A Quantified Model for Assessment of Drivers of Acquiring Green Buildings by Potential Clients

Abstract

In the context of an ongoing crisis related to climate change resulting from human activities as well as global attempts to reverse or mitigate this process, the role of sustainable buildings is of utmost importance. Although This study is a part of the continuous effort to investigate the attitudes of potential clients toward Green Buildings (GB) from the drivers' point of view. The proposed study developed a quantified model for assessing the drivers in the context of a developing country, thus, filling the gap in the field. The methodology adopted in this study is of a mixed nature and is based on (a) an extensive literature review aimed to identify some of the most influential drivers in the international context, and (b) an analysis of primary data collected via a survey among the general population (potential clients) to understand their perceptions regarding the identified drivers (factors). Various factors that may trigger potential homebuyer's purchase intention were combined and presented in a form of a conceptual model. The structural equation modeling technique, which combines factor analysis and multiple regression, was applied to carry out the analysis of the obtained data. This is the primary technique to examine and quantify the relative influence of latent variables on the measured phenomena. The results of the study indicate that the "client's environmental concern" has the highest impact on the attitude toward purchasing GB (β=0.7812). In turn, "marketing and promotion" efforts (especially promotional events and a word of mouth) were found to be the highest and second impact to intention to purchase (β=0.7402) and attitude toward purchasing (β=0.6617) "Client's awareness and knowledge" (β=0.7279) and "governmental incentives" (including tax incentives, grants, and soft loan incentives) were identified as the next most influential drivers. Despite the limitations that could be linked to the demographics, the findings of the paper identified and ranked the potential drivers which are mostly related to awareness, marketing, and incentives from the

government. It is recommended to follow the presented methodology to identify the drivers of acquiring GBs in any context. However, the identified and ranked list of drivers could be referred as an indicative list which should be taken into consideration while developing policies and strategies.

Keywords: Cambodia; purchase intention; green building; Structural Equation Modelling.

1 Introduction

The construction industry has been considered to be an engine of economic growth (Ozturk, Durdyev, Aras, & Banaitis, 2019), particularly in developing countries, where the sector generates employment and triggers other sectors due to cross-sectoral linkages (Durdyev & Ismail, 2016). Despite its economic contribution, the sector continues to detrimentally impact the environment (Tokbolat, Karaca, Durdyev, & Calay, 2019a), which has concerned the frontline of the sector around the globe (Nykamp, 2017). Reportedly, the sector consumes about 32% of unrenewable energy, 40% of raw materials, 25% of timber as well as 16% of water (Durdyev, Ismail, Ihtiyar, Abu Bakar, & Darko, 2018). In addition to the consumption, the sector generates 40% of construction waste (Jaillon, Poon, & Chiang, 2009) and responsible for about 39% of CO_2 emissions (World Green Building Council, 2019). Various techniques and technologies have been proposed to tackle the global environmental problems caused by the construction sector, such as prefabrication (off-site manufacturing) to reduce waste generation (Harris et al., 2019; Jaillon et al., 2009), lean manufacturing for energy reduction (Cai et al., 2019) and green roof technology to mitigate climate change in urbanized areas (Mahdiyar et al., 2019). As a new technology, green buildings (GBs) have reportedly been known for their potential to reduce the built environment's detrimental impact on the environment (Rock et al., 2019). Thus, several financial schemes have been introduced for the wider promotion and adoption of the GB technology around the globe, regardless of the nation's socio-economic status (Portnov et al., 2018). However, the uptake of the GB technology, which is attributed to various reasons (e.g.

lack of awareness, stakeholder resistance), is still at the moderate level (Rock et al., 2019; Tokbolat et al., 2019a). Likewise, in Cambodia, the adoption of GBs is still developing and has been continuously attracting investors' interest, particularly from the pioneers of the region like Singapore and Thailand. One of those investments is the center established by the government of Singapore, which serves as a training center for GB design and practices (Nguyen, Gray, & Skitmore, 2016). There have been twenty-one activities; however, only seven facilities have been certified by various GB rating systems, while the LEED (Leadership in Energy and Environmental Design) was the most widely used (The Green Building Information Gateway, 2020). The award-winning Vattanac Capital is one of the first facilities in the country that were certified by LEED. Although the number of certified facilities does not look satisfactory, these examples clearly show the intention toward shifting the built environment in Cambodia to much greener practices.

A review of the literature pool reveals that GBs have been robustly studied by focusing on various topics. The GB assessment tools and their utilization (Rastogi, Choi, Hong, & Lee, 2017), drivers and barriers (Kang, Ou, & Mak, 2017; Martek, Hosseini, Shrestha, Edwards, & Durdyev, 2019), and evaluating the attitudes of the potential GB clients (Tokbolat & Calay, 2015; (Olanipekun, Xia, Hon, & Hu, 2017) are some of those topics in the GB literature pool have been studied in various geographical contexts. However, research on GBs in the Cambodian context has received very little attention and, due to the country-specific legislative and cultural environment, it requires a specific diagnosis. Moreover, studies that are focused on the factors influencing the GB clients' purchase intention have failed to quantify the factors' collaborative influence on the purchase intention. Therefore, the absence of such a study in Cambodia has motivated the authors to research the subject using the potential clients' perspective as a starting point. This consideration implies that the proposed research activity is novel due to its specific focus on a developing country with no previous research published on this topic. Thus, the findings of the study will be very useful

for interested parties in making decisions and conducting further research to promote the integration GBs in Cambodia.

