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Managers' Perception on Adaptation of Green Building Practices and Environmental Performance

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The need for sustainability has gained remarkable momentum in the context of the global challenges of environmental pollution, climate change, and global warming. In this context, as the largest single share in global resource use and pollution emission, the building construction industry must play a remarkable role to overcome this negative impact. In this setting, the concept of Green Building (GB) provides an alternative sustainable solution for the environmental impacts of buildings while supporting sustainable development. Green building provides benefits not only from an environmental perspective but also from economic and social aspects. Thus, stakeholders of real estate tend to adopt green building technology to avoid the pressure of the internal and external business environment. In this background, by following the Melvilles' Belief-Action-Outcome framework, the study argued that green building practices of an organization are the outcome of the integrated micro and macro level pressure created by stakeholders for better adaptation of the GB concept, and beliefs of decision-makers on future consequences of non-adaptation of GB concept. Thus, this study aims to investigate the impact of macro and micro factors on the action of executives of the apparel sector of Sri Lanka on the adoption of green building practices. The population of the study is defined as executives of apparel companies in Sri Lanka. A total of 300 questionnaires has been distributed to executives who were selected using convenience sampling techniques and 86 valid responses were received. The Partial Least Squares Structural Equation Modeling (PLS-SEM) was used as the analytical technique of the

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study. The results suggest that macro factors namely coercive and mimetic pressure were not able to make a significant influence on executives' attitudes toward GB practices adoption. However, it is confirmed that the attitudes of executives significantly contribute to managers' actions on adopting pollution prevention, adoption for product stewardship, and adoption for sustainable development practices. Out of these three actions, product stewardship and sustainable development significantly contribute to the environmental performance of the organization. Accordingly, the study concludes that neither future consideration nor pressure created by the business environment act as motivators of the adoption of the green building concept within the apparel industry in Sri Lanka.

Keywords: Adoption of green building practices; environmental performance; belief-action-outcome framework.

1. INTRODUCTION

The United Nations Environmental Programme confirmed that the building sector contributes 40 percent of total annual waste of demolition and 40 percent of global greenhouse gas emissions. In contrast, the construction industry consumed a total of 40 percent of global annual energy consumption and 20 percent of global annual water usage [1]. Also, Chan et al. [2] noted that buildings play a pivotal role in greenhouse gas emission. The gravity of this environmental issue further heightened as UNEP, [3] confirmed that due to continuous demand for floor area and population expansion, emission levels increased by 2 percent from 2017 to 2018 and while final energy demand rose by 1 percent from 2017 and 7 percent from 2010. In addition, the renovation and refurbishment of the building also consumed a substantial number of natural resources and energy which directly and indirectly produce noise and other pollutants as well. Not only that, but disposal of the building at the end of its life also generates building waste [4]. In this context, it is evident that in the absence of sustainable environmental solutions, the construction industry will become one of the major environmental polluters and destruction of natural habitats and wildlife [1].

An alternative solution for this heightened negative impact on the building construction industry is green building. The concept supports environmental sustainability, health, and healing of the community. The term green building has been used as an interchangeable term with sustainable building and high-performance building. According to MacNaughton et al., [5] green building provides health facilities designed and built in a resource-efficient manner, using ecologically-based principles. According to Robichaud and Anantatmula [6] green building concept developed on four pillars namely, minimization of impacts on the environment, enhancing the health conditions of occupants, the return on investment to developers and local community, and the life cycle consideration during the planning and development process. According to this explanation, it is argued that the relationship between the construction industry and the environment is complex as construction can have both direct and indirect effects. The direct effects are due to the negative environmental impact of use, and disposal. Thus, making this effect greener has been termed green building, which supports to minimized or mitigating the environmental impact. On the other hand, the use of green building creates a secondary level impact on business or indirect impact on the business which ensures the eco-sustainability of businesses and society. Adhering to these benefits associated with sustainable designed and green building concepts, government and private sector organizations tends to adopt this concept during the last two decades. Especially in the Sri Lankan context, stakeholders like the Green Building Council of Sri Lanka, and Urban Development Authority continually emphasize the benefits associated with green building and promote the concept.

Though there is substantial evidence of the benefits that green building technology can provide [7], the number of green buildings in Sri Lanka is limited to 61 [8] and slow-moving new adoption is evident. Further, it is evident that poor attention and support for the green building concept by developers and occupiers of the building. Most occurrence, at the strategic business level green building concept has been dropped due to native perception of the green environment as well as financing issues of a green building due to lack of initial investment. According to Banerjee et al., [9], the driving force of green building initiatives are stakeholders of

the buildings. However, the motive behind green building initiatives is not the same for all stakeholders. In an organizational setting, stakeholders such as customers, local communities, government agencies, and public interest groups are considered relevant parties that affect environmental decision-making and actions [9]. Further, organizational capabilities and the availability of resources to implement a proactive environmental management strategy are also largely influenced by managerial decision-making as a stakeholder at the organizational level [9,10]. The owners and top management of the organization generally focused on business performance and the micro and macro environmental pressure on going green [7]. According to Lee et al., [10] top management stimuli are primary contributors to the adaptation and implementation of the green building concept in practice. Thus, it is argued that the motivations or drives of managers are fundamental to green building adaptation.

Previous research recognized that so-called green buildings are associated with lifecycle cost savings, improvement in human performance (including productivity gains and better employee/occupant health), and an increase in prestige [11]. However, researchers like Miller, et al., [12]; Eichholtz, et al., [13]; Wiley, et al., [14]; Fuerst and McAllister, [15], discussed on financial benefit of adopting green building technologies. In the meantime operationalization of the concept of green building was discussed by Chan et al. [2] in their study and noted that strategies for making popularity for the green building including government offerings on financial and market-based incentives, green rating and labeling systems, low-cost loan facilities for green buildings, mandatory government policies and standards for green buildings, public awareness campaigns on benefits of green buildings/education programmes, institutional framework form greenhouse buildings and strengthening research on green building. Further, Tran [16], noted that perceived advantages and disadvantages of green building technology, top management leadership, government support, market readiness of the green building technology, and social demand for green building technology are driving the intention for green building technology adaptation in Vietnam. In the same context, Darko et al. [17], in their review of literature noted five types of macro-level green building drivers which includes, corporate-level, property-level, project-level Individual-level, and external drivers. As per Darko et al. [17] these drivers act as motivators for or pressure stakeholders to build green. Accordingly, it confirmed that drivers can therefore be act as promoters and encourage the uptake of green building practices. However, Darko et al. [17], noted that the drivers summarized in their review have general applicability for all stakeholders interested in pursuing green building practices which limited to empirical applicability to specific countries and an industry.

