke IPTS di Malaysia dan data yang dikutip dianalisa dengan menggunakan SmartPLS. Dapatan kajian menunjukkan bahawa sokongan pengurusan atasan, sokongan pihak kerajaan dan sokongan fakulti mempunyai kesan positif terhadap inisiatif hijau serta daya saing. Sebaliknya pematuhan peraturan tidak mempunyai kesan positif atas inisiatif hijau. Selain dari itu, hasil kajian menunjukkan inisiatif hijau mempunyai pengaruh yang positif ke atas daya saing serta ia merupakan perantara antara faktor-faktor tersebut dan daya saing. Implikasi dapatan secara teori dan praktik dibincang, disertai dengan cadangan untuk kajian masa hadapan.

Kata kunci: Inisiatif hijau; daya saing; sokongan; Institusi Pendidikan Tinggi Swasta; pematuhan peraturan

INTRODUCTION

Sustainability is an important issue that need to be given serious consideration by everyone living in this world. This is because everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment (United States Environmental Protection Agency). With sustainability, human and nature can coexist in harmony to support the present and future generations. With sustainable development in mind, on

25 September 2015, the United Nations set 17 goals to be achieved for the next 15 years. These goals are: eliminate poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry, innovation and infrastructure; reduced inequalities; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice and strong institutions; as well as partnerships for the goals. The main

aim of sustainable development is to end poverty, protect the planet, and ensure prosperity for all (United Nations). To achieve the goals, everyone needs to do their part, that is, the government, the private sector, civil society, and the people. With that in mind, the Malaysian government incorporate sustainability in its 11th Malaysia Plan (2016-2020), whereby all parties, regardless of public or private, need to lend their hand and participate in sustainable development.

In Malaysia, private higher educational institutions (PHEIs) are educational institutions aiming at producing valuable and talented human resources for Malaysia's present and future growth and development. It is also the responsibility of all educational institutions to produce responsible individuals who display good citizenship. Thus, all PHEIs are entrusted with the responsibility to produce a workforce that internalizes sustainable development and is able to incorporate it in all future undertakings. At the same time, PHEIs need to focus on educating and producing graduates who value sustainability and are able to practise sustainability in their daily lives (Cortese 2003; McIntosh, Horner & Sugai 2009; Shriberg 2002). It is also the social responsibility of all PHEIs to promote and participate in efforts focusing on sustainable development (Viebahn 2002). PHEIs carry a deep responsibility to increase public awareness toward sustainability, and they possess the necessary knowledge and skills to create a sustainable future (Cortese 2003; McIntosh et al. 2008; Shriberg 2002). Thus, it is natural that the PHEIs adopt and promote the green initiative, and incorporate it as one of their agenda in their master plan. However, PHEIs are private organizations with the aim of maximizing profit. Anything that has no impact on profitability will not be adopted willingly by any private enterprise.

Campuses is a source of social change and a growing number of higher education institutions are actively participating in a process of society transformation by leading the green movement and contributing towards environmental protection (Santos 2017). Embracing sustainability brings a number of benefits to educational institutions (Santos 2017). First, it reduces cost and risk through the development of skills and knowledge in pollution prevention and eco-efficiency. Embracing sustainable technologies helps the institutions to reposition their internal competencies, and encouraged them to employ cost-saving and risk-avoidance technologies (Santos 2017). In this way, the institutions are able to increase their academic product or service value through optimizing the use of resources. Second, PHEIs can incorporate new programs related to sustainability to attract more students. Leading green initiative gives PHEIs the competitive edge through the opening of new courses, which can attract more students and enhance the institution's brand image and profitability. Third, eco-efficiency can result in increased innovation, which leads to increased competitiveness through efficient use of energy and materials and reduced risks and liabilities.

These innovative practices in sustainability are able to enhance the brand image of the institutions and increase the institution's reputation and legitimacy (Santos 2017). Thus, the green initiative embraced by PHEIs is related very much to the competitiveness of the institutions in the sense that sustainability reduces costs and risks and increases organizational competitive advantage.

In Malaysia, green initiative in higher educational institutions is a recent happening. There is not much research on factors that are able to promote the green initiative among higher educational institutions. The PHEIs are mainly owned by local entrepreneurs or companies that are profit oriented. These PHEIs are mainly small in size and usually do not have much capital for the green initiative. For these companies, compliance is their main concern. Hence, there is a need to examine factors that can help in increasing their efforts towards green initiative, and how green initiative can increase their competitiveness in the global market.

LITERATURE REVIEW

UNDERLYING THEORIES

This study employed the Institutional theory (Oliver 1997) and Stakeholder theory (Freeman 1984) as the underlying theories. Fundamentally, Institutional theory investigates how external forces influence an organization's decision making. Institutional theory leveraged firm's environmental practices with respect to the forces exerted by the internal and external stakeholder (Delmas & Toffel 2004). This theory emphasizes on the influences of societal and cultural pressure on firms' characteristics, which in turn impact on PHEIs' environmental management practices. Hence, this theory is adopted to assess how institutional factors, mainly in the form of top management support, government support, faculty support, stakeholder pressure, and regulation compliance, affects the PHEIs' green initiatives. On the other hand, the Stakeholder theory was used to complement the Institutional theory to support the second part of the framework, which argues that the success of the institutions' green initiatives depends on stakeholders' support (Lorne & Chris 2009). In this study, the stakeholders refer to the government, the faculty, and top management. Reducing the conflict among stakeholders and obtaining the support of the stakeholders are necessary for any institution to increase their competitiveness.