The paper continues by presenting a brief overview of the topic and a review of the context. Afterwards, the methodological approach (adopted in this study) is presented, which is followed by the results of the data analysis. The paper ends up with a discussion of the significant outcomes and offers several recommendations that could be implemented for the wider adoption of GBs in Cambodia and other developing countries with the same socio-economic status.

2 Literature review

2.1 Green Buildings (GBs): Overview

The world population has dramatically increased in the last two decades (Ritchie & Roser, 2019) – therefore increased consumption and demand for shelters –, which caused depletion of non-renewable resources (Rock et al., 2019). Being a primary provider of shelters and infrastructure, the built environment has had a huge impact on this (Durdyev, Ismail, & Kandymov, 2018). As a result, there has been an increasing demand for dwellings that are environmentally friendly, energy-efficient, constructed with minimal waste, and known for their healthy/quality indoor environment (Portnov et al., 2018). While GBs have been defined in various ways, the most common one is “healthy and resource-efficient dwellings that are designed and built based on environmental principles” (Kibert, 2016). The consensus is that green dwellings offer a wide range of benefits, which are of strategic importance in tackling the adverse impact of the built environment (Tokbolat, Karaca, Durdyev, Nazipov, & Aidyngaliyev, 2018). Some of these benefits are a healthy and comfortable environment for dwellers (Whang & Kim, 2015), efficiency in resource consumption (Tokbolat et al., 2019a), and long-term cost efficiency (Durdyev, Ismail, Ihtiyar, et al., 2018). For instance, studies reported from Germany and the US sufficiently proved that GBs are impressively better, comparing to conventional dwellings, in terms of

energy and potable water efficiency (Kibert, 2016). Overall, the trend towards popularization of GBs is noteworthy. It has started in 1970th when the general principles of sustainability started being introduced across various industries including the construction sector (Komurlu, Arditi, & Gurgun, 2014). This is evident from the fact that the overall number of "green" certified buildings under, for example, the LEED, BREEAM (Building Research Establishment Environmental Assessment Method) and other similar green building certification systems is constantly growing (Ali & Al Nsairat, 2009; Portnov et al., 2018).

Although, this topic was widely studied in terms of identifying the drivers and barriers of GBs as well as the benefits, there is a lack of research, particularly in the context of developing countries which attempts to see the intention to acquire GBs among general population (Gou, Lau, & Prasad, 2013; Matisoff, Noonan, & Flowers, 2016; Mulligan, Mollaoğlu-Korkmaz, Cotner, & Goldsberry, 2014; Qian, Fan, & Chan, 2016; Teng, Wang, Wu, & Xu, 2016). Thus, this paper attempts to fill this gap by running a wide scale survey among the general population of Cambodia to understand the driving forces which define their willingness to purchase GBs in the future.

2.2 Factors affecting End-users' Purchase Intention

With an increase in environmental concern, consumers have started to demand the products that are manufactured or processed based on environmental principles (Kanchanapibul, Lacka, Wang, & Chan, 2014). Likewise, in the built environment, resource depletion has led to the wider adoption of green practices within the construction sector. The construction companies and industry stakeholders have responded to the green imperative by introducing a variety of sustainable materials and designs (Chan et al., 2013) and innovative practices (Lin et al., 2013).

Purchase intention (PI), which has been an important concept of behavioral studies (Hartmann & Apaolaza-Ibáñez, 2012), has commonly been referred to as a consumer's willingness to buy a service or product (N. Rashid, 2009). Spears and Singh (2004) defined

it as a plan that is consciously made by a consumer to show an effort to buy a product. Attitude (ATT), consumer's perceived behavioral control (PBH), as well as a subjective norm, are the determinants of the PI, according to the Theory of Planned Behavior (TPB) (Leibao Zhang, Fan, Zhang, & Zhang, 2019). PI towards green products has been proven to be a significant predicting rationale behind the behavior demonstrated for green purchase (GP) (Kanchanapibul et al., 2014; Karatu & Mat, 2015). An earlier study reported by Hong (2013) examined psychological variables as a predicting factor of the PI for GB, while the later study (Hong, 2014) focused on the individual's evaluation of the GB characteristics. In another study, Kanchanapibul et al. (2014) empirically investigated how the young generation is affected by ecological knowledge. In the studies, Sangkakoon, Ngarmyarn, and Panichpathom (2014) investigated how effective the family members in influencing the individual's selection in a dwelling purchase, while Alias, Sin, and Aziz (2010) reported that the high cost and particularly, lack of awareness about the GB concept were the most inhibiting barriers to the customer's purchase decision. A review of the literature reveals that the TPB was used to base theoretical assumptions in the studies that explored PI for green products (including GBs) (Aman, Harun, & Hussein, 2012; Kong, Harun, Sulong, & Lily, 2014; Sangkakoon et al., 2014). However, the present study expands the scope with the inclusion of the macro-business environment factors, such as the government's role and industry credibility.

