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A systematic study on the Domino effect of creating Green India: An Awareness and perception study of Indians towards Green Buildings

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Abstract

Sustainability revolves around the concept of bettering human life while balancing environmental, social and economic needs. Construction projects including residential buildings emit large amounts of greenhouse gases responsible towards global warming. Methods, materials, and operations all contribute to the environmental impact of construction. Governments across the world have sanctioned curbs and there are many building rating systems like LEED and GRIHA available to generate awareness about methods to reduce environmental hazards. There are many stakeholders involved in residential construction projects while experts like Architects, Civil Engineer and Contractors might exhibit knowledge regarding sustainable buildings but few studies are conducted on the most important stakeholder- citizen's knowledge towards the concept. This study attempts to understand the awareness and perception of citizens towards Green buildings. Data has been collected through structured questionnaire across 669 respondents from different cities of India across demographics. Analysis has been conducted using SPSS 22.0. Anova, factor analysis, and reliability tests have been conducted to compare the various dimensions of awareness and perception across selected demographic variables such as age, gender, occupation, marital status, family monthly income, education and city of residence. Correlation was done to find out the relationship between green awareness levels and perception with demographic variables. Regression was done to find out the actual determinants of respondents' investment in Green buildings. Discriminant validity and convergent validity test indicated a visible presence of reliability and validity in the study. Three clusters were identified Cluster 1: Potential Greens – Green buildings perceived costly but could be a useful investment; Cluster 2: Ready Greens – Green Buildings are beneficial for the environment; Cluster 3: Ignorant Greens – Green Building are for the rich and regular monetary investment needed.

Keywords: Sustainability, Green Buildings, Environmental Friendly Buildings, Citizen Awareness, Citizen Perception

Introduction

The building sector emits more than a third of global energy-related carbon dioxide (CO2) — a record 10 gigatonnes (Gt) according to the United Nations Environment Program conducted in 2019 ("CO_2 emissions from building sector highest in 2019",2020). This makes the building sector one of the major contributors to climate change causing destruction of the local environment due to the materials used during construction. According to the International Finance Corporation (IFC), 70 percent of the buildings required by 2030 are yet to be constructed in India. The Green buildings market in India is currently at a nascent stage of development, with only 5% buildings being classified as green (Ahuja, 2020). This indicates that a huge opportunity exists to build in an efficient, green and sustainable India. For India, to go Green, apart from the rules made mandatory by the government an understanding of the Green Buildings from the consumers perspective is vital.

According to World Green Building Council (2021), a 'green' building is a building that, in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment. In simple terms, Green buildings preserve the natural resources and better the quality of life. In other words, Green buildings is a building which causes comparatively less to almost negligible ecological harm to the climate. To consider any building project as a Green building there exist a number of rating systems some proposed by Government bodies, field and industry experts. There exist multiple definitions of Green buildings for instance, the practice of making structures while using methods that are conscientious environmentally as well as use the resources proficiently during the entire life cycle of the construction phase i.e. site selection, design, construction, operation, maintenance, renovation as well deconstruction (Environmental Protection Agency). Another definition indicates healthy facilities created and constructed by using the planet's constrained resources in a sustainable manner while decreasing its impact on the environment (Kibert, 2008). However, this definition does not cover all the aspects holistically in terms of the effects of

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the building on its surrounding and the inhabitant. The word "green" or "sustainable typically indicate that the building has been constructed keeping the third party environmental rating scheme like LEED or BREEAM (Zalejska-Jonsson, 2013).

Green building offers a basis for sustainable construction development (Samari et al., 2013). Sustainable construction has gained wide spread acceptance globally. Many a times, sustainable construction and Green buildings are used to describe each other. Green building is stated to be a structure that sticks to the requirement of building performance standards while lessening the disturbance, and augmenting, the ecosystems in the regional and universal circumstances in the whole life cycle (Glavinich, 2008). Green building help to enhance the health of the occupants through the design of a healthy interior environment (Allen et al., 2015). With the increase in health ailments globally due to multitude reasons, numerous researches has indicated better and improved health of the occupants of Green building due to smarter healthier exterior and interior designs. Green building is considered important to realise the fundamental building code terms and lessen the life-cycle environmental impacts and cost (Ali & Al Nsairat, 2009).

A construction project has many stakeholders like Architects, Civil Engineers, Contractors, Consultants for HVAC and MEPF, Structural Consultants, Landscape Architects and the most important one – the client. The client is not only the financer of the project but also the one who is going to use the building and have the final say in most decisions, rendering him the most important stakeholder. The client's awareness, understanding and perception of green building becomes imperative for the execution of a green building. An attempt to gain an insight to the perception of individuals (present and future stakeholders) on green buildings is carried out through the means of this study.

