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## **A Theoretical and Empirical Discussion on Environmental Awareness Issue in Malaysia: Establishing a Viable Research Framework**

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### **Abstract**

The very aim of this paper is to pull together the statistics and empirical evidence to highlight the current state of environmental awareness issue in Malaysia. Based on the issue heightened, the problem statement is then crystallized. Empirical and theoretical supports were intertwined to explain and justify as to how the potential variables suggested may contribute to the parsimony of the suggested research framework, particularly in the setting of Malaysia. The variables of interest include a dependent variable, environmental awareness; an independent variable, perceived media coverage; two moderators, namely perceived government role and green value respectively. The originality of this paper lays in the combination of these variables in a sole framework, within the specific setting of Malaysia. Specifically, the discussion and introduction of the two moderators would add to the theoretical and empirical body of knowledge, as both have not been examined as moderators in the extant studies which correlate media coverage and environmental awareness.

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Another contribution of this paper is the empirically-based suggestion as to why media coverage is better examined from the perspective of the end-user, and not the conventional provider-oriented perspective. In this view, the operationalization of media coverage is one of that oriented on the end-user, hence perceived media coverage. Towards the end, research questions and objectives were formulated to call for earnest empirical examination.

**Keywords:** Environment Awareness; Media Coverage; Green Values; Government Role; Malaysia.

## **1. Introduction**

Having to live in a healthy natural environment is one of most important things for a quality life. However, many a time, the desirability for national development is hardly balanced by the initiatives to preserve the natural environment. While this notorious paradox is witnessed worldwide, it becomes particularly appealing for the developing countries, as the eager to strive for fully industrialized developed country's status is comparatively more intense. Malaysia is of no exception. Malaysia is a developing country [1]. In the continuum of development, a developing country is also denoted as a less-developed country [2]. Since independence, Malaysia has threaded a recognized history of national development, fueled by its natural resources and followed by phases-after-phases development initiatives. Particularly, industrialization was put to the fore front. Being renowned as one of the fastest growing developing countries, today Malaysia is one of the very few countries (eleven) worldwide, which has been recognized and reached the stage of Newly Industrialized Countries (NIC). NIC are nations with economies more advanced and developed than those in the developing world, but not yet with the full signs of a developed country [3]. As a NIC, Malaysia has a newly industrialized market economy, which ranks the third largest in Southeast Asia and 29<sup>th</sup> largest in the world [4]. However, undeniably and unfortunately, this good-willed transformation has brought undesirable negative effects to the natural surrounding over the years. The impact has become so plain today, as statistics speak for themselves.

## **2. Literature Study**

Under the mask of development, the environmental degradation appears evident in a broad range of land-based and sea-based activities, directly or indirectly. While manufacturing industries, agro-based industries, sewage treatment plants, and animal farms are sources of land-based pollution, sources of sea-based water pollutions range from oil or ballast water discharge of ships, waste trash from ships, shipping traffic, port operations and off-shore oil and gas exploration to production rigs [5].

The national statistics clearly shows that the conditions of some environmental aspects of Malaysia are rather worrisome. Observing from the very surface of the earth habitation, urban air quality, river water quality, deforestation, household wastes and hazardous wastes are some obvious long-lived yet still-unsolved environmental issues facing Malaysia at this intermediary stage of development today. To coin an instance, the Malaysian Air pollutants Index (API) assessment revealed that 18 out of 52 stations monitored has recorded unhealthy level, with the remainder fairing only between good and moderate for most of the time in 2011 [6] A

note to heighten in corollary to this unfavorable overall air quality, it is worth-noting that an average of 65 to 70 percent of the forests area had been destroyed by logging operations of hill forests between the period of 1991-2009[7].