Despite the benefits offered by green dwellings and barriers inhibiting their adoption, potential end users' willingness to purchase the dwelling is strategically significant. Given this argument, Hu, Geertman, and Hooimeijer (2014) reported the following factors that are motivating potential dwellers to purchase GB in China: commuting options, accessibility to the workplace, price, and air pollution. Moreover, the results demonstrate a reality (environmental concern is not at the priority level) about the implementation of green practices in developing nations, which is attributed to the lack of knowledge about the

features offered by GBs (Durdyev, Ismail, Ihtiyar, et al., 2018; Tokbolat et al., 2019a), the long-term ones in particular. This has further been buttressed by the findings of (Burnett, Chau, Lee, & Edmunds, 2008), where financial, cultural and personal preferences are found to be at the highest level of consideration for customers to make their purchase decision. Wilkinson and Bonde (2012) and Durdyev and Ihtiyar (2020) reported a long payback period, visibility, and institutional problems as the reasons behind the unwillingness of homebuyers to purchase GB. The review of the literature clearly shows that the factors that are motivating potential homebuyers to purchase GB are different depends on the individual's financial status, cultural preferences as well as his/her expectations (Devine & McCollum, 2019). Reflecting the unique attitudes of Cambodian end-users regarding factors that motivate them for GB purchase (the aim of the study) is therefore of strategic importance. Thus, related studies – particularly the international context was acknowledged due to the shortage in the local context – on the subject were reviewed to extract potential factors, which are presented in Table 1.

Table 1. Latent and observed variables (factors) extracted from the literature

Code	Latent and observed variables	References
ATT	**Client's attitude toward purchasing GB**	
ATT1	It would be favourable for me to purchase GB	[1]
ATT2	It would be a good idea to purchase GB	[1, 2]
ATT3	It would be safe to purchase GB	[3]
EOP	**Encouragement of people around the client**	
EOP1	Family members' influence to purchase GB	[4]
EOP2	Close friends' influence to purchase GB	[5]
EOP3	Important people influence to purchase GB	[4, 5]
PBH	**Perceived behavioural control**	
PBH1	Confidence in purchasing GB over conventional building anytime I want	[6]
PBH2	Capability to purchase GB	[6]
PBH3	Willingness, time and resources to purchase GB	[7]
CAK	**Client's awareness and knowledge**	
CAK1	On the evolution of GB	[8]
CAK2	On the need for GB development	[8]

CAK3	On the advantages of GB over conventional building	[8]
MP	**Marketing and Promotion**	
MP1	Advertisements	[9]
MP2	Promotional events (e.g. exhibitions)	[9]
MP3	Word of mouth	[9]
CEC	**Client's environmental concern**	
CEC1	Severe abuse of the environment by mankind	[10]
CEC2	Limits to growth beyond the industrialized society's expansion emerge	[11]
CEC3	Mankind must live in harmony with nature to survive	[11]
GI	**Government incentives**	
GI1	Tax incentives	[12]
GI2	Direct grants	[13]
GI3	A soft loan incentive	[13]
PI	**Purchase intention for GB**	
PI1	I would purchase GB	[5]
PI2	I would live in GB	[5]
PI3	I would recommend GB to other people (i.e. family, friends)	[5]

1 = Maichum, Parichatnon, and Peng (2016); 2 = Ahn, Pearce, Wang, and Wang (2013); 3 = Whang and Kim (2015); 4 = Liobikienė, Mandravickaitė, and Bernatonienė (2016); 5 = Lin Zhang, Chen, Wu, Zhang, and Song (2018); 6 = Kim and Han (2010); 7 = Portnov et al. (2018); 8 = Abidin (2010); 9 = Durdyev and Ihtiyar (2019); 10 = N. R. N. A. Rashid and Shaharudin (2017); 11 = Hartmann and Apaolaza-Ibáñez (2012); 12 = Diyana and Abidin (2013); 13 = Lianying Zhang, Li, and Zhou (2017)