In this setting, there is a knowledge gap on the motivational drivers of a company when choosing to apply green building and its subsequent impact on the performance of the organization. In this context, is essential to identify the motivators or drivers of the green building concept as they are the stakeholders and/or decision-makers who play critical roles in deciding the direction of companies' strategies towards the adoption of green building practices and achieving the environmental performance of a firm. Whether this helps understand the reasons for adopting green building practices, these have not identified the real motivating factors behind the individuals' action toward green building practices adoption and its outcome on environmental performance. These issues have led to investigating the motivational factors which lead to adopting green building technology. Therefore, the knowledge gap on the perception of managers in the context of macro and micro environments which lead to the adoption of green building technology is an important consideration in the empirical study. This situation has led to identifying the real motivating factors behind the adoption of green building practices and finding the subsequent impact on environmental performance. That is because human behavior plays a major role to achieve environmental sustainability. From a psychological point of view, peoples' perceptions have a direct influence on their decision-making and consequently the result of their decisions. Thus, human behavior is influenced by their attitudes and perceptions. In this context, this study aims to analyze the impact of the perception of managers on the adoption of green building practices and its impact on the environmental performance of the business organization.

2. LITERATURE REVIEW

According to Juraitė [18], environmental behavior refers to a socially conscious behavior that has a significant impact on the environment. Several

models explain the environmental behavior of an individual including the Theory of Planned Behavior (TPB), Self-Efficacy Model, Responsible Environmental Behavior Model, the Unified Theory of Acceptance and Use of Technology (UTAUT), etc... Although no single theory provides a definitive model for individual acceptance and environmental behavior [19], the UTAUT currently holds the most promising application due to its integration of eight competing models widely accepted by technology management researchers [20]. Venkatesh, et al., [20] formulated the UTAUT based on the conceptual similarities between competing theories. These theories include the Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), the Motivational Model (MM), Theory of Planned Behavior (TPB), Combined TAM and TPB (C-TAM-TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT). In the meantime, Malkani & Starik [21] in their study has used Green Building Technology Model (GBTM) which has modified the factors in UTAUT. This model is used to determine the factors that lead to an individual's willingness to adopt green building technology.

Within this setting, Gholami, et al., [22] in their study identified that Melville's Belief Action Outcome framework (BAO) is the best model to understand the motivators of green information system (Green IS) adoption and integrate them with the outcome of adoption. Originally, the BAO framework defines outcomes as the functioning of organizations (or other social systems). This framework suggests that behaviors are an outcome of belief and action formed by macro (organization) and/or micro-level (individual) forces. Belief formation captures how psychic states (beliefs, desires, opportunities, etc.) about the natural environment are formed. For instance, individual environmentalism is said to be dependent on ecological worldviews, awareness of consequences, and ascription of responsibility (Steg, 2000). Action formation describes how psychic states about the natural environment translate to actions. On the micro-level, action formation describes what actions are selected and performed by individuals to improve the environmentalism of behaviors. In this model, the outcomes describe what the consequences of the actions are, on macro and/or micro-level forces. On the other hand, Melville [23] argues that "environmental sustainability" involves human behavior and the broader social, organizational, and environmental context. As such BAO links the social and organizational contexts on individuals' and organizations' beliefs and their influence of them on actions and subsequent outcomes. The framework, therefore, links macro-level constructs with micro-level constructs. In this context, it is argued that managerial beliefs and commitment lead to organizational action that led to outcomes [23]. In the meantime, Gholami et al., [22] in their study said that senior managers are always influenced by the organizational context and successfully adopted the BAO on green IS adoption and has argued that managers' attitudes and beliefs about the natural environment motivate organizational action to intensify green IS adoption [22].

Gholami et al., [22] has identified that the green IS adoption of an organization can be observed by determining the extent to which an organization is involved in its pollution prevention, product stewardship, and sustainable development. In this context, the study proposed that green building practices adoption also will be observed summarizing the above-mentioned green IS practices and allowing the actions of pollution prevention, product stewardship, and sustainable development for environmental performance. Consequently, it is argued that BAO portrays the sufficient validity to assess the perceptions of managers on green building initiatives and their impact on environmental performance with the moderated version of the model applied by Gholami et al., [22] in their study on green IS adoption. Thus, the study proposed the application of BAO to review the managers' perception of the adaptation of green building practices and environmental performance. Refer to Fig. 1 for conceptualization.

2.1 Hypothesis of the Study

In line with the theoretical background and the conceptualization, the study argued that environmental performance is an outcome of three green building practices or actions namely; green building practices for pollution prevention (reducing overall emissions, waste, and hazardous materials, use of nergy-efficient materials and design), green building practices for product stewardship (enhancing the environmental friendliness building life cycle) and green building practices for sustainable development (transforming business). In the meantime, the model proposed that the above actions lead by macro and micro factors of the

environment which include managers' attitudes, consideration for future consequences, coercive pressure, and mimetic pressure which results in better environmental performance. Accordingly, hypotheses are developed as Fig. 1.

2.1.1 Attitude towards adoption of green building practices

Environmental attitude is defined as "the collection of beliefs, affect, and behavioral intentions a person holds regarding environmentally related activities or issues" [24]. Thus, it is assessed the environmental attitude of a manager and measures the extent to which they are aware of the adoption of green building practices. The manager is responsible to lead the organization for better environmental performance and his positive attitude toward the application of building practices is essential and will lead an organization to better performance. Therefore, it is argued that managers who are responsible for environmental sustainability will lead the organization in the adoption of green building practices and proposed the hypothesis as follows.