GREEN INITIATIVE IN PHEI

The rapid growth and development of the Malaysia economy brought about a number of negative impact on the environment (Tan, Goh & Chan 2015). The Malaysian government, through its 11th Malaysia Plan, instituted several green incentives to encourage various sectors

to implement green initiatives within their capability. Among the sectors, PHEIs are taking proactive actions to initiate the activities that can either diminish the adverse effects of human activities on environment, or manage the environmental performance, or to make progressive improvement on the environment.

Since 1996, the enactment of the Private Higher Educational Act by Malaysian Parliament had brought about a tremendous increase in the number of PHEI (Ministry of Higher Education 2016). The sudden increase in the number of PHEIs causes intense rivalry in their fight for student enrolments, which forces many PHEIs to seek new ways to thrive in the super-competitive business environment. Many PHEIs, following the footsteps of their foreign counterparts, turn to green initiative to compete in the global market (Shriberg 2002; McIntosh et al. 2008). A green or sustainable educational institution is an institution that involves, addresses and promotes the minimization of negative economic, environmental, social, and health effects generated from the consumption of resources in order to accomplish its functions of research, teaching and partnership, and stewardship in ways to help society to make the transition to a sustainable lifestyle (Velazquez et al. 2006).

The green initiative is a world phenomenon. Higher educational institutions all over the world answer the call of sustainable development by United Nations and take up various projects to promote and practice sustainability among their students. The common sustainability themes impacting higher education as seen across various institutional policies include sustainable operations, sustainable academic research, ethical environment, environmental literacy, and moral responsibility. Most institutions cooperate with their governments through multiple pathways, including the development of interdisciplinary curriculum, partnerships with NGOs and industry, and public outreach (Wright 2002).

Three broadly used approaches of green initiatives practiced by PHEIs are: Eco-Management and Audit Scheme (EMAS), green building initiative, and ISO14001-based Environmental Management System (EMS) (Alshuwaikhat & Abu Bakar 2008). EMAS is a voluntary scheme consisting of the premium management instrument developed by European Commission for firms and organizations to evaluate, report, and improve their environmental performance. EMAS is used widely in European countries, but not commonly adopted in Malaysia. Conversely, PHEIs in Malaysia are more familiar with the green building initiative and ISO14001-based EMS. Green buildings initiative is a set of projects planned to reduce the production of waste and hazardous materials, to reduce the level of energy consumption, and to promote the design of energy saving buildings. This initiative is gaining momentum recently among universities and colleges globally to promote campus sustainability (Alshuwaikhat & Abu Bakar 2008). ISO14001-based EMS maps out a framework that an organization can follow in order to set up an effective environmental management system. It can be applied by any firm regardless of their sectors.

Since the inception of green initiatives, numerous activities were carried out by PHEIs in Malaysia. For instance, Open University Malaysia (OUM), in collaboration with Awana Genting Highlands Golf and Country Resort, launched a Green Campus initiative. Through this green initiative, OUM created a greater awareness towards sustainability and demonstrated some environment-friendly practices to the society. Other than that, Stamford College Malaysia had also launched the "Go Green" project in February 2010 to educate school children on the importance of conservation. Through the campaign, students of 45 secondary schools in Petaling Jaya, Kuala Lumpur, Seremban, and Melaka helped to recycle aluminium cans and paper-based items. Another green initiative undertaken by a group of DISTED College students was the "Why Waste World (w.w.w)" project. The aim of this recycling campaign was to encourage students and staff to go green for the good of the environment and build a sustainable lifestyle for future generations through the recycling of household waste. Similarly, The Green War campaign in 2011, which was organized by the KDU-USM Bachelor of Communication students focused on the protection of the mangrove ecosystem and the replanting of mangrove trees in Penang. Besides that, the University of Nottingham Malaysia Campus (UNMC) organized its go-green program, "The Green Week 2011", which is a week-long environmental campaign aimed at steering the younger generation into a greener lifestyle and to educate them about the importance of going green. The mission of the campaign was to transform UNMC into an environmentally friendly campus where Mother Nature's best interests are kept in mind and reflected in the community's actions and daily practices.

Other form of green initiatives implemented by PHEIs are: recycled content materials, high-efficiency lighting, low-flow plumbing fixtures, protection of existing ornamental trees and landscape features, and building bicycle paths. Some green initiative practices are to segregate the waste and maintain an active recycling program in collaboration with the campus waste carrier (Tan et al. 2015).

GREEN INITIATIVE AND COMPETITIVENESS

Competitiveness is viewed as the capabilities of an organization to differentiate itself from its competitors, and it is an outcome of critical management decisions to attract customers (Tracey, Vonderembse & Lim 1999). The PHEIs were pressured to undertake the green initiative by the internal and external stakeholders (Shriberg 2002; McIntosh et al. 2008). Internal stakeholders were the students, staff, school administrators, and other campus community members, while the external stakeholders were the pressure groups, local community, alumni, and the media. The internal stakeholders' main concern is efficiency in the use of resources (such as power and supply), and the external stakeholders' concern is societal responsibility of the institutions (Santos 2017).