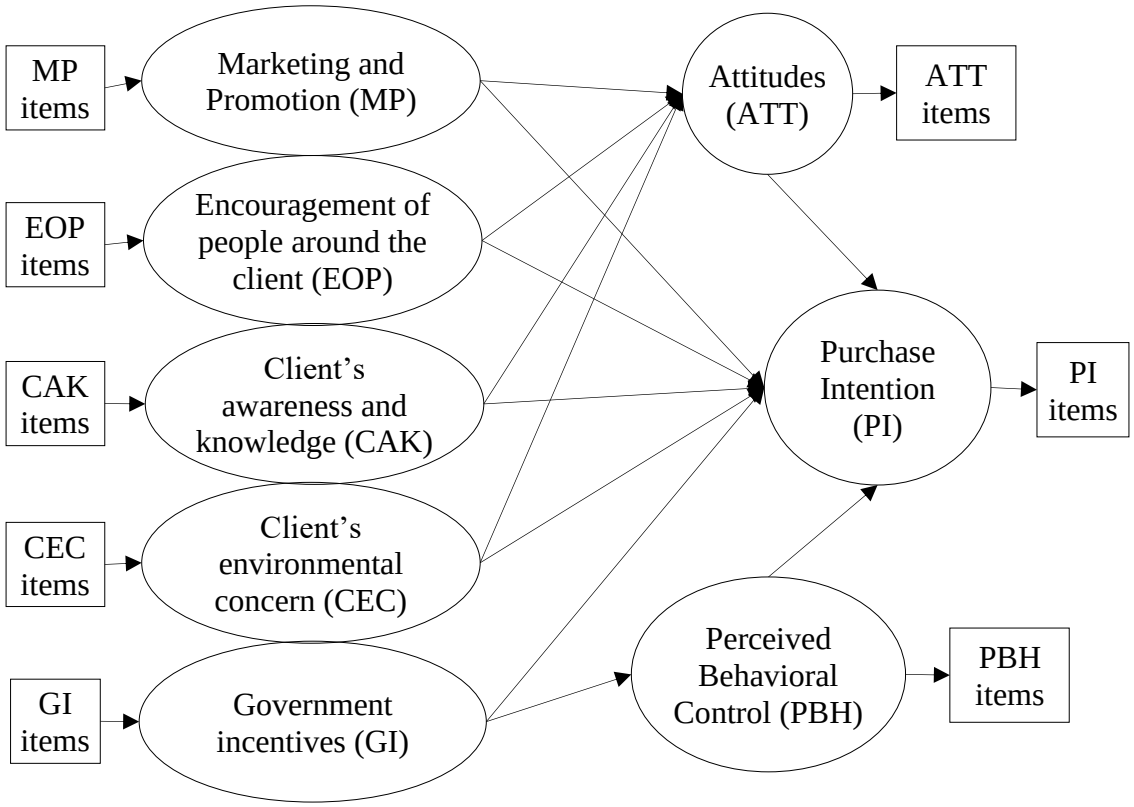
3 Methodology

3.1 A Conceptual Model

No doubt, the GB concept has been introduced to improve – environmentally, economically, and socially – living conditions (Durdyev, Zavadskas, Thurnell, Banaitis, & Ihtiyar, 2018). Despite its benefits, for widespread adoption of the GB concept, an individual's willingness to buy a GB is important. As highlighted in the relevant literature on the subject, various factors may trigger potential homebuyer's PI, for example, cultural preferences, expectations from the GB, and particularly economic factors/financial status. As such, sui generis socio-economic conditions of each nation require a particular diagnosis, which is the departure point of this study. With the inclusion of the macro-business

183 environment factors (i.e. government's contribution) to the well-known TPB, this study has
184 extracted potential factors by acknowledging the international context on the subject. Thus,
185 the extracted factors that are presented in Table 1 are used to develop a conceptual model of
186 the study (refer to Figure 1).

187 **Figure 1.** Conceptual model of the study



188 **3.2 Research Method**

189 This study adopts mixed methodological approach, as illustrated by Figure 2 and
190 described below. While qualitative method is used to identify the factors, quantitative method
191 is used to collect the primary data. The qualitative stage was achieved through a robust review
192 of the GB context, while a questionnaire survey method was adopted to assess the
193 hypothesized model of factors influencing the potential GB clients' PI. The simplest design
194 of the questions was helpful to reduce the complexity of the questionnaire survey. Hence, to
195 ensure that the potential GB clients can easily understand the relationship of the factors (refer
196 to Table 1) with the PI and rate them according to their relative impact according to a Likert
197 scale (from strongly disagree (1) to strongly agree (5)) adopted in this study. A short

questionnaire, comprised of two distinct sections, was developed for the potential clients to complete. The first section aimed to identify the precise level of impact that each of the factors has on each potential clients' intention. Section two of the questionnaire was to do with the demographic background of the participants. This information is important as a tool to identify whether the range of the above factors influenced groups with differing backgrounds in differing fashions.