Critical conditions are also evident in the sea-change of water quality in Malaysia over the recent years. The Department of Environment (DOE) found that approximately 50 percent of the monitored 470 rivers were not clean in 2010[8]. A similar phenomenon has also been observed in previous years. For instance, Environmental Quality Report 2009 showed that 46% of river water of Malaysia is polluted, and this figure is in fact higher than the previous couple of years [9]. Similarly, the number of clean rivers has also reportedly noted a significant drop from 91 to 76 between 2007 and 2008, while those of slightly polluted rivers had drastically increased to 60 in 2008 as compared to 2007[10].

Previously, water pollution was due to mining activities, but presently the problem is contributed by intense logging, land clearing for infrastructure development, agriculture, and construction, manufacturing activities and leisure and recreation areas' development [11]. Such hazardous wastes as heavy metals sludge, mineral sludge, and asbestos and textile by-products were reportedly causing environmental water problems in Malaysia Peninsular [7]. Suspended solids waste is reported as remaining the main water pollutant in most Malaysian rivers and coastal waters.

Further, forest depletion is evident in the large-scale conversions of forestland for agricultural purposes, hydro-electric projects, mining, commercial logging, and shifting cultivation [11]. In the same vein, emissions from stationary sources (industries including power plants), motor vehicles and open burning activities are reported the main sources of air pollution in Malaysia [12]. The DOE report has also revealed a massive annual production of 380,000 m<sup>3</sup> of toxic waste from industrial consumption [13].

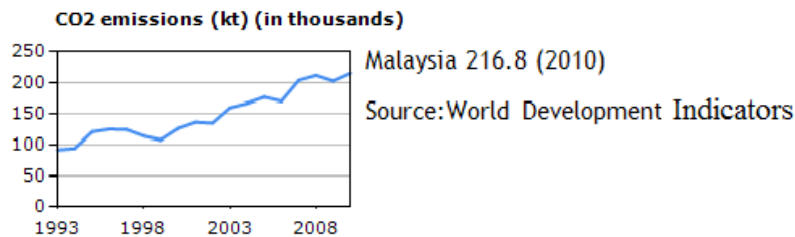
Furthermore, closely related to the statistics heightened above, some discouraging reputation of recycling practice is also noteworthy in Malaysia. The report by the Department of Environment lamented that only 5% of the total waste is recycled, despite the high potential of such treatment practice. Consequently, over 280 million kilograms of solid wastes which were supposedly be recycled were discarded and land-filled annually [12]. Likewise, the Malaysian government has also recognized solid waste as one of the most significant environmental problems. To note some frantic facts, approximately 2,000 tonnes of municipal solid waste has to be delivered from the Kuala Lumpur State Territory to Taman Beringin Transfer Station (TBTS) every day in 2010 [14]. In another instance, the daily production of 17,000 tones waste in Kuala Lunpur is conjectured to be able to tot up the Kuala Lumpur Twin Towers in only nine days [15].

Obviously, all the environmental problems mentioned above are the outcome discharges amidst the development activities. It seems to suggest a desperate contradict between development being the culprit of environmental degradation, and its importance as driving factors which would help develop Malaysia into a fully industrialized developed country as postulated by 2020.

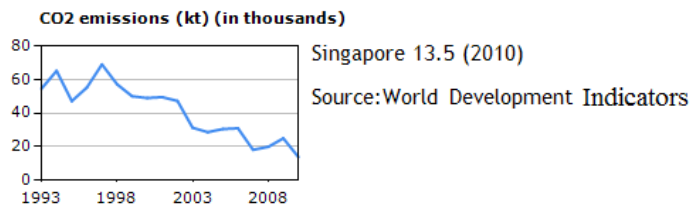
Again, they also seem unavoidable. But, is this the price for development? Apparently, it is not. Economic

development does not necessarily mean sacrificing the environment. Take an instance of our very close counterpart, Singapore. Malaysia and Singapore have very similar history of development. Both share the same vision to be industrialized nation. However, Singapore although has already realized their vision of a fully developed industrialized country, their environment is much still intact. It is a well-established fact that *"Singapore has succeeded in simultaneous pursuit of economic development and environment protection, providing people with a favorable living environment and a high-quality public health by the world's standards."*... *Considering the fact that neighboring countries in the Southeast Asian region are suffering from serious environmental pollution caused by economic growth, Singapore is unique in this region in that it is developing the economy while maintaining a favorable living environment"*[16]. Malaysia, though still a long way to pave towards achieving such status, has already shown marks of compromising environment for the sake of economic development.