The issue of sustainable development is an important agenda in United States because of the massive negative impact of human activities on environment. In response to that, the Malaysian government incorporated green initiatives in its 11th Malaysia Plan, whereby all key sectors were urged to consider seriously the issue of sustainable development in all their undertakings. PHEIS consume large quantity of energy and resources. Thus, it is appropriate that PHEIS should participate in the conservation drive, and practice resource efficiency and pollution prevention (Alshuwaikhat & Abu Bakar 2008). Those PHEIS that pay serious attention to conservation and sustainability are viewed as responsible organizations that have higher prestige and should be given more respect. In this way, PHEIS that embrace green initiatives are considered more reputable and carries higher brand image, compared with other PHEIS (Santos 2017). Thus, green initiatives enhance the institution's competitive advantage, and resulted in higher level of student enrolment, as well as higher profitability. The use of green initiative as a competitive edge is seen in PHEIS that advertise their green effort widely in local media. These PHEIS also incorporate their green initiative in their strategic or master plan (Santos 2017).

Additionally, the adoption of new sustainable technologies enables the institution to save energy and material costs, and at the same time, reduces risks connected with the use of old technologies (Santos 2017). The use of new technologies minimizes waste and emissions from operations, and reduces raw material consumption. The savings in costs and the reduction of risks provide the institutions that participate in green initiatives the opportunity to reap higher level of profit, and thus have added value in the eyes of the shareholders.

Sustainability also gives the PHEIS the opportunity to engage in innovative activities, such as doing more research on sustainable development, gaining more knowledge on sustainable competencies, and designing new programs for sustainability. Green initiative exposes PHEIS to new avenues, which can provide great opportunities for future development. For example, the adoption of new technologies may point to the need of opening up new courses or new faculties, which provide added value to the organization and eventually more competitive advantage to the organization. Thus, green initiative is linked highly to PHEIS' competitiveness in the global market.

HYPOTHESES DEVELOPMENT

INFLUENCING FACTORS ON GREEN INITIATIVES

Some of the factors influencing PHEIS' decision on competitiveness are: faculty support (Trivellas et al. 2009), government support (Alam 2009), top management support (Venkatraman et al. 2007), stakeholder pressure (Duderstadt 2008), and regulation compliance (Carrington, Meek & Wood 2007). All these factors are the stakeholders of PHEIS.

Faculty Support Faculty is a division within an institute of higher learning that provides some related subject areas for study (Thompson & Green 2005). Faculty commitment and involvement are essential for institutionalizing sustainability in institutions (Thompson & Green 2005). Research revealed that faculty is one of the most important stakeholders that play a vital role in promoting sustainable practices (Stafford 2008) because they are the key initiators, supporters, and advisors of green initiatives. Some faculty provided scholarship for staffs to further their studies in sustainability to create quality manpower that can enhance their competitiveness (Venkatraman et al. 2007). Faculty academics involve themselves in guiding sustainability in PHEIS and transmit sustainable practices via collaboration with administrators, community members, and the public. Therefore, faculty support has a significant influence on PHEIS' adoption of sustainable practices and green initiatives in their facilities. Thus, Hypothesis 1a was conjectured as,

H_{1a} Faculty support has a positive influence on green initiatives.

Government Support Government refers to the administrators, legislators, and arbitrators in the administrative bureaucracy, who control a state at a given time, and report to the system of government by which they are organized (Bealey 1999). Good public provision in terms of better environmental quality can be attained by government support and involvement in green initiatives (Daugbjerg & Svendsen 2011). Government funding to PHEIS is essential in promoting sustainability research and encouraging academic faculty to work on sustainable technology for practical as well as educational purposes (Tan et al. 2015). A study by Rasmussen (2008) showed that government support in terms of resources, professional expertise development, and cooperation between commercializing firms are vital to facilitate the commercialization of university research. There are many support activities provided by government with the intention to enhance the development of SMES in Malaysia. These recognized support activities are financial and credit assistance, technical and training assistance, extension and advisory services, marketing and market research, and supports in infrastructure (Abdullah 1999). Thus, it is clear that government support encourages PHEIS to adopt the green initiatives, which results in Hypothesis 1b:

H_{1b} Government support has a positive influence on green initiatives.

Top Management Support Top management are the owners or decision makers who are responsible for the operation of the entire organization (Moore et al. 2010). Without top management support, it is difficult to implement the green initiatives. It is often relatively easy to sell the concept of incorporating environmental issues in business practices in PHEIS because the top management of PHEIS are highly educated and are well aware of business management principles. There is a remarkable

convergence in the literature on the importance of top management support on environmental advancement (Walton 2000). For universities, it was found that top management support, in particular, written commitment to sustainability statement, plays a crucial role in mainstreaming environmental management (Carpenter & Meehan 2002). Based on the above discussion, Hypothesis 1c is formulated as,

H_{1c} Top management support has a positive influence on green initiatives.

Stakeholder Pressure Stakeholder refers to a person, group, or organization that has a direct or indirect stake in an organization because it can affect or be affected by the organization’s actions, objectives, and policies (Freeman 1984). The increasing awareness of environmental issues has made PHEIS more proactively engaged with its stakeholders (students, alumni, administrators, and faculty) (Tan et al. 2015). More interactions with their stakeholders, in the form of dialogue sessions with students, meetings with faculty members, and suggestions from shareholders enable PHEIS to understand and comprehend the needs of stakeholders, which lead to their responsiveness towards stakeholder demands. Moreover, as suggested in the discussions above, the government, the faculty, and top management are some of the stakeholders of PHEIS. Hence, the subsequent hypothesis is proposed as,

H_{1d} Stakeholder pressure has a positive influence on green initiatives.