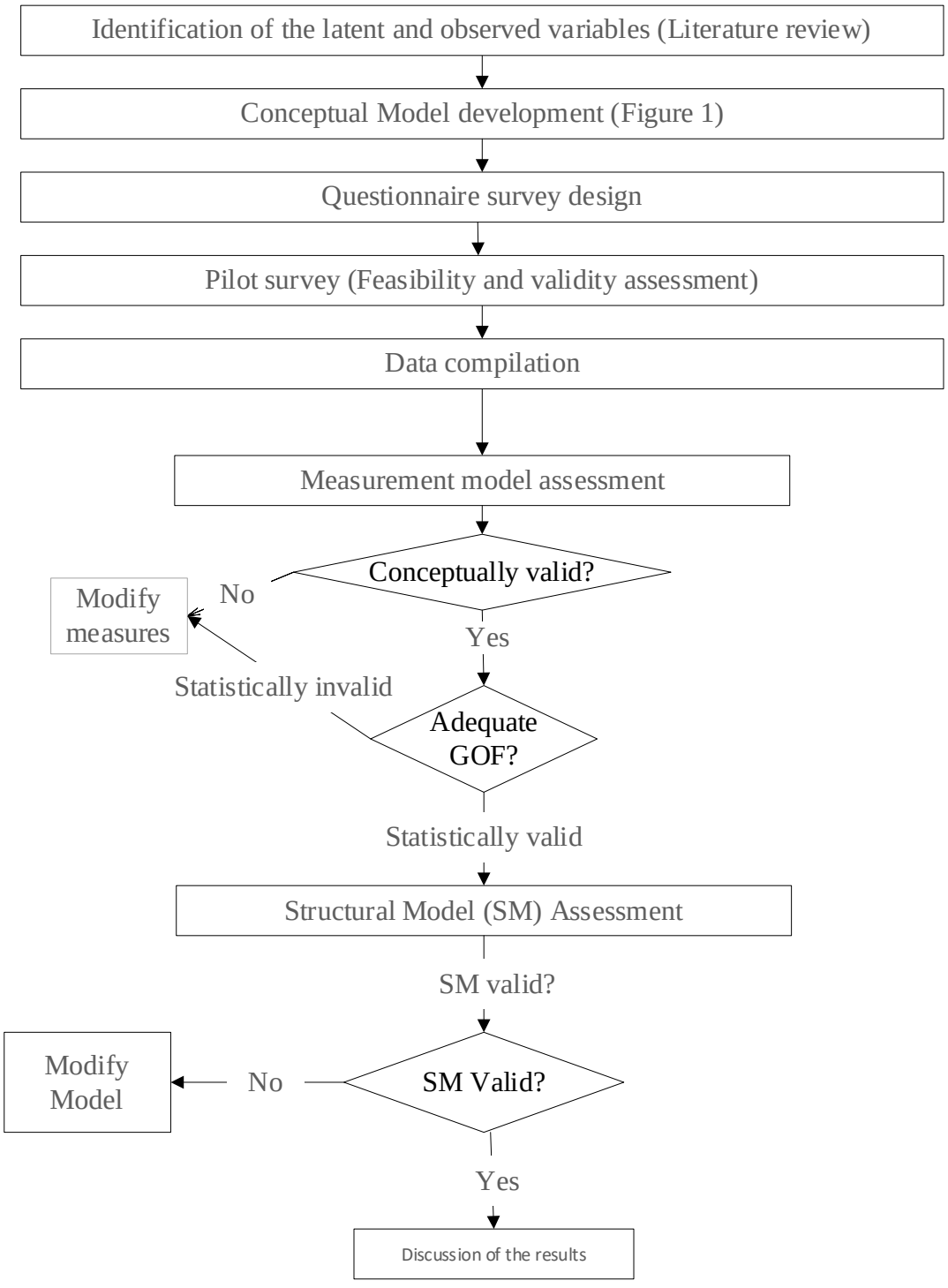


Figure 2: Research flowchart

Before the administration of the survey, the feasibility and validity of the survey's design and relevance to the Cambodian context were assessed through a pilot survey with the GB and marketing experts. These experts were from both industry practicing (3 experts with a minimum of 5 years of GB experience) and people working in academia (professors in marketing and construction management). Their feedback was then utilized to improve the survey's appeal and to ensure a sufficient response rate.

3.2.1 Structural Equation Modelling (SEM)

As one of the robust analysis techniques, Structural Equation Modelling (SEM), which combines factor analysis and multiple regression (Byrne, 2010), has been widely applied to solve various environmental problems (Mardani et al., 2017). For instance, Durdyev, Ismail, Ihtiyar, et al. (2018) utilized SEM to quantify the relationship between the barriers to sustainable construction. N. R. N. A. Rashid and Shaharudin (2017) quantified the relationship between the factors influencing the Malaysian clients' PI toward a green home, for which they used SEM. As it can be seen, SEM has been a primary technique to examine and quantify the relative influence of latent variables on the measured phenomena. This study thus aims to provide an in-depth understanding of the hypothesized latent variables and their observed variables on PI; hence, utilizes SEM to quantify the relationship between them.

4 Results

4.1 Demographic data

To know the demographics of the survey participants is crucial when evaluating their purchasing attitudes (Kanchanapibul et al., 2014). Thus, in the second section of the survey, the respondents were asked to provide their demographics, such as age, gender, and the highest level of qualification. The survey was administered to the residents of Phnom Penh city, which is known for its completed as well as ongoing GB facilities. The results demonstrate that about two-thirds of the participants hold a bachelor's degree, while others

hold a higher degree of tertiary education (e.g. a master's degree). The majority of the participants nearly 88% have ages ranging from 16 to 25, and the remaining 12% being 25-40 years old respectively which indicates that the feedback is biased towards the perceptions of young potential clients (Zhang et al., 2018). While female participants are accounted for 47%, the male respondents are slightly above half of the responses. It is worth mentioning that most of the responses were received from well-educated young clients. Although this added to the quality of the feedback and therefore, reliability of the research outcomes, it could also be treated as a limitation of the study. To the authors' observation, the rationale behind this perhaps due to more knowledge and awareness of the generation, which eventually makes them feel more competent in participating in the survey. This is supported by the findings of Kanchanapibul et al. (2014), who concluded that the younger and well-educated clients the more knowledgeable and concerned generation about the environmental issues.

4.2 Measurement Model (MM)

The MM assesses the relationship between the latent variables and their observed attributes (refer to Table 1). The assessment was performed based on parameters of the exploratory factor analysis (Hair Jr, Hult, Ringle, & Sarstedt, 2016), which are demonstrated in Table 2. As it can be seen, the computed values of the outer loadings (OL), Cronbach's alpha (Cα) and composite reliability (CR), and average variance extracted (AVE) are above the satisfactory thresholds (refer to Table 2) reported in the SEM literature. In addition, Table 3 presents the square root of AVE values, which is a clear indication of the inexistence of correlation between any latent variables. It is worthwhile mentioning that the observed variables (MP1, CEC2, and EOP3) that have an outer loading less than 0.7 were omitted for further analysis to ensure that the model yields the recommended levels of the goodness of fit measures. Thus, the MM is assessed (in terms of its reliability and validity) for further assessment of the structural model (SM).