To cite some more remarks, the study by Economist Intelligence Unit (EIU) in 2011 has recognized Singapore as the Asia's greenest metropolis among 22 major cities. This assessment was based on fairly wide-ranging markers including energy and carbon dioxide (CO<sub>2</sub>), land use and buildings, transport, waste, water, sanitation, air quality and environmental governance [17].Singapore is also ranked second in the Sustainable Competitiveness Index conducted by the World Economic Forum's Global Competitiveness Report 2011–2012. This index is formed based on the considerations such as countries' environmental policy, resource efficiency and environmental degradation, alongside other economic and social indicators [17]. To note further, as an industrialized country, Singapore's pollutant indices remain under control. To mark a clear example, while the carbon dioxide emission (CO<sub>2</sub>) level of Malaysia has increased over the years, a noticeable decrease is witnessed in Singapore. This trend is depicted in the following Figure 1 and 2 respectively. To pluck a few figures, while Malaysia CO<sub>2</sub>emissions (Kt, in thousands) reached 216.8 in 2010 [18], it was only 13.5 for Singapore [19].



**Figure 1:** Carbon dioxide emissions in Malaysia.



**Figure 2:** Carbon dioxide emissions in Singapore.

Similar pattern of disparity is also reported by the International Energy Agency's (2012) survey [20], where Malaysia's CO<sub>2</sub> emission level (185.0 million tonnes) is nearly three times greater than that of Singapore (62.9 million tonnes). In addition, Singapore Pollutant Standards Index assessment shows that the country records 92% of days with 'good' air quality in 2012; 0% of unhealthy air quality days was reportedly remained over the years from 2007 through 2012 [21]. As opposed to the 5% recycling rate in Malaysia [22], Singapore intends to increase its recycling rate from 59% in 2011 to 70% by 2030 [17]. The long-term prospectus of environmental conservation is vivid.

In parallel to the statistics regarding the unfavorable state of environmental issues in Malaysia discussed above, also transpire to view are statistics pinpointing low level of knowledge and awareness among Malaysian pertaining to such issues. Surveys indicate that while respondents are reportedly high on basic or general environmental knowledge, knowledge on specific environmental questions were superficial [23, 24]. For instance, the survey by [23] shows that only 5 out of a total of 35 questions on basic and general knowledge on environment received more than 80% correct answers. In particular, the study reveals miserably low level of specific environmental knowledge, such as those related to differentiating bins for recycling glass and aluminum containers purposes, as well as air and noise pollution. In the same vein, the survey by [24] claim that more than 50% of the Malaysian respondents think that it is alright to sacrifice the natural environment for development, and majority of them were found at odd with various scientific environmental terms. To add, [25] examined the level of awareness and perception on green living amongst Malaysian youths. The study found low level of green awareness among the Malaysian youths. While only 22 % of them strongly understand the green living concept, only 12% confirmed of practicing green living. Indeed, quite a number of studies found that Malaysians possess low levels of environmental knowledge and awareness. This holds for youths [25], teachers [26], students [27], and public at large [28, 24].

In contrary, the survey done on our Singaporean counterparts however shows greater level of pro environmental concern. In a survey conducted to measure the levels of environmental attitudes, public awareness and behaviors towards issues surrounding climate change in Singapore, National Climate Change Secretariat (NCCS) reported that 85% of respondents expressed the sense of belonging and togetherness in taking action on climate change, while 73 % claimed to care about climate change. 75% asserted motivation to preserve the environment for future generations [29].