Regulation Compliance Regulation is a set of requirements that the government imposes on private firms and individuals to achieve government’s purposes (Darnall, Henriques & Sadosky 2009). In Malaysia, the government has shown its interests in stepping up its pledge to the environment for long-term environmental sustainability. To materialize environmental sustainability, several strategies are formulated in the 11th Malaysia Plan (11thMP). One of the strategies is to strengthen the governance by enhancing the regulatory and institutional framework as well as the capacity of the authority to monitor and evaluate the transformation process (Sustainable Consumption & Production 2016). Several studies had proved that regulation drives organizations to engage in green initiatives (Worthington & Patton 2005). Thus, firms facing higher regulatory pressures may have better green initiative. Therefore, the following hypothesis is proposed,

H_{1e} Regulation compliance has a positive influence on green initiatives.

GREEN INITIATIVE AND COMPETITIVENESS

Green initiatives may help organizations to improve their competitiveness (Trung & Kumar 2006). Some organizations integrate environmental issues into business decisions to create competitive advantage (Dunlap &

York 2008). Christmann’s (2000) study revealed that the potential effects of being environmentally proactive would contribute to competitive advantage through lowering costs and improving differentiation (Christmann 2000). Through the adoption of proactive strategies in the corporate environmental management, businesses could develop new market opportunities without facing environmentalist protests or penalties and hence increase competitive advantage (Chen, Lai & Wen 2006). Likewise, PHEIS that adopt the green initiative in the facility would be able to increase its competitiveness in terms of cost and differentiation. In this context, the green initiative of PHEIS may refer to the green campus initiative, other environmental related programs, and the adoption of ISO14001-based EMS. Hence, the subsequent hypothesis is conjectured as,

H₂ Green initiatives have a positive influence on competitiveness of businesses.

GREEN INITIATIVE AS A MEDIATOR

Green Initiative as a Mediator Past research verified that green initiatives have a mediation effect on the relationship between external forces (such as stringent regulatory rules, stakeholder pressures, and top management concerns) and firm’s competitive advantage (Eiadat et al. 2008). Green initiative was confirmed as an important intervening variable that mediates the relationship between stakeholder pressure and the different dimensions of a firm’s competitiveness (Burritt & Saka 2006). The green initiative is postulated as the mediator in this study as the researchers believed that the factors mentioned above (faculty support, top management support, government support, stakeholder pressure, and regulation compliance) can better influence the PHEIS competitiveness via the effort of the green initiative. Against this backdrop, the hypotheses are developed as follows,

- H_{3a} Green initiative mediates the relationship between faculty support and competitiveness.
- H_{3b} Green initiative mediates the relationship between top management support and competitiveness.
- H_{3c} Green initiative mediates the relationship between government support and competitiveness.
- H_{3d} Green initiative mediates the relationship between stakeholder pressure and competitiveness.
- H_{3e} Green initiative mediates the relationship between regulation compliance and competitiveness.

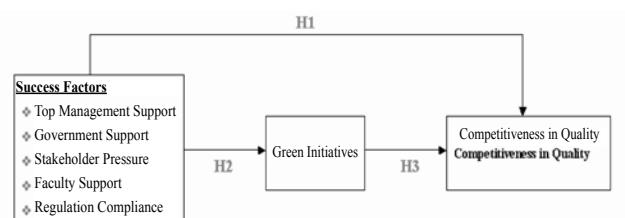


FIGURE 1. Research framework and the hypotheses

SAMPLE AND DATA COLLECTION PROCEDURE

The respondents of this research were PHEIS registered in the list of private higher educational institutions under the Ministry of Higher Education (MOE) web portal. There was a total of 452 PHEIS in Malaysia, which comprises of 23 PHEI with university status, 5 foreign university offshore campuses, 21 PHEI with university college status, and 403 PHEI without university status. These PHEIS were mostly located in big cities such as Kuala Lumpur, Selangor, Johor, and Penang.

A cross-sectional survey had been used whereby data was collected at one specific point in time through the use of questionnaires. This approach is found to be the most suitable approach because it enables the researchers to analyze and determine the association between the variables under study at a particular point of time. The unit of analysis in this study was the private higher education institutions (PHEIS) in Malaysia. Data was collected from 452 administrative heads of PHEIS in Malaysia through online questionnaire. The respondents received a link that was sent to their emails, which they could access and answer the questionnaire online within a period of three weeks. After several follow ups, at a fortnight's interval, a total of 138 usable questionnaires were returned, resulting in a response rate of 34.5%. Based on Hair, Ringle and Sarstedt (2011), the rule of thumbs for the minimum sample size is ten-to-one. In this study, the minimum sample size required is 40. Therefore, the sample size of 138 is considered sufficient.

RESPONDENTS' PROFILE

In terms of PHEIS ownership, of the 138 PHEIS that participated in this survey, 83.3% were owned locally and 8.7% were joint ventures, and another 8.0% was owned by foreigners. As for the type of PHEI, the majority of the institutions were colleges (55.8%), followed by universities (30.4%), and college universities (13.8%). Forty-two PHEIS had less than 100 employees, and only 8 PHEIS had between 301-400 employees. The average years of operation and number of students for the sample were 17.5 years ($SD = 11.0$), and 4408 people ($SD = 75596$) respectively. Summary of the respondents' profile is presented in Table 1.