257 **Table 2.** Assessment of the MM

Observed variable	**OL**	**AVE**	**Cα**
ATT1	0.8958	0.5795	0.8029
ATT2	0.7952		
ATT3	0.7887		
EOP1	0.8143	0.7263	0.8881
EOP2	0.8513		
EOP3*	*0.5894*		
PBH1	0.8604	0.6849	0.8673
PBH2	0.7915		
PBH3	0.8293		
CAK1	0.8485	0.7152	0.8829
CAK2	0.8562		
CAK3	0.8323		
MP1*	*0.6347*	0.6476	0.8441
MP2	0.8331		
MP3	0.7358		
CEC1	0.7482	0.6473	0.7300
CEC2*	*0.6104*		
CEC3	0.7733		
GI1	0.8957	0.5820	0.7708
GI2	0.7807		
GI3	0.8134		
PI1	0.8889	0.7150	0.8831
PI2	0.8101		
PI3	0.8357		

*Note: observed variables are omitted from further analysis due to low outer loadings (<

258 **Table 3.** Fornell-Larcker criterion (Discriminant validity)

Construct	PI	ATT	PBH	EOP	GI	CEC	MP	CAK
PI	**0.8456**							
ATT	0.5767	**0.7612**						
PBH	0.3217	0.3463	**0.8276**					
EOP	0.2643	0.3850	0.4653	**0.8522**				
GI	0.5453	0.3993	0.3614	0.2895	**0.7629**			
CEC	0.6341	0.4934	0.3167	0.3030	0.6103	**0.8045**		
MP	0.2400	0.3353	0.4564	0.5479	0.3675	0.3225	**0.8047**	
CAK	0.4910	0.5280	0.4737	0.4178	0.4337	0.5298	0.4378	**0.8457**

Squared correlations; AVE in the diagonal.

259 **4.3 Structural Model (SM)**

The goodness of fit was used as the point of departure to assess the SM of the factors that are having an influence on the Cambodian clients' purchase intention, for which the standardized root-mean-square (SRMR) was computed. The estimated value of 0.034 was calculated for the SRMR, which indicates a satisfactory fit for the final model (Byrne, 2010). Additionally, the R2 values, which demonstrate the measure of the predictive power and amount of variance for the latent variable in question, were computed (refer to Figure 2). According to the classification proposed by Chin (1998), the computed R2 values in this study are between the moderate and substantial level, while only PI is above the substantial level. The results indicate that the final model explains 73.2%, 59.5%, and 58.9% of the variance in PI, ATT, and PBH, respectively. Finally, the decisions (all are supported and statistically significant at $p<0.05$) made on the research hypotheses and path coefficients are presented in Table 4.

Table 4. The final model (SM) results

Hypothesis	Path coefficient (β)	t-value	Support
CEC -> ATT	0.7812	14.1721***	Yes
MP -> PI	0.7402	17.8583***	Yes
CAK -> PI	0.7279	15.0368***	Yes
MP -> ATT	0.6617	13.4566***	Yes
EOP -> PI	0.5713	4.8878***	Yes
GI -> PI	0.5281	2.2605**	Yes
GI -> PBH	0.4875	2.1012**	Yes
ATT -> PI	0.4504	3.2557***	Yes
CAK -> ATT	0.4374	4.3723***	Yes
PBH -> PI	0.4248	3.3389***	Yes
EOP -> ATT	0.415	2.5901**	Yes
CEC -> PI	0.3695	2.2615**	Yes

*** $p < 0.001$; t (0.001) = 3.107; ** $p < 0.05$; t (0.05) = 1.648 (Roldán & Sánchez-Franco,

Figure 2 illustrates the associations (denoted by the numbers on the arrows) between the constructs, which indicate the significance of the constructs and are used to rank them according to their relative significance (refer to Table 4) (Roldán & Sánchez-Franco, 2012).

The results show that the ‘client’s environmental concern’ (CEC) has the highest influence (β=0.7812) on the ‘client’s attitude toward purchasing GB’ (ATT), while the same construct has the least (β=0.3695) impact on the ‘client’s purchase intention’ (PI). The ‘marketing and promotion’ (MP) has the highest (β=0.7402) and the second-highest (β=0.6617) influence on PI and ATT, respectively. The results in Figure 3 shows that ‘promotional events’ (MP2) and ‘word of mouth’ (MP3) are the first and second most significant items contributing to the construct (MP). The results indicate that the second construct influencing PI is ‘client’s awareness and knowledge’ (β=0.7279) and ‘I am aware and has a knowledge on the evolution of GB’ (CAK1), ‘I am aware and know why there is a need for GB development’ (CAK2) and ‘I am aware and know the advantages of GB over conventional building’ (CAK3) are the first, second and third most influential items under this construct, respectively. The same construct (CAK) was found to be the third that is influencing ATT with β=0.4374 as presented by Figure 3. The ‘government incentives’ (GI) construct is the only construct that was hypothesized to have an influence on ‘perceived behavioral control’ (PBH) and has almost the same influence on both PBH (β=0.4875) and PI (β=0.5281). All items, which are ‘tax incentives’ (GI1), ‘direct grants’ (GI2), and ‘a soft loan incentive’ (GI3) for purchasing GB are significantly reflecting this construct. Figure 3 illustrates that ‘encouragement of people around the client’ (EOP) has the third-highest influence on PI, while the same construct has the least influence on ATT. The major contributing items under this construct are ‘family members’ influence to purchase GB’ (EOP1) and ‘close friends’ influence to purchase GB'. Lastly, according to Figure 3, the influence of ATT on PI (β=0.4504) is slightly higher than the influence of PBH on PI (β=0.4248).