The study also deals with analysing the financial risks towards green building, the influence of the stakeholder's (common people's) perceptions and other demographics on green buildings and buyer behaviour. A literature review of existing research and green building guidelines like GRIHA, LEED, and ECBC / Eco Niwas Samhita was carried out. A basic questionnaire was modelled on the basis of the literature review and presented before few industry experts. Based on the received suggestions a modified questionnaire was then formed and sent out to the volunteers in the form of an online questionnaire hosted on Google forms. The form collected the volunteer's generic data as well as their responses to a series of questions regarding their knowledge on green buildings. The responses were collected and analysed by Anova, factor analysis, and reliability tests using SPSS 22.0. Comparisons were made over various demographic variables to find their impact.

Related Works

According to a report published by the United National Environment Programme (2019), emissions from the construction industry have reached highest ever level. Numerous articles have cited that construction boom across India would create severe environmental concerns. The Green Building Movement in India has been spearheaded by IGBC since 2001, by creating awareness amongst the stakeholders. Green Buildings have become an alternative solution to reduce the damage on the environmental resources.

As a strategy to improve the sustainability of the construction industry, GBs have been widely recognized by governments globally, as a necessary step towards a sustainable construction industry (Shen et al. 2017).

Zuo and Zhao (2014) studied the existing research and the potential future advancement of GBs, concentrating on associations and scope of research, the advantages and disadvantages between GBs and traditional buildings and diverse methods to accomplish green building development. A research impact report of studies on GBs was undertaken to discover contemporary research ideas and information gaps from the year 2000 to 2016 (Zhao et al, 2019). The authentication of the actual performance of GBs, the function of ICT, health and safety standards in the creation of the green buildings and corporate social responsibility were identified as future direction. A scient metric (subset of informetric) study of research papers on Green Buildings by scrutinizing fourteen journals of architecture between the years 1992 and 2018 indicates that 44% of the globe took part in the research on the execution of green buildings, management and involvement of all stake holders, gauging the attitude; regulation and policies, measuring energy efficiency, calculating sustainability performance as well as green building certification among others. The biggest impact of COVID 19 has been the acceptance of telecommunicating

COVID-19 has led to a huge awareness among the people regarding the significance of healthy buildings. The last two decades has witnessed an increase in research towards building science due to the connection between man-made world or built environment and health. Public open spaces and spreading out of building in mixed-use area are encouraged. COVID 19 has resulted in acceptance of telecommuting which has led to significance of indoor air quality in built environments (Fezi, 2000). The process for examining the sustainability of buildings existed since the past 20 years but

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the systems dedicated to recognizing the health of the buildings have come into sight (McArthur and Powell, 2020). Increase in research papers as well as health building certification systems like WELE and Fitwel, (McArthur and Powell, 2020) indicate that the population at large has started focusing more on the health factors in the built environment.

Various studies conducted on Green building specify that there are four main focus areas: decreasing the harmful effect of the project on the surroundings, Bettering as well as enhancing the health conditions of the residents, providing a profitable financial value on the investment from the consumer's perspective and to be cost effective in the long term. Keeping the above focus areas in mind, typically Green buildings are built to decrease the damaging effects on the environment while bettering human health, proficient use of natural resources, reducing garbage and waste generation and make certain that the occupants well being is bettered through better living conditions. (Agency USEP Indoor Air Quality; Building, n.d.)

In order to be LEED (LEED, 2018) certified, a given project has to earn points by adhering to prerequisites and credits that address carbon emissions and footprint, reduction and generation of energy, water management, waste management, transportation of materials and debris, materials' qualities like embodied energy and emissions, the health and indoor environmental quality. Projects are verified and reviewed by GBCI and are awarded points that correspond to a level of LEED certification: Certified (40-49 points), Silver (50-59 points), Gold (60-79 points) and Platinum (80+ points).

In the Indian Context there exist numerous codes which recommend and rate buildings and building components. However the awareness regarding these codes is almost negligible when the common man is concerned. There may be some level of awareness regarding G B but the quantification /realization of the same (which is through codes or standards) is largely absent.

Awareness and perception regarding Green Building is on the rise in India with talks about global warming, climate change among others. But, the study tries to understand whether the stage of awareness of Green Buildings in terms of knowledge and the perception they have towards these Green buildings compared to Conventional buildings.