INSTRUMENT

The instruments used in this study were based on previous research but with slight modification. The competitiveness construct comprises of five items adapted from Li et al. (2006). The independent variables that relate to faculty support, top management support, government support, stakeholder pressure, and regulation compliance were adapted from various sources. Faculty support and top management support were adapted from Leow and Zailani

TABLE 1. Profile of respondents

		Frequency	%
Ownership	Foreign	11	8
	Joint venture between local and foreign	12	8.7
	Local	115	83.3
Type	College	77	55.8
	College University	19	13.8
	University	42	30.4
Number of	< 100	42	30.4
Employee	100-200	30	21.7
	201-300	17	12.3
	301-400	8	5.8
	> 401	41	29.7

(2012), and consist of three items each. The government support construct comprises of four items adapted for Lin (2008). Stakeholder pressure contains six items adapted from Shriberg (2002). Regulation compliance has three items and were adapted from El Tayeb, Zailani, and Jayaraman's (2010) study. The green initiative construct comprises of five items adapted from Shriberg (2002). Five points Likert scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree" was deployed to gauge the level of agreement or disagreement of the respondents with each statement in the questionnaire.

DATA ANALYSIS

MEASUREMENT MODEL RESULTS

To determine the validity and reliability of the instruments, it is necessary to assess the convergent and discriminant validity of the constructs through the use of factor loadings, composite reliability (CR), and average variance extracted (AVE) (Hair et al. 2011). Loadings of all indicators were satisfactory (ranges from 0.672 to 0.880) (Hair et al. 2011). Additionally, the value of AVE for all constructs are above 0.5 (ranges from 0.519 to 0.812) (Hair et al. 2011). Item GI3 (loadings = 0.615) of the green initiative construct was removed due to low AVE (0.475). CR for all constructs (ranges from 0.816 to 0.889) exceeded the recommended value of 0.7 (Hair et al. 2011). Thus, it can be concluded that all constructs had satisfactory convergent validity (Table 2).

Discriminant validity of the measures was determined by utilizing the Fornell-Lacker criterion, that is, the square root of the AVE of each construct should be higher than the correlations among the latent constructs (Table 3). This indicates that the discriminant validity of this study is well established.

Table 4 reveals that all items loaded highly on its respective construct and lowly on other constructs, which provides sufficient support for the convergent and discriminant validity at item level as suggested by Chin (1998).

TABLE 2. Measurement model results

Constructs	Question Items	Loadings	AVE	CR
Competitiveness	Q1	0.771	0.560	0.864
	Q2	0.736		
	Q3	0.735		
	Q4	0.752		
	Q5	0.746		
Faculty Support	FA1	0.824	0.689	0.869
	FA2	0.827		
	FA3	0.829		
Government Support	GOV1	0.733	0.563	0.837
	GOV 2	0.693		
	GOV 3	0.799		
	GOV 4	0.773		
Green Initiative	GI1	0.789	0.526	0.816
	GI2	0.708		
	GI4	0.672		
	GI5	0.727		
	RC 1	0.812		
Regulation Compliance	RC 2	0.690	0.612	0.863
	RC 3	0.779		
	RC4	0.841		
	ACTP	0.761		
Stakeholder Pressure	ALUP	0.679	0.526	0.869
	DONP	0.695		
	FALP	0.693		
	GOVP	0.754		
	STUP	0.766		
Top Management Support	TM1	0.880	0.728	0.889
	TM 2	0.859		
	TM 3	0.819		

Note: CR = Composite Reliability, AVE = Average Variance Extracted.

STRUCTURAL MODEL RESULTS

Statistical significance of the path coefficients of the structural model was determined by using the bootstrap procedure (Hair et al. 2013) with 5000 resamples. Table 5 revealed that the direct relationship of faculty support

($\beta = 0.152, p < 0.05$), government support ($\beta = 0.174, p < 0.05$), stakeholder pressure ($\beta = 0.181, p < 0.01$), and top management support ($\beta = 0.416, p < 0.01$) have significant positive relationship with green initiatives whereas regulation compliance ($\beta = 0.048$) was found not significant with green initiatives. Besides, green initiatives have a significant positive relationship with competitiveness ($\beta = 0.743, p < 0.01$). Additionally, green initiatives were found to be a significant mediator to the relationship between faculty support, government support, stakeholder pressure, and top management support with competitiveness. Figure 2 demonstrates the results of the structural model.

THE IMPORTANCE-PERFORMANCE MATRIX ANALYSIS (IPMA) RESULTS

IPMA was performed for the researchers to identify the possible areas that need to be addressed and improved on (Schloderer, Sarstedt & Ringle 2014). Table 6 illustrates the IPMA analysis results. The importance value is the direct effect of an exogenous variable on an endogenous variable, whereas the performance value is the latent variable score on a scale from 0 to 100. Figure 3 and Figure 4 are the IPMA results for the two endogenous variables of “green initiatives” and “competitiveness”, which illustrates that for both endogenous variables (green initiatives and competitiveness), top management support (60.677) and stakeholder pressure (60.649) had high performance readings whereas regulation compliance (47.463) had the lowest performance reading. Thus, the most important variable for both green initiatives and competitiveness is top management support with the rating of 0.307 and 0.272 respectively. Regulation compliance is the least important (0.035) and is underperforming (47.463) for green initiatives and competitiveness. Based on the IPMA results, regulatory compliance need further improvement.