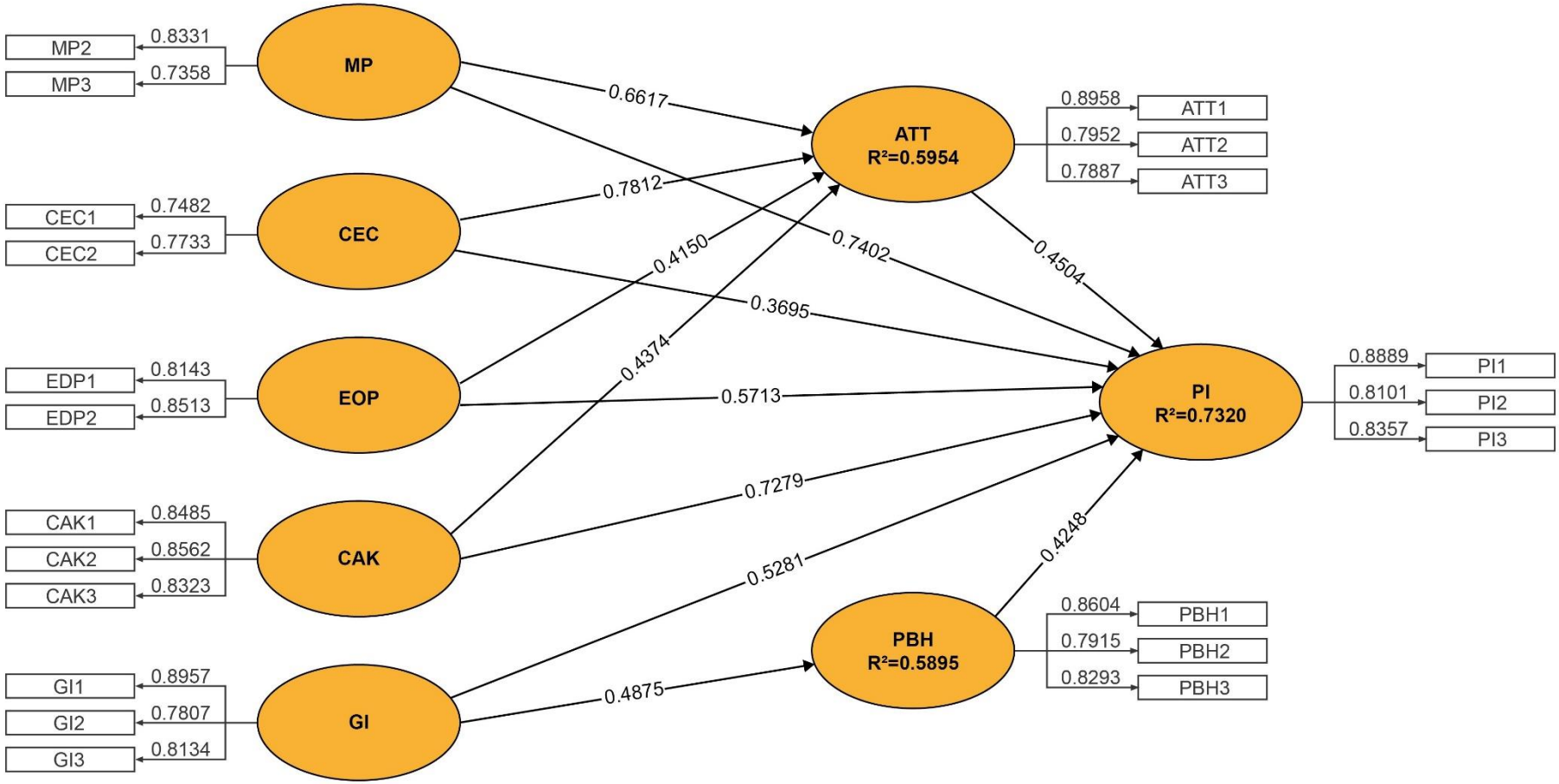


Figure 3. The final SEM model

5 Discussion

To provide a detailed discussion, significant outcomes from the SM (were assessed based on the responses from the potential GB clients in Cambodia) were pulled out and discussed, which are then compared/contrasted against the findings of the studies in the GB context. The consensus among past studies is that it may not be possible to translate the theoretical lessons of ecology and environment into actual performance. This has been justified by other businesses, such as hospitality and food (Kollmuss & Agyeman, 2002). This hypothesis seems to be rejected by the statistical findings, which show that both 'awareness and knowledge' (CAK) and 'environmental concern' (CEC) constructs have the highest influence on the individuals' purchase intention. The clear message is that the respondents are concerned with the ecological problems in Cambodia, which is reported by Moll (2019), and believe that they are an essential part of ecology. These results are also consistent with the demographic background of the study as it can be seen that the young respondents are dominant. Reportedly, the young generation has some knowledge of GB, which consequently gives an ability to make a judgment about being committed to green behavior (Kanchanapibul et al., 2014). Although awareness and knowledge have been reportedly known as a good catalyst to widely promoting GBs (Durdyev, Ismail, Ihtiyar, et al., 2018; Martek et al., 2019; Wang, Zhang, & Pasquire, 2018), it has also been suggested that other perceptions (i.e. social perceptions) may dominate the judgment ability (Wilcock, Pun, Khanona, & Aung, 2004). For instance, people around the potential homebuyers have a significant influence on their purchase intention. Given the significance of family members in decision-making for an individual in Cambodia, this factor is particularly worth highlighting. As reported by Nakanishi and Yamano (2014), elders frequently remind the young generation in Cambodia: "Your parents are your first god(s)". This shows that social issues, particularly in culturally conservative countries, exert a greater influence on the young generation's decisions. On the other hand, the results show that the 'marketing and promotional' events have a significant

influence on the PI. This result implies that the frontline of the construction industry, those who are involved in GB development, in particular, are recommended to utilize this kind of event to raise awareness among the individuals.

The results also show that the homebuyers' confidence (PBH1), capability (PBH2), and resources and willingness (PBH3) are significantly contributed to their PI, while the governmental support (GI), in terms of any means of support, is also a significantly influencing issue. The capability and willingness of the potential clients to pay for GB is a clear message of the research findings, while the structure meets their health, safety, and environmental comfort expectations. Furthermore, this finding clearly shows that the government support would also drive the potential clients to purchase GBs. This is also consistent with other studies, which reported that governmental support is one of the significant drivers in promoting green practices, particularly in developing countries (Tokbolat, Karaca, Durdyev, & Calay, 2019b).

6 Conclusion

The impact of buildings and the construction industry on the environment and socio-economic well-being of any society is unquestionable. People live, work, and spend leisure time indoors, thus, the conditions, as well as the quality of both the construction process and operation stages, have a significant influence on the social-economic aspects of the lives of the occupiers. The cumulative impact of buildings on the environment over their life cycle in terms of energy consumption, greenhouse gas emissions, resource consumption, waste, and pollution is one of the largest among other sectors. This is particularly true in the context of developing countries, where the sustainability agenda is not as advanced as in the developed countries. The role of sustainable buildings or so-called green buildings in this regard is unique as the principles and methods of design, construction, and operation of such buildings are usually aligned with energy-efficient, eco-friendly and human-centered standards, and philosophies. The financial side of the question is debated as many researchers argue that