H1a: Managers with more positive attitude toward green building practices will be more likely to adopt green building practices with pollution prevention orientation

H1b: Managers with more positive attitude toward green building practices will be more likely to adopt green building practices with product stewardship orientation

H1c: Managers with more positive attitude toward green building practices will be more likely to adopt green building practices with a sustainable development orientation.

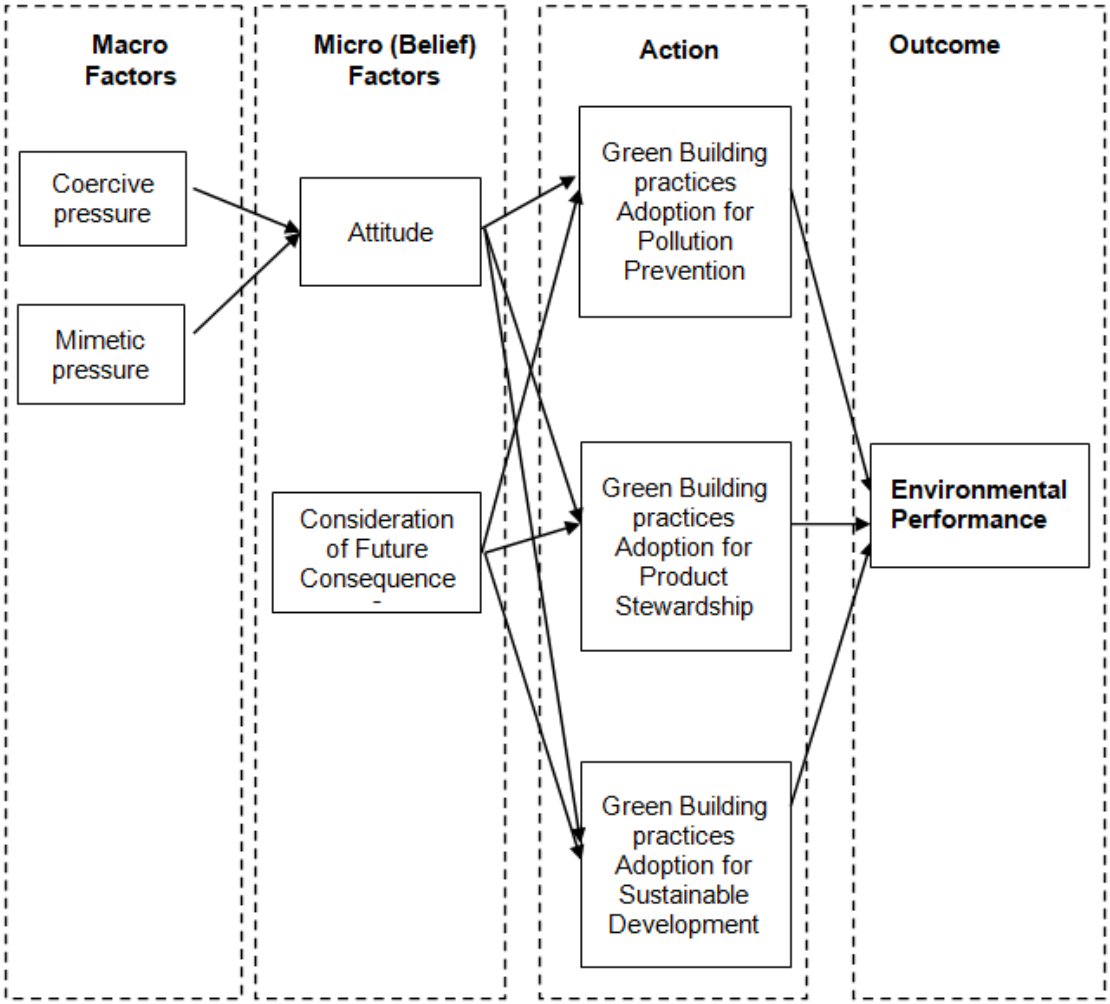

Fig. 1. Conceptual Model – Adopted melville's belief action outcome framework (BAO) on green building adoption

2.1.2 Consideration of future consequences towards adoption of green building practices

Whether all studies do not capture the all reasons related to behavior like personal traits, few studies have found personal traits as predictors of human behavior. Consideration of Future Consequences (CFC) was proposed by Strathman et al., [25] as a stable individual difference construct on the extent to which individuals consider the future versus immediate consequences of their behavior. The CFC refers to the extent to which individuals consider the potential distant outcomes of their current behaviors and the extent to which they are influenced by these potential outcomes. It involves the intrapersonal struggle between present behavior with one set of immediate outcomes and one set of future outcomes [25]. Individuals low in CFC will give high importance to the immediate consequences of behavior while individuals high in CFC will give high importance to the future consequences. Thus, the hypothesis will be proposed as follows.

H2a: Managers high in CFC will be more likely to adopt green building practices with pollution prevention orientation.
H2b: Managers high in CFC will be more likely to adopt green building practices with product stewardship orientation.
H2c: Managers high in CFC will be more likely to adopt green building practices with a sustainable development orientation.

2.1.3 Institutional pressure and adoption of green building practices

An institutional theory emphasizes the role of social and cultural pressures imposed on organizations that influence organizational practices and structures [26]. DiMaggio and Powell [27] argue that managerial decisions are strongly influenced by three institutional mechanisms – coercive, mimetic, and normative isomorphism – that create and diffuse a common set of values, norms, and rules to produce similar practices and structures across organizations that share a common organizational field [27]. Institutional theory conveys how organizations should behave [28,26] and how organizations should take action in response to environmental pressures [29,30] that are beyond their control [31].