TABLE 3. Discriminant validity and correlations of the constructs

	Competitiveness	Faculty Support	Government Support	Green Initiative	Regulation Compliance	Stakeholder Pressure	Top Management Support
Competitiveness	0.748						
Faculty Support	0.599	0.830					
Government Support	0.676	0.499	0.751				
Green Initiative	0.743	0.512	0.592	0.725			
Regulation Compliance	0.571	0.485	0.456	0.459	0.782		
Stakeholder Pressure	0.598	0.443	0.554	0.557	0.418	0.725	
TM	0.664	0.418	0.539	0.677	0.457	0.470	0.853

Note: Diagonals (in bold) represent the squared root of average variance extracted (AVE) while the other entries represent the correlations.

TABLE 4. Loadings and cross loadings

	Q	FA	GOV	GI	RC	SP	TM
Q1	0.771	0.545	0.599	0.607	0.383	0.522	0.550
Q2	0.736	0.442	0.441	0.543	0.428	0.477	0.416
Q3	0.735	0.450	0.474	0.561	0.489	0.383	0.498
Q4	0.752	0.322	0.494	0.495	0.442	0.423	0.487
Q5	0.746	0.459	0.508	0.564	0.399	0.425	0.524
FA1	0.483	0.824	0.439	0.414	0.318	0.416	0.272
FA2	0.466	0.827	0.425	0.420	0.444	0.258	0.320
FA3	0.541	0.839	0.382	0.441	0.444	0.428	0.443
GOV1	0.472	0.259	0.733	0.388	0.332	0.380	0.367
GOV2	0.505	0.322	0.693	0.418	0.351	0.386	0.412
GOV3	0.511	0.448	0.799	0.506	0.303	0.460	0.412
GOV4	0.541	0.445	0.773	0.454	0.390	0.429	0.426
GI1	0.599	0.370	0.536	0.789	0.401	0.427	0.573
GI2	0.584	0.454	0.358	0.708	0.253	0.390	0.430
GI4	0.452	0.278	0.367	0.672	0.345	0.365	0.433
GI5	0.509	0.376	0.441	0.727	0.330	0.429	0.515
RC1	0.441	0.388	0.358	0.343	0.812	0.311	0.396
RC2	0.437	0.337	0.282	0.306	0.690	0.299	0.311
RC3	0.428	0.410	0.324	0.316	0.779	0.243	0.346
RC4	0.479	0.389	0.436	0.445	0.841	0.424	0.375
ACTP	0.483	0.425	0.409	0.554	0.391	0.761	0.473
ALUP	0.329	0.261	0.296	0.288	0.163	0.679	0.169
DONP	0.356	0.267	0.349	0.313	0.350	0.695	0.290
FALP	0.418	0.319	0.429	0.320	0.269	0.693	0.278
GOVP	0.513	0.384	0.434	0.382	0.395	0.754	0.298
STUP	0.457	0.235	0.468	0.452	0.213	0.766	0.420
TM1	0.530	0.223	0.464	0.577	0.367	0.350	0.819
TM2	0.595	0.402	0.457	0.578	0.428	0.441	0.880
TM3	0.572	0.444	0.458	0.576	0.374	0.411	0.859

Note: Q = Competitiveness, FA = Faculty Support, GOV = Government Support, GI = Green Initiatives, RC = Regulation Compliance, SP = Stakeholder Pressure, TM = Top Management Support