354 green buildings cost more while purchasing due to various additional features which make
355 them sustainable. Nevertheless, green buildings are considered as one of the viable and
356 potential solutions to the aforementioned sustainability challenges. In this context, the role
357 of those who would be living or working in green buildings is critical.

358 To effectively plan, design, and implement green building projects, it is critically
359 important to understand the market and especially the perceptions and willingness of the
360 general public to engage with green buildings. In this context, the present study aimed to
361 gauge the perceptions of the general public (potential clients) in a developing country and to
362 understand the drivers (factors) that would encourage them to purchase a GB. The adopted
363 methodology combined the secondary and primary data collection and analysis. The former
364 being (a) an extensive literature review aimed to identify the key drivers (factors) based on
365 international research findings that would positively affect the prospective clients, and the
366 latter being (2) a survey adopted to understand the perceptions of potential clients to the
367 identified drivers (factors). The obtained data were analyzed using the Structural Equation
368 Modelling technique which combines factor analysis and multiple regression. The results of
369 the study indicate that the general willingness and decision of potential clients to buy GBs
370 would be driven by such factors such as (the first one having the highest impact): (1) "client's
371 environmental concern"; (2) "marketing and promotion" efforts (especially promotional
372 events and a word of mouth); (3) "client's awareness and knowledge"; and (4) "governmental
373 incentives" (including tax incentives, grants, and soft loan incentives). The unfolded
374 explanation of the results and their associated validation are provided in the previous sections.

375 The findings of the study explain to potential stakeholders who could be engaged with
376 GBs in the future in the context of a developing country It is envisaged that the findings of
377 the study could help researchers, developers, investors, and other relevant stakeholders to
378 better understand the subject matter, and particularly, the drivers, i.e. significant factors, that
379 affect the potential clients the most to be willing to engage with GBs. This study would also

help wider society, especially in developing countries where this sort of research activities are limited and there is no critical mass of information relevant to a local context which could help to advance the adoption of GB on a wider scale. The study is intended to make an impactful contribution to the Cambodian, in particular, and to developing countries' context, in general, in terms of implementing the proposed methodology to identify drivers affecting the intention of the general population to acquire GBs. Considering that this type of research has not been done in the context of Cambodia, the paper will be very useful to develop the concept of GBs as it provides a very detailed guidelines how to perform such research and also provide a list of drivers which could be simply used as a guidance while making decisions. Although the study runs the survey among the public, there was a high prevalence of young and educated respondents, which means that the survey results can be slightly biased towards the opinions of a certain group of people. However, it is also believed that this part of the population will play an active role in the future in terms of building a sustainable society and will also become the actual potential clients. Future research, nevertheless, should widen the respondent's pool demographics.

Data Availability Statement

Some or all data, models, or codes that support the findings of this study are available from the corresponding author upon reasonable request.

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