Following Chen et al., [32] and Gholamy et al., [22], the study focused on the impact of mimetic and coercive pressures on managers' attitudes toward green building practices adoption. Coercive pressures are exerted by external bodies through formal or informal power. Normally coercive pressure arises from regulatory pressure and customer pressure. Government agencies or rules and regulations are an example of normative pressures that influence organizational behavior. Most of the literature supports the regulatory forces as coercive pressure [27]. Thus, environmental and other regulations are used as a key driver for coercive pressure. Firms may have better environmental performance when facing higher regulatory pressure. In the meantime, this creates a positive impact as consumers are also concerned about the level of involvement of businesses in adopting environmentally friendly activities [33]. With that, one of the challenges for a business aiming to be sustainable is to deal with the growing demand from consumers for businesses to practice environmental protection [34]. According to Manaktola and Jauhari [35], the environmental performance of a firm can be considered as one of the attributes of its products that deliver benefits to customers. Environmental issues are considered negative externalities of a firm. Thus, pressure arising from consumers as well as regulatory bodies will force managers to adopt green building practices.

Mimetic pressures occur when an organization follows successful competitors in the industry. According to DiMaggio and Powell [27], a mimetic process occurs when an organization models itself on other organizations when that organization is in an uncertain environment (i.e., the organization's goals are ambiguous and it has a poor understanding of organizational technologies). Organizations tend to model themselves after other organizations they believe are well managed and able to survive in a competitive environment. These organizations do not intentionally serve as models, but other organizations view them as a convenient source of information to reduce uncertainty. According to Jennings and Zandbergen [36], firms sometimes implement programs (e.g., environmentally friendly programs, green products, and environmental marketing programs) without studying the impacts, but rather due to competitive pressure. Managers will tend to lead organizations due to both formal and informal pressure from other firms. In this context, the hypothesis will be proposed as follows.

H3: High coercive pressure will lead to a more positive attitude towards Green building practices adoption.
H4: High mimetic pressure will lead to a more positive attitude towards Green building practices adoption.

2.1.4 Adoption of green building practices and environmental performance

Sustainability deals with three types of performance dimensions such as economic (financial), social and environmental performance which are necessary for the environment as well as organizations [37]. Organizations have to pay great attention to environmental protection and management [38]. Environmental issues (e.g., climate change, pollution, energy crisis, etc.) create challenges as well as opportunities for business organizations.

There are several environmental activities associated with these different types of green strategies that can be implemented by the manufacturers across their supply chain. However, because of resource constraints, no business can address all environmentally conscious issues and undertake all green practices, so they have to identify the practices that are strategically important to their business. Masumik et al., [39] in their study has analyzed the importance-performance of three types of green strategy, namely, pollution prevention, product stewardship, and clean technology concerning environmental and competitive performance among Malaysian EMS ISO 14001 certified manufacturers. Gholami et al., [22] also has identified that the green IS adoption of a firm can be observed by the extent to which the organization is embodying the green strategies of pollution prevention, product stewardship, and sustainable development. In line with the conceptual model, the study proposed the following hypothesis.

H5a: Green building practices adoption for pollution prevention is associated with the environmental performance of a firm.
H5b: Green building practices adoption for product stewardship is associated with the environmental performance of a firm.
H5c: Green building practices sustainable development is associated with the environmental performance of a firm.

3. METHODOLOGY

3.1 Study Area

Sri Lankan apparel is exported to a large number of countries all over the world including the European Union and the United States of America. The industry gives the most significant and dynamic contribution to the country's economy. It has demonstrated tremendous growth over the past four decades and has today become the country's primary foreign exchange earner. Sri Lanka's apparel industry started in the 1960s mainly producing textile and clothing for the local market under heavy protection. It was only a decade later that the concept of readymade garments with the focus on export orientation began, ultimately expanding and becoming a contender in the global apparel industry in the 1980s, post liberalization of the Sri Lankan economy in 1977. By 1992, the apparel industry had become the largest foreign exchange earner in the country (USD 400 million) overtaking the tea industry. The sector which accounted for 27% of all exports in 1986 today accounts for 44% of the total exports of the country. The apparel sector realized a growth of 4.7% in 2017 with exports worth US$ 5,015.12 million in exports in 2017 compared to US$ 4.8 billion in 2016. In 2018 it's being US $ million 5299.88. According to the statistics of the Export Development Board, there are about 300 apparel exporters in Sri Lanka. Out of those factories and offices, most of the apparel industries are located in the Western Province of Sri Lanka because of better infrastructure facilities and proximity to Colombo harbor.

The industry now is in dilemma on a green concept which where the world now implies that the industry is not sustainable where cheap production process, unhealthy practices of construction industry results high in water pollution and air pollution causing severe environmental pollution. This creates a negative perception of the industry. Thus, the apparel industry now focusing more on environmental performance to improve its efficiency, profitability, and corporate image in the global market. With this setting, considering extent of real estate holding and the nature of the global business competition, the study focused on the apparel industry as the area of study.

3.2 Sample Size Data Collection Procedure and Data Analysis Process

This quantitative study employed an adopted questionnaire of Gholami et al., [22], in which the items used to measure Coercive Pressure (3 items), Mimetic Pressure (3 items), Attitudes (3 items), Consideration of Future Consequence (4 items), Green Building Practices for Pollution Prevention (3 items), Green Building Practices for Product Stewardship (2 items), Green Building Practices for Sustainable Development (4 items), and Environmental Performance (6 items). The all reflective and formative statements of Gholami et al., [22] was rephase in line with social, cultural, pollical, economic and legal context of Sri Lanka. The adopted questionnaire used only reflective statements.

The study used PLS-SEM, and analyzed the relationship using the statistical software of Smart PLS 3.2.4 [40] PLS- SEM is a multivariate approach used to estimate path models with latent variables. The study used PLS because it makes minimal demands on the data distributions, sample size, and measurement scales and as this study was exploratory; it is a better tool to explain the data. Further, a bootstrapping method (5000 resamples) was used to determine the significance levels of the loadings, weights, and path coefficients.

The most widely used minimum sample size estimation method in PLS-SEM, in the field of IS as well as other fields, is the "10-times rule" method [41,42]. Accordingly based on the 10-times rule that the sample size should be greater than 10 times the maximum number of inner or outer model links pointing at any latent variable in the model [43] is equal 30 proposed model. The questionnaire was distributed to managers of the apparel industry of Sri Lanka which is identified as the population of the study. The study employed two enumerators to collect the data who reached 300 respondents. Out of contacted respondents, the study can safely collect 103 questionnaires. However, out of the 103 questionnaires only 86 were an acceptable level where 17 questioners were partly completed.