Research Objectives:

- To analyze the influence of perceived environmental concerns towards green buildings and buyer behaviour
- To analyse the influence of perceived financial risks towards green buildings and buyer behaviour
- To analyse the influence of perceived Information asymmetry towards green buildings and buyer behaviour
- To study the influence of demographics on green buildings and buyer behaviour

Research Hypothesis

The research objectives were stated through the following hypothesis

1. Hypothesis 1: Perceived value positively affects the buying behaviour towards green buildings
a. Hypothesis 1[a]: Perceived Environmental concern affects the buying behaviour towards green buildings
b. Hypothesis 1[b]: Perceived financial risks affects the buying behaviour towards green buildings
c. Hypothesis 1[c]: Perceived Information asymmetry affects the buying behaviour towards green buildings
2. Hypothesis 2: There is positive association amongst the gender of the respondents and the awareness regarding investing in green buildings
3. Hypothesis 3: There is positive association amongst the age of the respondents and the awareness regarding investing in green buildings
4. Hypothesis 4: There is positive association amongst the occupation of the respondents and the awareness regarding investing in green buildings
5. Hypothesis 5: There is positive association amongst the Annual family income of the respondents and the awareness regarding investing in green buildings

Research Method

Instrument building and validity

An initial form of questionnaire survey was built based on the presented literature review. Then, it was sent out to review by related experts in the areas of construction, engineering, and architecture. The comments of experts were taken in consideration before sending the final version to a random sample of volunteering participants to ensure its validity of clearness. It contains three main parts; the first one includes the demographic information (gender, age, education

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background, education level and profession area). The second part contains the likert phrases to assess the perception (12 items) and the third part contains dichotomous questions related to awareness (12 items). Likert scale items are built on five-point scale, ranging from 'strongly agree' to 'strongly disagree'. Twelve variables in line with the recommendation of the BREEAM (Ticleanu et al, 2021) and LEED (LEED, 2018) were used to measure the degree of perception and awareness of green building standards. The measurement items of the constructs were adopted from previous studies and were modified and adapted to the present research setting. Items for perceived value were adapted from Kim et al. [1]. Items for perceived functional benefits were adapted from Sweeney and Soutar [2], Liu et al. [3], and Zhang et al. [4]. Items for perceived green benefits were derived from He et al. [5] and Zhang et al. [4]. Items for perceived performance risks were adapted from Grewal et al. [6] and Featherman and Pavlou [7]. Items for perceived financial risks were adapted from Grewal et al. [6] and Liu et al. [3]. Items for environmental concern were adopted from Goh and Balaji [8]. Items for social trust were adopted from Liu et al. [3] as mentioned in detail in table 1.

Table 1: Details of Dataset

Factors and Item constructs	**References**
I believe that….	
Potential Greens	
Using the right kind of Building material also constitutes as a part of Green Buildings	Kim et al, Liu et al [1]
Green Buildings also reduce wastage of energy, water and materials used during construction	Kim et al, Liu et al[1]
Green Buildings are expensive to build	Kim et al, Liu et al[1]
Ready Greens	
Green buildings provide healthy living space	Sweeney and Soutar [2] Liu et al [3] Zhang et al [4]He et al [5] Goh and Balaji [8]
Green buildings provide access to energy services, enhanced indoor and outdoor air resulting in reducing the negative effect on the natural habitat	Sweeney and Soutar, Liu et al [3] Zhang et al [4]He et al [5] Goh and Balaji [8]
Green Buildings include onsite generation of renewable energy through solar power, wind power, hydro power, or biomass	Sweeney and Soutar[2] Liu et al [3] Zhang et al [4] He et al [5] Goh and Balaji [8]
Green Buildings focus on reducing water consumption and protecting water	Sweeney and Soutar [2], Liu et al [3] Zhang et al [4] He et al [5] Goh and Balaji[8]
Green Building minimize the total environmental impact associated with all life-cycle stages of the building project	Sweeney and Soutar [2] Liu et al [3] Zhang et al [4] He et al [5] Goh and Balaji [8]
Ignorant Greens	
Green Buildings are for the rich	Grewal et al. [6] Featherman and Pavlou, Liu et al. [7]
Green Buildings are expensive to maintain	Grewal et al. [6]Featherman and Pavlou, Liu et al. [7]
Ensuring operations and maintenance(O&M) on a regular basis is an important part of Green Buildings	Grewal et al. [6] Featherman and Pavlou, Liu et al. [7]
Indoor air quality (IAQ), thermal quality, and lighting quality are important	Grewal et al. [6] Featherman and Pavlou, Liu et al. [7]