Previous research often holds mass media responsible for public awareness inadequacies. This is largely because mass media has proven a very prevailing tool for channeling and extending awareness towards environmental issues amongst the public [30, 31]. This is in part due to their capability of far-reaching and cost effective [32, 33]. Therefore, the phenomenon of superficial level of environmental knowledge and awareness among Malaysian as discussed above is perhaps suggestive of the inadequacy and ineffectiveness of media role particularly in the coverage of environmental issue. The viability of such claim can be traced back in previous studies which asserted that the consideration for the environment could only come from well-informed citizens who are aware of and fully committed to their rights to a quality environment [34, 24, 35, 26]. Content analysts typically find gaps in media coverage due to episodic coverage of dramatic events, and to focusing superficially on human interest and conflict, while overlooking systemic concerns [36].

Such observation simply that, in the very context of Malaysia, its people and the regulator body which form the crucial part in the whole system (Malaysia), could perhaps have some important bearings on environmental awareness issue. It is possible because advances in environmental protections are claimed to be possible with a more open and accountable government [37]. Moreover, government (as the policy maker) is one of the utmost influential authorities to exercise new rules and regulations upon the public when it comes to the benefits for the public. No one environment issue can reach the desired fruition without the proper assistance of the government body [38]. Further, the discussion above also points to the fact that as far as the very Malaysian context is concerned, the value its people hold may make somewhat the difference between what Singaporean can achieve and what Malaysia has not. Values are basic guiding principle central in people's life which may assert meaningful influence on what people attend to, what knowledge become most accessible to their cognitive, how much importance they ascribe to the consequences of their action, and how they evaluate the various aspects of the situation [39].

Towards this end, empirical effort studying environmental awareness in Malaysia should be studied in concert with media effectiveness, government role and values the people hold.

### **3. The Statement of Research Problem**

Despite the significant importance of a healthy natural environment for living of all, and despite the glaring threatened scenarios and condition of the environmental deterioration in Malaysia, it is a depressing fact that perhaps previous empirical works which investigated such matter in Malaysia are still arguably insufficient of significance. Not much empirical efforts have been done in ways that inspect into such deterioration in the specific Malaysian context, and its people's awareness of such issue. Therefore, this current paper aims at filling in this void by empirically examining environmental issue in lights of the awareness of its people in the country. The starting point reflecting the issue at stake is hence environmental awareness.

Environmental awareness is defined as knowing of, being informed or having knowledge and specific facts about the adverse impact of people's behavior on the environment [40, 41, 42, 43, 44]. In a broader view, environmental awareness is perceived as comprising three constituents, namely, the cognitive knowledge-based element, affective perception-based/ emotional involvement element, and behavioral action-based element [45, 46, 47, 48].

In most time when negative environmental consequences alarms for public awareness, it is noticeable that none has been put in incumbent as much as the mass media's function in the country. This is conceivable given that mass media has long been recognized of holding potential role in circulating information and messages to massive, diverse and far-reaching audiences about various issues [49, 50].

In particular, mass media have credited by users at large, in both Malaysia and overseas countries, as a major source of information about environmental issues [25, 23, 51, 24, 52, and 26]. Since the public have minimal direct experience and first-hand knowledge about unobtrusive issues such as those of the environment [53, 54, and 55], media hence becomes a major public arena through which public becomes aware of environmental

issues, and the way in which the issues are addressed, contested and resolved [56].

However, taking the discussion above together with the questionable state of the environmental awareness issue in Malaysia as discussed in section 1.0 earlier, a deficit in mass media coverage is somehow appears very suggestive. Past empirical studies have revealed that the influence of mass media is positively associated with the public awareness [57, 58, 59, 60, 61, 62, 63]. For instance, [59] who examined the effects of economic cycles and media coverage on the environmental concern of Swedish public during a period of more than 20 years, revealed that media coverage positively affect environmental concern among the citizens.

In another empirical evidence, [63] investigated the influence of the media coverage on public awareness of global warming issue in Japan. Using a sample of 2000 Japanese people at 140 sampling points, the researchers provided statistical evidence of the positive correlation between mass media coverage and public awareness.