4. Results and Discussion

The respondent of the study includes executive-level employees of apparel sector companies with private ownership and their product market is on a global level. The demographic profile of the respondents is shown in Table 1.

4.1 Measurement Model

As a measurement model designed in reflective mode, the PLS assessment is focused on internal consistency reliability, and convergent and discriminant validity analysis.

Table 1. Demographic profile of the respondents

Demographic Profile	Percentage
Gender	
Male	92
Female	08
Age Group (Years)	
20-40	70
40-60	30
Experience in Apparel Sector (Years)	
0-10	70
10-20	30
Level of Education	
Up to GCE Advanced Level	14
Basic or Masters Degree	86
Functional Area of the Current Job	
Finance	08
HRM	21
Production	24
Engineering	13
Administration	20
Operational	14

Source: Field Data (2019)

Cronbach's alpha and composite reliability (CR) is with the threshold of 0.7 used to measure the internal constancy. Average Variance Extracted (AVE) and factor loading was used to assess convergence validity. As per Hair et al., [44], loading should be above 0.7, and AVE should be greater than 0.5 for the threshold level of convergent validity. The discriminate validity is measured based on cross-loading between constructs. The cross-loading indicator should load high on its own constructs but low on other constructs [44].

Table 2 confirmed that Cronbach's alpha and CR are within the threshold limit which established the internal consistency. The loadings for all reflective items exceeded the recommended value of 0.7 while the AVE was in the range of 0.678 and 0.897 which also exceeded the recommended value of 0.5. This confirmed the establishment of convergent validity.

The discriminant validity estimates based on cross-loading confirmed the construct is truly distinct from other constructs by empirical standards. Refer Table 3.

Table 2. Internal consistency and convergent validity

	Lording	AVE	CR	Cronbach's alpha
Attitude		0.689	0.869	0.775
AT1	0.794			
AT2	0.825			
AT3	0.870			
Consideration of Future Consequences		0.678	0.893	0.839
CFC1	0.856			
CFC2	0.911			
CFC3	0.701			
CFC4	0.843			
Coercive Pressure		0.819	0.931	0.895
CP1	0.880			
CP2	0.867			
CP3	0.965			
Environmental Performance		0.776	0.954	0.941
ENV1	0.791			
ENV2	0.848			
ENV3	0.870			
ENV4	0.893			
ENV5	0.942			
ENV6	0.931			
Mimetic Pressure		0.779	0.913	0.876
MP1	0.938			
MP2	0.805			
MP3	0.899			
Pollution Prevention		0.897	0.963	0.942
PP1	0.935			
PP2	0.957			
PP3	0.949			
Product Stewardship		0.878	0.935	0.864
PS1	0.918			
PS2	0.956			
Sustainable Development		0.806	0.943	0.920
SUS1	0.872			
SUS2	0.916			
SUS3	0.898			
SUS4	0.905			

Source: Field Data (2019)

Table 3. Cross loadings

	AT	CFC	CP	ENV	MP	PP	PS	SUS
AT1	**0.794**	0.397	0.043	0.434	0.149	0.610	0.319	0.457
AT2	**0.825**	0.620	0.236	0.475	0.235	0.322	0.345	0.483
AT3	**0.870**	0.544	0.262	0.646	0.243	0.485	0.433	0.631
CFC1	0.589	**0.856**	0.270	0.320	0.128	0.184	0.305	0.260
CFC2	0.555	**0.911**	0.283	0.322	0.175	0.335	0.282	0.277
CFC3	0.429	**0.673**	0.117	0.266	0.017	0.438	0.328	0.207
CFC4	0.481	**0.843**	0.352	0.345	0.175	0.266	0.366	0.300
CP1	0.114	0.182	**0.880**	0.210	0.436	0.251	0.180	0.189
CP2	0.146	0.222	**0.867**	0.037	0.338	0.154	0.292	0.013
CP3	0.269	0.362	**0.965**	0.242	0.401	0.278	0.221	0.217
ENV 1	0.470	0.253	0.137	**0.791**	0.287	0.428	0.538	0.738
ENV 2	0.523	0.367	0.231	**0.848**	0.329	0.751	0.724	0.804
ENV 3	0.605	0.384	0.147	**0.870**	0.301	0.781	0.597	0.848
ENV 4	0.503	0.228	0.112	**0.893**	0.360	0.572	0.616	0.840
ENV 5	0.627	0.401	0.222	**0.942**	0.467	0.817	0.736	0.915
ENV 6	0.606	0.373	0.170	**0.931**	0.422	0.732	0.659	0.859
MP1	0.309	0.254	0.490	0.359	**0.938**	0.409	0.415	0.311
MP2	0.133	-0.002	0.236	0.357	**0.805**	0.380	0.416	0.341
MP3	0.124	-0.022	0.269	0.417	**0.899**	0.388	0.420	0.415
PP1	0.564	0.357	0.226	0.726	0.372	**0.935**	0.600	0.715
PP2	0.535	0.342	0.245	0.753	0.461	**0.957**	0.681	0.751
PP3	0.536	0.395	0.265	0.737	0.424	**0.949**	0.665	0.757
PS1	0.267	0.211	0.152	0.636	0.392	0.649	**0.918**	0.598
PS2	0.530	0.488	0.300	0.731	0.468	0.640	**0.956**	0.700
SUS 1	0.653	0.402	0.225	0.834	0.420	0.848	0.707	**0.872**
SUS 2	0.597	0.375	0.190	0.886	0.389	0.835	0.686	**0.916**
SUS 3	0.533	0.173	0.077	0.844	0.255	0.553	0.543	**0.898**
SUS 4	0.505	0.185	0.106	0.842	0.292	0.560	0.567	**0.905**

Source: Field Data (2019)

With the establishment of internal consistency, convergent validity, and discriminant validity, the study moved into the assessment of the structural model.