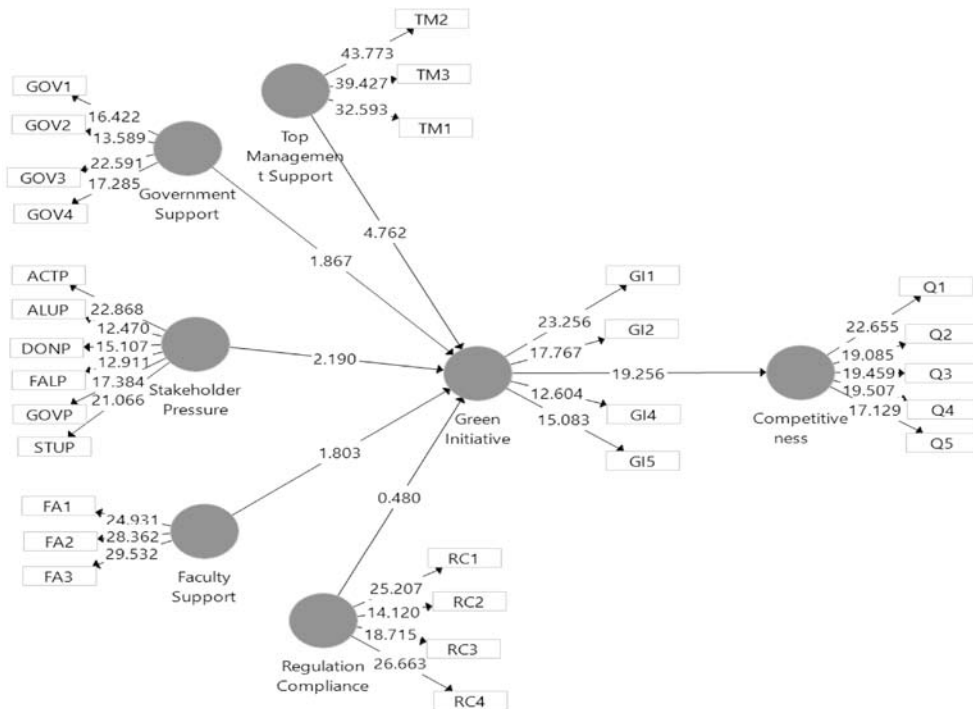


FIGURE 2. The structural model

TABLE 5. Results of the hypothesis testing

Effects	Hypothesis	Path	Beta Value	Standard Error (STERR)	t – Value	Decision
Direct	H1a	FA -> GI	0.152	0.084	1.803*	Supported
	H1b	GS -> GI	0.174	0.093	1.867*	Supported
	H1c	RC -> GI	0.040	0.039	0.480	Not supported
	H1d	SP -> GI	0.181	0.083	2.190**	Supported
	H1e	TM -> GI	0.416	0.082	4.762**	Supported
	H2	GI -> Q	0.743	0.087	19.256**	Supported
Indirect	H3a	FA->GI->Q	0.113	0.064	1.780*	Supported
	H3b	GS->GI->Q	0.129	0.071	1.811*	Supported
	H3c	RC->GI->Q	0.030	0.062	0.476	Not supported
	H3d	SP->GI->Q	0.134	0.062	2.149**	Supported
	H3e	TM->GI->Q	0.309	0.067	4.646**	Supported

Notes: **p < 0.01, *p < 0.05, bootstrapping (n = 5000)

Q = Competitiveness, FA = Faculty Support, GOV = Government Support, GI = Green Initiatives, RC = Regulation Compliance, SP = Stakeholder Pressure, TM = Top Management Support

TABLE 6. Importance-performance matrix analysis (IPMA) results

Latent variable	Green Initiatives		Competitiveness	
	Direct effect (importance)	Index value (performance)	Direct effect (importance)	Index value (performance)
Faculty Support	0.119	57.696	0.105	57.696
Government Support	0.166	58.389	0.147	58.389
Regulation Compliance	0.035	47.463	0.031	47.463
Stakeholder Pressure	0.168	60.649	0.148	60.649
Top Management Support	0.307	60.677	0.272	60.677

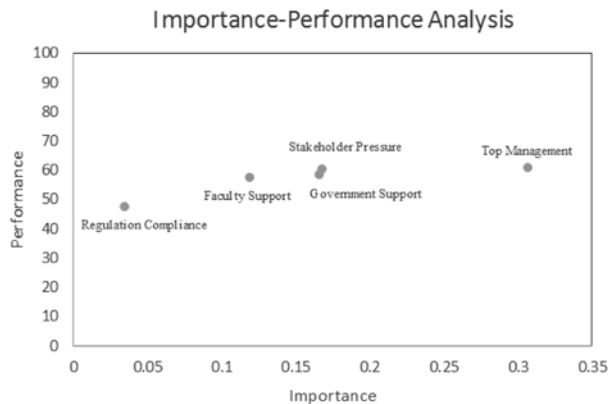


FIGURE 3. IPMA for green initiatives

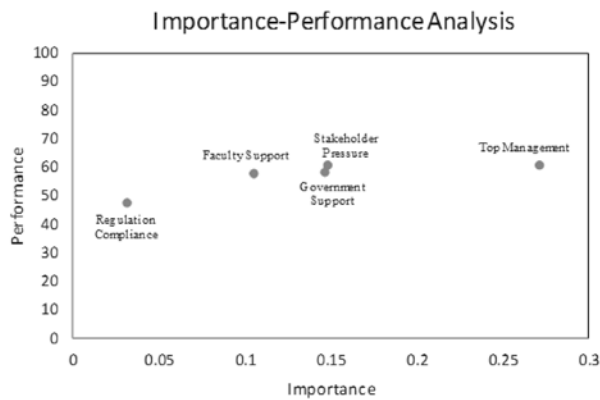


FIGURE 4. IPMA for competitiveness

DISCUSSION AND LIMITATIONS

This study was to examine the relationship between the influencing factors (top management support, government support, stakeholder pressure, faculty support, and regulation compliance) and competitiveness, mediated by green initiatives within the context of PHEIs in Malaysia. Data analysis revealed that all, except two, sub-hypotheses were supported, meaning that faculty support, government support, stakeholder pressure, and top management support are significant determinants of green initiatives. On the other hand, regulation compliance was found to have no significant effect on green initiatives. Simultaneously, green initiatives are also found to influence institution competitiveness significantly and positively. Besides, the analysis from this study also indicates the indirect effects of green initiatives on the relationships between faculty support, government support, stakeholder pressure, top management support and competitiveness.