Nevertheless, the positive relationship between environmental awareness and mass media coverage does not come without contest. The literature study of the current research has also found negative relationships between media and awareness amongst the past studies [64]. In addition, past studies also unearth mixed results in one particular work [45,40,55]. For example, the work of [45], while finding television and informational online media positively related to public awareness of climate problems in Germany, a negative relationship is also concurrently evident between newspaper coverage and public awareness. A similar but distinct pattern of mixed results is also evident in past studies [61]. To note some instance, [61] examined the influence of television and newspaper's coverage on the awareness of global environmental issues among the Tokyo residents. While the study found gradual and cumulative effect of newspapers coverage on public awareness, the study however only manage to report a weak relationship between television viewing and public awareness. Notably, Mikami and his associates also examined the relationship between media coverage and public concern about climate change and environmental issues in many ways and found mixed results.

Obviously, inconsistent findings exist. From the theoretical perspective, these inconsistent findings invite further investigations into the possible contingent variables which perhaps have potential bearings on the relationship between environmental awareness and media coverage. This theoretical argument put forth here is consistent with [65] suggestion which asserts that inconsistent findings in an empirical relationship grants the opportunity to introduce a moderating variable (interaction) to render better understandings on a relationship.

While this inconsistency has declared open ways for interaction, it was noticed that past studies which examined a population at large at the national level had occasionally brought the role of government into their investigation [66]. Government as the regulator and national policy maker is one of the utmost influential authorities to exercise new rules and regulations upon the public when it comes to the benefits for the public [67]. In particular to the environmental issues, it is interesting to note that no one environmental issue can reach the desired fruition without the proper assistance of the government body [38]. In this line of thought, investigations of government role in environmental issues can be traced back to some very recent empirical works which indeed found government role in positive association with environment-related concern such as public green purchase and attitudes toward environment [27,68,69].

The inclusion of government role in the discussion of environmental issue at the national (country) level is also consistent with Institutional Theory. According to Institutional Theory, two important national-level concerns (dimensions) that clearly determine how different nations respond to environmental issues: the regulatory and normative dimensions [70,71]. While the former refers to the rules and regulations in a particular nation or setting that promote certain practices or behaviors and restrict or ban others [72], the latter represent the cultural values, goals of the society, and beliefs that determine the legitimacy of the displayed behavior [70]. This is in agreement with the fact that both government and its people form a huge part in the whole system of a country (Malaysia).

Also in line with this theory, it is suggestive that besides the government role, the values peoples hold may equally assert pivotal bearings on the environmental awareness issue, and hence worth equal attention for investigation. To explain, previous studies had offered understandings that, changing the values that people hold about environmental issues could be the only effective long-term solution [73].

In fact, it has also been heightened that the change in the people values has a significant impact on the rise in people awareness and on their priority and sensitivity to environmental protection [74]. In this vein, empirical evidence also demonstrated positive correlation between value orientations and public awareness [75, 76, 77, 78, 47, and 39]. Take an instance, such researcher as [76] who examined the impact of values on tourists' intention to buy sustainable tourism choices, found a significant positive relationship between universalism value orientation and environmental concern. The study showed that individuals who value equity, peace on earth, and social justice (reflecting universalism) are more concern about environment in their vacation choices in comparison to those with benevolence values.

In another example, [79] studied the influence of values on energy use. The researchers found that biospheric value which resonates with strong appreciation for environment contributed significantly to explain the greater feeling of responsibility towards problems related to energy consumption.

Given the theoretical foundation discussed above, it seems reasonable to postulate government role and perceived green values of people as potential moderators that would give rise to the existing relationship between mass media coverage and environmental awareness. All these variables are perceived from the perspective of the public, the end user of media.

Towards this end, the current study put forth a frame work consisting of four major variables into investigation of environmental awareness in Malaysia context. This framework includes environmental awareness as the dependent variable, perceived mass media's coverage as the predictor, and two moderators, namely the perceived government role and perceived green values.