4.2 Structural Model and the Hypothesis Testing

The coefficient of determination (R2) analysis confirmed that the research model explained 91.2% of the differences in environmental performance and also explained 33%, 22%, and 41% of the percent of the variance in green building adoption for pollution prevention, product stewardship and sustainable development respectively. Accordingly, the predictive accuracy of the model was established. The results showed the effect of exogenous variables on endogenous variables of the study. According to Cohen [45], R2 value above 0.13 was identified as moderate levels of predictive accuracy. As the results are well above the threshold of 0.13, the study confirmed the moderate level of the predictive accuracy of the model.

The results of the size and significance of the path model are given in Table 4. It is confirmed that the attitudes of managers positively contributed to pollution prevention, product stewardship, and sustainable development with the beta value of 0.549, 0.326, and 0.719 respectively with p values less than 0.05. However, results confirmed that consideration of future consequences is not significantly supported by pollution prevention, product stewardship, and sustainable development. On the other hand, it is noted that mimetic pressure and coercive pressure do not significantly support the attitude of the manager.

Finally, it was confirmed that action of green building practices of product stewardship and sustainable development supported environment performance positively with the path coefficient of 0.127 and 0.821 respectively with the p value of less than 0.05. However, pollution prevention was not supported by environmental performance. The results of the structural model are given in Fig. 2.

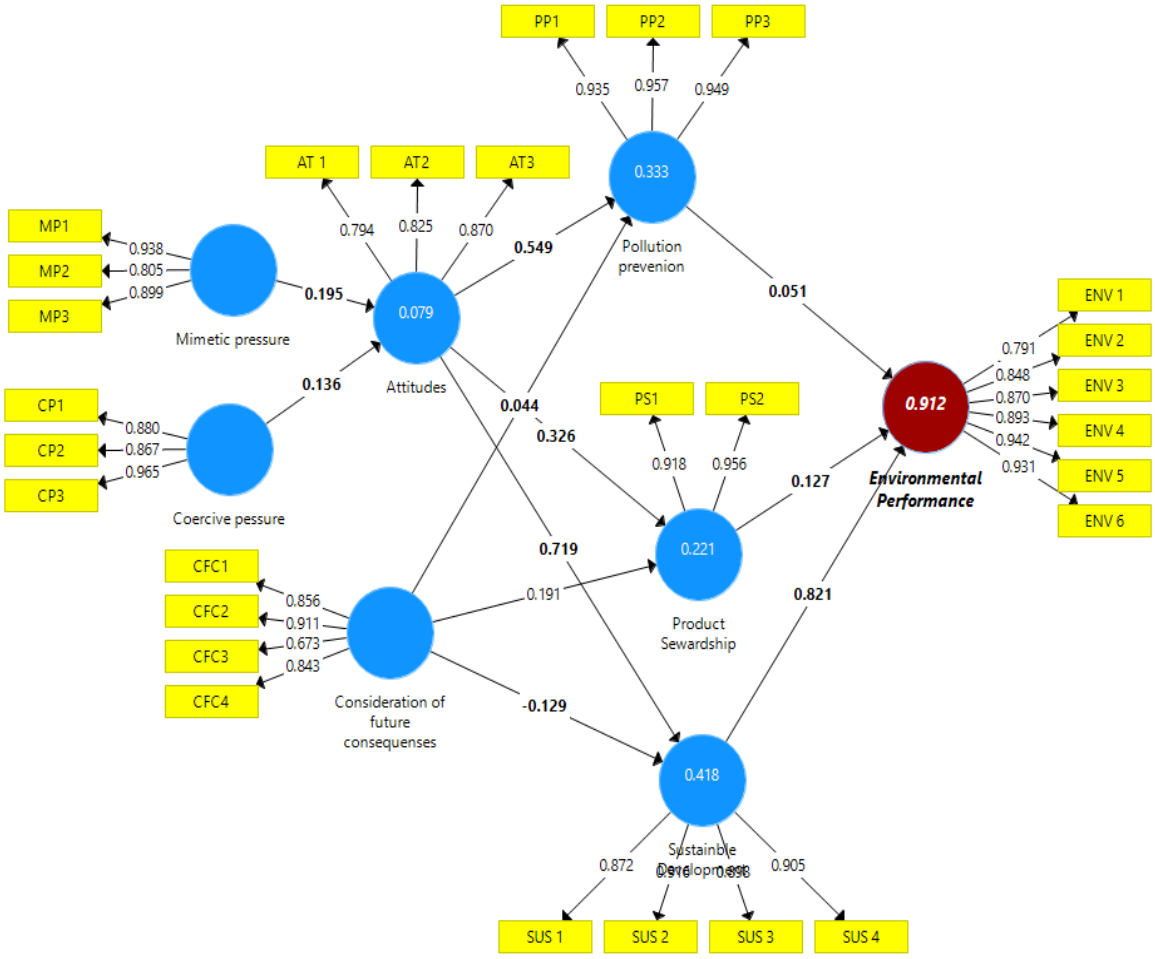

Fig. 2. Results of the structural model
Source: Results of SmartPLS analysis (2019)

5. DISCUSSION

There was a significant relationship between managers' attitudes and green building adoption which includes pollution prevention, product stewardship, and sustainable development. This confirmed that managers as policymakers of the organization are aware that environmentally supportive design and building are important to respond to a global environmental issue. The results are in line with what Chan et al. [2] and Tran [16] confirmed where drivers such as perceived advantages and disadvantages of green building technology and top management leadership are important in green building adoption. Further, it is emphasized that the view of the manager and his beliefs become significant contributors to green adoption in the apparel industry in Sri Lanka. Therefore, policymakers and regulatory organizations in Sri Lanka including advocates of education should deepen their work on popular green building concepts at the secondary and tertiary level education system. This leads to creating awareness of green building. In the practical context, it is noted that the most important strategy for green building adaptation in Sri Lanka is to create an awareness campaign about the benefits of green building. Special focus should be on executive staff members of the organization. The campaign should be focused on the impact of green building on pollution prevention, product stewardship, and sustainable development. This contributes to creating positive attitudes within managers' mindsets which positively contributes to green building.