Of the five types of stakeholder influence, top management support is found to have the strongest influence on the green initiatives of PHEIs. This finding is consistent with previous research (Tan et al. 2015). This means that top management is the most influential stakeholder that determines PHEIs strategic focus. Top management has the power and authority to decide on organizational issues, and thus has significant influences on company strategies and operations. The second most

influential stakeholder for the PHEIS in this study is government support, which is similar to findings of most research on green initiatives (Eiadat et al. 2008; Nomura & Abe 2010; Su et al. 2013; Tan et al. 2015). Government plays a critical role in achieving campus green initiatives. Government-sponsored funding schemes promotes sustainability research in PHEIS, and are encouraging faculty members to work on sustainable technologies. Faculty support is also found to have significant influence on green initiative, suggesting that faculty members are important for the implementation of green initiatives. Thus, the findings of this study support the tenet of Stakeholders theory that stakeholders exert pressure on institutions to adopt better environmental practices. On the other hand, regulation compliance is found to have no significant relationship with green initiatives, is consistent with a study by Palmer and Simpson (1995). This is because stringent environmental regulation causes the firm to spend more resources on environmental protection, which eventually reduces shareholder earnings and resources. Furthermore, the finding that green initiatives have a positive effect on competitiveness is consistent with Trung et al.'s (2005) study, whereby the integration of environmental protection into its business operations results in a gain in company's competitive advantage, which eventually impact on the level of revenue for PHEIS (Molina-Azorin et al. 2015; Stafford 2010).

In this study, the theoretical relationship from the research framework is empirically supported as the linkages between influence factors and green initiative are confirmed. The study contributed particularly on the importance of green initiatives as a mediator between influence factors (independent variables) and competitiveness (dependent variables) of PHEIS. By demonstrating the existence of significant direct and indirect effects of green initiatives on PHEIS' competitiveness, this study provides clear evidence that green initiatives are important in fostering competitiveness of higher educational institutions. Additionally, this study also suggests that the Stakeholder Institutional theories can be applied to explain the relationship between stakeholders, green initiative and competitiveness.

From the practical perspective, the results of this study provide PHEIS in Malaysia several options. PHEIS can strive to improve institution's competitive advantage by taking green initiatives seriously and that the green initiatives can be successfully implemented by engaging the help and support of the stakeholders, in particular, the top management, the government, and faculty members. Most importantly, this study contributes to the growing literature on the influence of influence factors, green initiatives, and competitiveness. Specifically, it provides empirical evidence that the relationship between influence factors and competitiveness is mediated by green initiatives. The current study suggested that top management; government, and faculty support should be enhanced in PHEIS to increase their competitiveness.

This research has some limitations because of its nature of data collection, which may cause common method bias. Additionally, the low response rate may result in biases in the findings, where only those PHEI that are proactive towards green initiatives participated in the study. Thus, the results of this study also provide guidance for PHEIS on ways and means to increase participation in sustainable development and at the same time, increases educational quality and competitiveness of PHEIS which can be researched in the near future. Hence, future research may need to use random data collection method or qualitative data collection method to improve on the validity and generalizability of the findings. Other than that, other variables such as service quality, knowledge management process, knowledge sharing, and research facilities may need to be researched on so that there will be a better understanding of the operations in PHEIS.

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APPENDIX A

INSTRUMENT

Construct	Items	Source
Competitiveness	<p>My institution able to complete based on quality.</p> <p>My institution offers education service that is highly reliable as compared to my competitor.</p> <p>My institution offers education service that is durable as compared to my competitor.</p> <p>My institution offers high quality of education to our student as compared to my competitor.</p> <p>My institution offers courses that are conformance to Malaysia Quality Accreditation (MOA).</p>	Li et al. (2006)
Top Management Support	<p>Top management often reserve budget for green initiatives implementation.</p> <p>Top management often plan extra resources to handle environmental related issues</p> <p>Top management realizes its responsibility in maintaining environmental sustainability.</p>	Leow (2010)
Government Support	<p>Government provides incentives for developing green initiatives.</p> <p>Government encourages institutional to propose green initiative projects.</p> <p>Government helps training manpower with green initiative skills.</p> <p>Government set the environmental regulations for the educational industry.</p>	Chieh (2008)
Stakeholder Pressure	<p>Alumni always pressure the institution to implement green initiatives.</p> <p>Donor always pressures the institution to implement green initiatives.</p> <p>Government always pressures the institution to implement green initiatives.</p> <p>Activist always pressures the institution to implement green initiatives.</p>	Shriberg (2002)
Faculty Support	<p>Student always pressures the institution to implement green initiatives.</p> <p>Faculty always pressures the institution to implement green initiatives.</p> <p>Faculty often allocate budget for green initiatives implementation.</p> <p>Faculty often proposes green initiatives projects to the institution.</p> <p>Faculty realizes its responsibility in maintaining environmental sustainability</p>	Leow (2010).
Regulation Compliance	<p>Through adopting green initiatives, my institution tries to reduce or avoid the treat of environmental registration.</p> <p>There are many environmental regulation or restrictions imposed by government on educational industry.</p> <p>Environmental regulation in other countries such as Europe, Japan, USA etc. induced my institution to adopt green initiatives.</p>	El Tayeb (2010).
Green Initatives	<p>My institution maximizes the recycling program (eg. aluminum can, paper, plastic etc.)</p> <p>My institution maximizes energy conservation activities (eg. efficient light bulb, solar panel, etc.)</p> <p>My institution maximizes water conservation activities (eg. dual flush toilet, reuse rain water for gardening, etc.)</p> <p>My institution maximizes greenhouse gas emission through sustainable transportation (eg. cycling, car pool, etc.)</p> <p>My institution implements green purchasing practices (eg environmental friendly stationeries, cleaning chemicals etc.).</p>	Shriberg (2002).