Further, it is also important to heighten here the fact that a considerable lack in empirical efforts scrutinizing environmental awareness still exists, whether it appears as a standalone research issue [28, 25, 24, 26, 80] or studied in relationship to superficial variables such as demographic variables [81, 62, 82]. While there were some other studies examining public awareness in relation to media coverage [25, 83]. This line of research



nevertheless is mainly descriptive studies which tackle the issue at the preliminary level. Only few recent studies, mostly in the western-country and Japanese context, embark on the higher level of correlation studies which investigate the relationship between media coverage and environmental awareness specifically [45, 57, 40, 61, 63], as well as with awareness in general arenas such as politics [84] and health [85]. Therefore, this study aims at filling in this void by means of empirical efforts.

In particular to media coverage, it is important to note that media coverage for this particular study is more appropriate to be gauged from the perspective of the public, the seemingly end users of the media product, hence perceived media coverage. This stance is ponderable as the information media provides from one side does not necessarily be fully translated and interpreted by end-user as intended. This proposition is in line with the contention that increased media attention does not automatically translated into changes in the public attitudes. Or in other words, public's behavior change does not necessarily follow even when information is "successfully" disseminated [55, p.307].

In fact, being the end user of the media, the direct experience of being a paying consumer is believed to posit media users at good stance to provide righteous answer pertaining to the extent to which media had made sufficient and effective role on environmental issue. Correspondingly, media coverage is to be operationalized to capture users' perceptions at the individual level. Likewise, this study would also differ from previous studies' assessment which mainly depend on the level of the content intended, for example, at the article-level [86, 63], subject matter-level [87, 88].

#### **4. Conclusion**

Given the discussion above in the foregoing research problem section, it is concluded that several potential research questions and objectives be put forth to be highlighted for further empirical investigation. These research questions are as follow.

- i. What is the relationship between media coverage on environmental issues and awareness of public in Malaysia?
- ii. Does 'green values' among the public play a moderating role to influence the relationship between perceived media coverage and public environmental awareness?
- iii. Does government role in environmental issues play a moderating role to influence the relationship between perceived media coverage and environmental awareness?

In addition, given the lack of recent empirical evidence as to the level of media coverage and the state of public awareness on environmental issue among Malaysians, two additional research questions are appended as follow.

- i. What is the level of environmental awareness among Malaysians?
- ii. To what extent and in what way perceived media coverage informs public on environmental issues in Malaysia?

The above research questions correspond to the following three main research objectives; namely,

- i. To determine the relationship between perceived media coverage and public environmental awareness.
- ii. To examine the moderating effect of green values of the public on the relationship between perceived media coverage and environmental awareness.
- iii. To examine the moderating effect of government role on the relationship between perceived media coverage and environmental awareness.

## **5. Recommendations**

Particularly related to the variables of interest, namely media coverage, government role, green values, and environmental awareness, the measures of these constructs in the context of environmental awareness are not yet established. Specific to media coverage, there is an absence of an appropriate measure instrument to gauge media coverage from the public perspective, which calls for the need to develop such measure for empirical examination.

Besides, while a multidimensional measure of environmental awareness which included the dimensions of cognitive, affective, conative, and behavior, is hopeful to capture a fuller perspective of the construct. However, the knowledge aspect of the cognitive dimension which used to be captured using nominal scale in the past (versus continuous Likert-type scale) is not able to be measured together with other dimensions which are of continuous Likert-type scale. Therefore, a challenge for research forward is to operationalize the knowledge aspect into a compatible scale, so as to incorporate it into a fuller measure of environmental awareness. This way, not only future researchers will be able to measure the level of environmental awareness comprising the four full dimensions, researchers will also be able to examine this full environmental awareness construct in relationship to other continuous Likert-scaled variables of interest (media coverage, green value, and government role).

Further, government role and green values are also not readily available, should the specific setting of this study is concerned. Therefore, it is recommended that these measures be properly operationalized and validated to allow more meaningful empirical examination.

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