However, results portrait that coercive pressure does not have a significant impact on attitudes toward green building practice adoption. As such it can be argued that pressure arises from stakeholders on potential impose like product purchasing rules and regulations, sanctions, and punishments do not have a significant impact on

Table 4. The size and significance of the path model

Hypothesis	Path Coefficient	T Value	P Values	Confidence Interval		Decision
				2.50	97.50	
H1a: Attitudes_ -> Pollution prevention	0.549	4.968	0	0.328	0.749	Supported
H1b: Attitudes_ -> Product Stewardship	0.326	2.286	0.023	0.044	0.594	Supported
H1c: Attitudes_ -> Sustainable Development_	0.719	7.490	0	0.541	0.900	Supported
H3: Coercive pressure_ -> Attitudes_	0.136	0.867	0.387	-0.288	0.441	Not Supported
H2a: Consideration of future consequences_ -> Pollution prevention	0.044	0.322	0.748	-0.216	0.302	Not Supported
H2b: Consideration of future consequences_ -> Product Stewardship	0.191	1.575	0.116	-0.030	0.426	Not Supported
H2c: Consideration of future consequences_ -> Sustainable Development_	-0.129	1.119	0.264	-0.347	0.099	Not Supported
H4: Mimetic pressure -> Attitudes_	0.195	1.426	0.154	-0.195	0.414	Not Supported
H5a: Pollution prevention -> Environmental Performance	0.051	0.948	0.344	-0.048	0.157	Not Supported
H5b: Product Stewardship -> Environmental Performance	0.127	3.036	0.003	0.048	0.214	Supported
H5c: Sustainable Development_ -> Environmental Performance	0.821	14.813	0	0.707	0.931	Supported

Source: Field Data (2019)

the attitudes towards the adoption of green building practices. In the same way, mimetic pressure, in other words, pressure rises when companies engage in a competition seeking superior performance did not have any significant relationship with green building adoption. This emphasis that external pressure does not have impact on green initiatives in the construction industry. This finding is contradictory with the empirical study of Tran et al., [16] which confirmed the social demand for green building create significant impact on green building adaptation. This is mainly due to the early stage of the green rating system and green building technology in Sri Lanka where few green-rated buildings existed. Further, cost factors in the conversion of existing buildings to green buildings discourage firms' competitors, suppliers and customers influence their attitude toward green building adoption and are likely to influence senior management attitude, and few companies measure and publicize green building performance. However, the development of green building technology and gradual popularity of the concept, and the external pressure may have a positive impact on the attitudes of managers toward green building adoption within the next decade. In this context, it can argue that the external pressure does not have any impact on the attitude of the manager on green building adoption. However, there may have an indirect effect or general attitude on environmental protection which leads to general attitudes of managers toward going green.

The results confirmed that green building practice adoption on product stewardship and environmental performance positively contribute to the environmental performance of the apparel industry. This confirmed that green building practices in the apparel industry, especially on building designs, contractors/builders, real estate managers, and building maintenance teams, and uses take responsibility for minimizing the building's environmental impact throughout all stages of its life cycle, including the end-of-life management. This positively contributes to the environmental performance of the respective company. Not only that adoption of sustainable development green building practices includes minimum consumption of material and energy, reusability and recyclability of the building

material and minimum environmental impacts, and embodied energy support for the environmental performance of the organization. The concept of sustainability is rapidly growing and expanding. As such it is the time gap between green adaptation using technology and the theoretical foundation of green building.

The study makes important theoretical contributions to the green building literature. The study validates that the green building practices of an organization are the outcome of the beliefs of decision-makers on the green concept. On the other hand, it is noted that most of the research work on drivers of green building is found in the US, Australia, UK, India, and China [17] and by and large the results of this study contribute to the knowledge gap of green building drivers of developing countries.

6. CONCLUSION

The BAO framework highlighted the perception of human beings on technology adoption. Gholami et al., [22], validate this model in the context of green IS adoption and review how personality contributes to the acceptance of green technology. This study made a next-level view on green building technology acceptance on environmental performance and how the perception of managers supported to results. The results of the study confirmed that neither coercive pressure nor mimetic pressure does not influence the attitude of the manager on green building adoption. Also, consideration of future consequences does not lead to sustainable development. Thus, it concludes that only the general attitudes of environment and perception will lead to the adaptation of the green building concept in Sri Lanka. This helps to understand the reason behind the poor adaptation of the green building concept within Sri Lankan industrial spectrum.

In the context of policy decisions on green building adaptation, it is recommended that external pressure on customers, competitors, regulatory authority, and society is more important. As such creating external pressure especially through regulators of the building/construction industry of Sri Lanka may lead to a successful implementation of the green building concept. Thus, coercive pressure from policymakers is important because business incentives (mimetic pressure) are lacking in Sri Lanka. Further, a long-term awareness program on the green building concept and its advantages should be on the government policy agenda which may lead to positive strategic real estate decisions for the companies.

CONSENT

All the interviewees consent the use of their views for analysis and publication purpose of the study.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. UNEP. Buildings and climate change—Summary for decision-makers; 2019. Available:http://www.unep.org/sbci/pdfs/sbci-bccsummary.pdf
2. Chan APC, Darko A, Ameyaw EE. Strategies for promoting green building technologies adoption in the construction industry—An international study. Sustainability. 2017;9(6):969.
3. UNEP, Making Peace with Nature—A scientific blueprint to tackle the climate, biodiversity and pollution emergencies, UNEP Secretariat, Nairobi; 2021.
4. Zuo J, Zhao ZY. Green building research–current status and future agenda: A review. Renewable and Sustainable Energy Reviews. 2014;30:271-281.
5. MacNaughton P, Cao X, Buonocore J, Cedeno-Laurent J, Spengler J, Bernstein A, Allen J. Energy savings, emission reductions, and health co-benefits of the green building movement. J Expo Sci Environ Epidemiol. 2018;28(307):12.
6. Robichaud LB, Anantatmula VS. Greening project management practices for sustainable construction. Journal of Management in Engineering. 2011;27(1): 48-57.
7. Yudelson J. The green building revolution. Island Press; 2010.
8. GBCSL, Green Builing Council of Sri Lanka, GBCSL; 2021.

Available:https://srilankagbc.org/
9. Banerjee SB, Iyer ES, Kashyap RK. Corporate environmentalism: Antecedents and influence of industry type. Journal of Marketing. 2003;67(2):106-122.
10. Lee S, Lee B, Kim J, Kim J. A financing model to solve financial barriers for implementing green building projects. The Scientific World Journal; 2013.
11. Nalewaik A, Venters V. Cost benefits of building green. IEEE Engineering Management Review. 2010;38(2):77–87.
12. Miller N, Spivey J, Florance A. Does green pay off?. Journal of Real Estate Portfolio Management. 2008;14(4):385-400
13. Eichholtz P, Kok N, Quigley JM. Sustainability and the Dynamics of green Building. European Centre for Corporate Engagement, Maastricht; 2010.
14. Wiley JA, Benefield JD, Johnson KH. Green design and the market for commercial office space. The Journal of Real Estate Finance and Economics. 2010;41(2):228-243.
15. Fuerst F, McAllister P. Green noise or green value? Measuring the effects of environmental certification on office values. Real Estate Economics. 2011;39(1):45-69.
16. Tran Q, Nazir S, Nguyen TH, Ho NK, Dinh TH, Nguyen VP, et al. Empirical examination of factors influencing the adoption of green building technologies: The perspective of construction developers in developing economies. Sustainability. 2020;12(19):8067.
17. Darko A, Zhang C, Chan AP. Drivers for green building: A review of empirical studies. Habitat International. 2017;60:34-49.
18. Juraitė K. Construction of public opinion on environmental issues in the media. Sociologija. Mintis ir Veiksmas. 2002;2:90-99.
19. Halawi L, McCarthy R. Which theory applies: An analysis of information systems research. Issues in Information Systems. 2006;7(2):252.
20. Venkatesh V, Morris MG, Davis GB, Davis FD. User acceptance of information technology: Toward a unified view. MIS Quarterly. 2003;425-478.
21. Malkani A, Starik M. The green building technology model: An approach to understanding the adoption of green office buildings. Journal of Sustainable Real Estate. 2014;5(1):131-148.
22. Gholami R, Sulaiman AB, Ramayah T, Molla A. Senior managers' perception on green information systems (IS) adoption and environmental performance: Results from a field survey. Information & Management. 2013;50(7):431-438.
23. Melville NP. Information systems innovation for environmental sustainability. MIS Quarterly. 2010;1-21.
24. Schultz PW, Shriver C, Tabanico JJ, Khazian AM. Implicit connections with nature. Journal of Environmental Psychology. 2004;24(1):31-42.
25. Strathman A, Gleicher F, Boninger DS, Edwards CS. The consideration of future consequences: Weighing immediate and distant outcomes of behavior. Journal of Personality and Social Psychology. 1994; 66:742-752.
DOI: 10.1037/0022-3514.66.4.742
26. Scott WR. Institutions and Organizations, Sage, R. (2001). Institutions and organizations (2nd ed.). Thousand Oaks, CA; 1995.
27. DiMaggio PJ, Powell WW. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review. 1983;147-160.
28. Hatch MJ, Schultz M. Relations between organizational culture, identity and image. European Journal of Marketing; 1997.
29. Grewal R, Dharwadkar R. The role of the institutional environment in marketing channels. Journal of Marketing. 2002; 66(3):82-97.
30. Hoffman AJ. Linking organizational and field-level analyses: The diffusion of corporate environmental practice. Organization & Environment. 2001;14(2): 133-156.
31. Hoffman ML. Moral internalization: Current theory and research. In Advances in experimental social psychology. Academic Press. 1977;10:85-133.
32. Chen X, Yi N, Zhang L, Li D. Does institutional pressure foster corporate green innovation? Evidence from China's top 100 companies. Journal of Cleaner Production. 2018;188:304-311.
33. De Pelsmacker P, Janssens W, Sterckx E, Mielants C. Consumer preferences for the marketing of ethically labelled coffee. International Marketing Review; 2005.
34. Follows SB, Jobber D. Environmentally responsible purchase behaviour: A test of

a consumer model. European Journal of Marketing; 2000.
35. Manaktola K, Jauhari V. Exploring consumer attitude and behaviour towards green practices in the lodging industry in India. International Journal of Contemporary Hospitality Management; 2007.
36. Jennings PD, Zandbergen PA. Ecologically sustainable organizations: An institutional approach. Academy of Management Review. 1995;20(4):1015-1052.
37. Elkington J. Cannibals with Forks: The triple bottom line of 21st century business. Capstone: Oxford; 1997.
38. Renwick DW, Redman T, Maguire S. Green human resource management: A review and research agenda. International Journal of Management Reviews. 2013;15(1):1-14.
39. Masoumik SM, Abdul-Rashid SH, Olugu EU, Raja Ghazilla RA. A Strategic Approach to Develop Green Supply Chains. 12th Global Conference on Sustainable Manufacturing, Procedia CIRP. 2015;26:670–676.
40. Ringle Christian M, Wende Sven, Becker Jan-Michael. SmartPLS 3. Boenningstedt: SmartPLS; 2015.
Available:https://www.smartpls.com
41. Hair JF, Ringle CM, Sarstedt M. PLS-SEM: Indeed a silver bullet. Journal of Marketing theory and Practice. 2011;19(2):139-152.
42. Peng DX, Lai F. Using partial least squares in operations management research: A practical guideline and summary of past research. Journal of Operations Management. 2012;30(6):467-480.
43. Goodhue DL, Lewis W, Thompson R. Does PLS have advantages for small sample size or non-normal data?. MIS Quarterly. 2012;981-1001.
44. Hair Jr, JF, Hult GTM, Ringle CM, Sarstedt M. A primer on partial least squares structural equation modeling (PLS-SEM). Sage Publications; 2021.
45. Cohen MP. Determining sample sizes for surveys with data analyzed by hierarchical linear models. Journal of Official Statistics. 1998;14(3):267.

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