Data collection and Sampling

The e-questionnaire of this research was built based on Google-form to collect data electronically. It was sent out to participants through emails and other social media platforms. A total of 669 respondents participated in the survey. Table 2 shows the demographic characteristics of the sample. Anova was used for validation of hypothesis where one-way ANOVA ("analysis of variance") compares the means of two or more independent groups in order to determine whether there is statistical evidence that the associated population means are significantly different. One-Way ANOVA is a parametric test. The One-Way ANOVA is commonly used to test the following:

- Statistical differences among the means of two or more groups
- Statistical differences among the means of two or more interventions

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- Statistical differences among the means of two or more change scores

SPSS-v20 and AMOS-v18 applications were used for the statistical analysis in this study, to benefit from the advantage of each of them in the analysis and result confirming. The results and discussion are detailed in Section 6, then conclusion is presented in Section 7.

Table 2

Category	**Items**	**Percentage**
Gender	Male	51.5
	Female	48.5
Age Group	Less than 25 years	32.9
	26-35 years	13.8
	36 -45 years	10.8
	46-55 years	35.9
	Above 55 years	6.6
Occupation	Self Employed	11.4
	Business	16.8
	Home maker	6
	Working Professional	38.8
	Students	26.9
Marital Status	Un-married	45.5
	Married	54.5
Annual Family Income	Less than Rs. 10 LPA	24.6
	Between Rs. 10 and 20 LPA	19.8
	Between Rs. 21 and 30 LPA	30
	Between Rs. 31 and 40 LPA	10.8
	Above Rs. 40 LPA	34.7
Education	Graduate	38.3
	Post Graduate	50.9
	Doctoral Studies	10.8
Residence city	Indian metro	51.1
	Indian non metro	48.9
Residence type	Rented Accommodation	18.6
	Own home	81.4
Is being environmentally conscious very important nowadays?	Yes	98.8
	No	1.2
Are you aware of Green Buildings (GB)or Eco-friendly Building (EB) or Sustainable Building (SB) as a concept?	Yes	80.8
	No	19.2

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Results and Discussions

The results of the descriptive statistics are as follows:

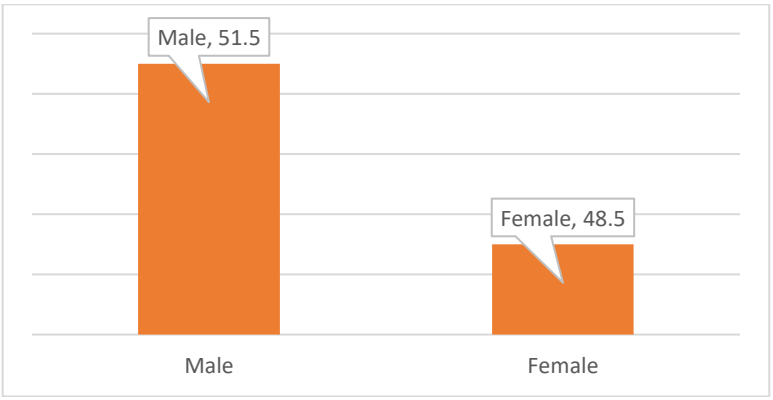

Figure 1: Gender bifurcation of the respondents:

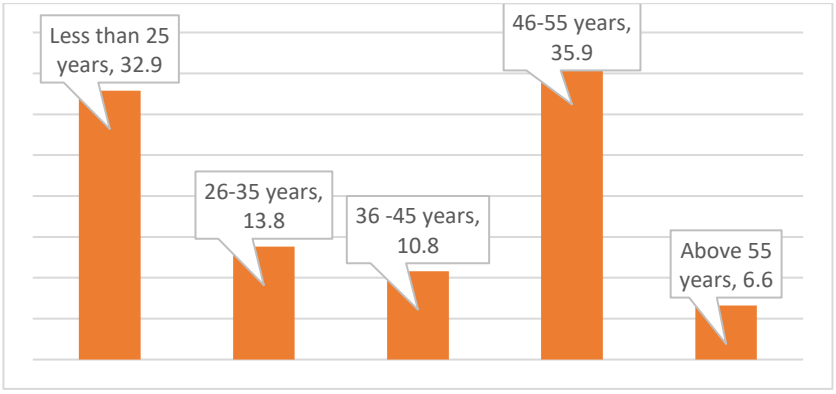

Figure 2 Age group of the respondents:

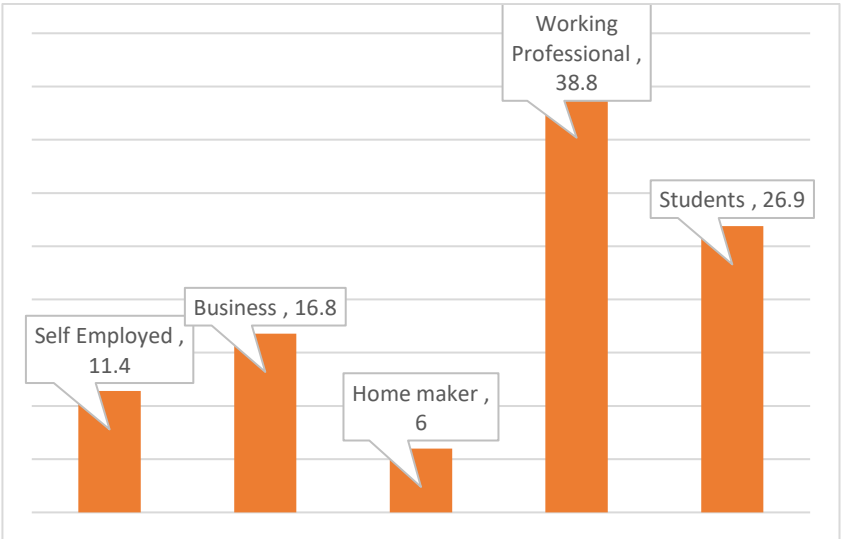

Figure 3 Occupation of the respondents:

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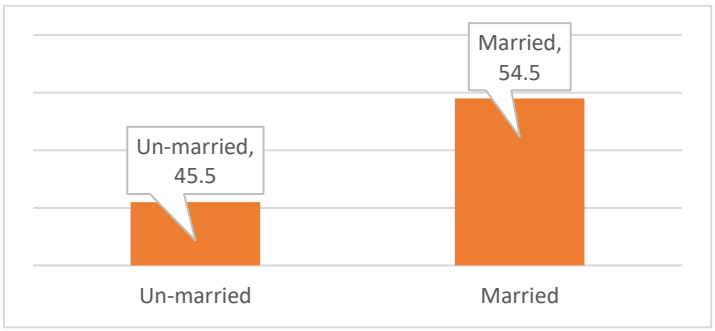

Figure 4 Marital Status of the respondents:

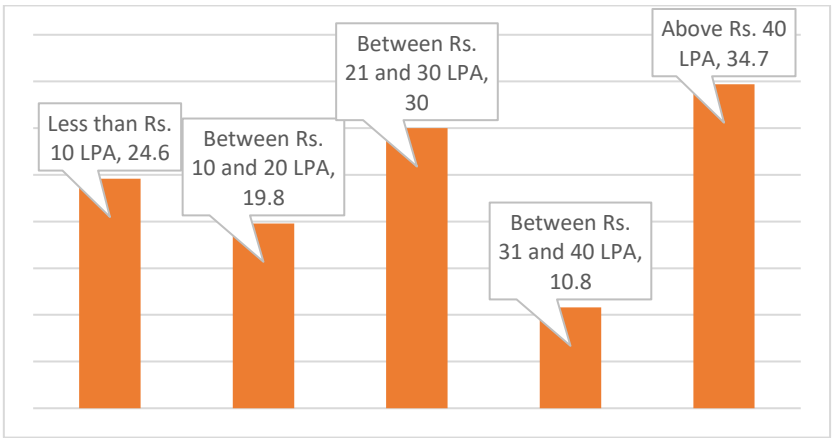

Figure 5 Annual family income of the respondents:

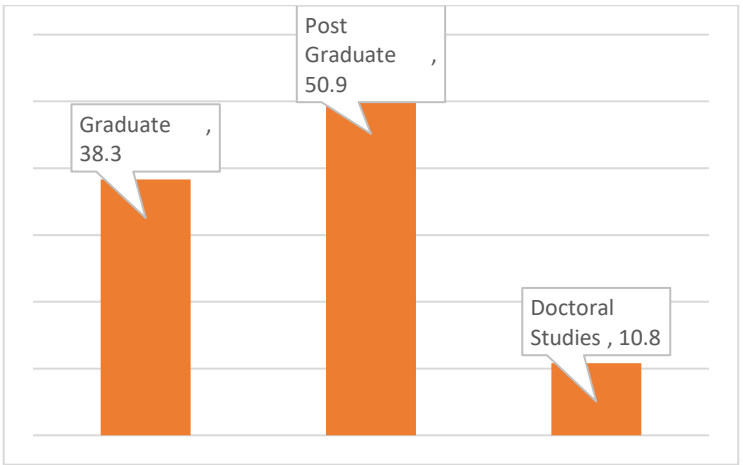

Figure 6 Education of the respondents

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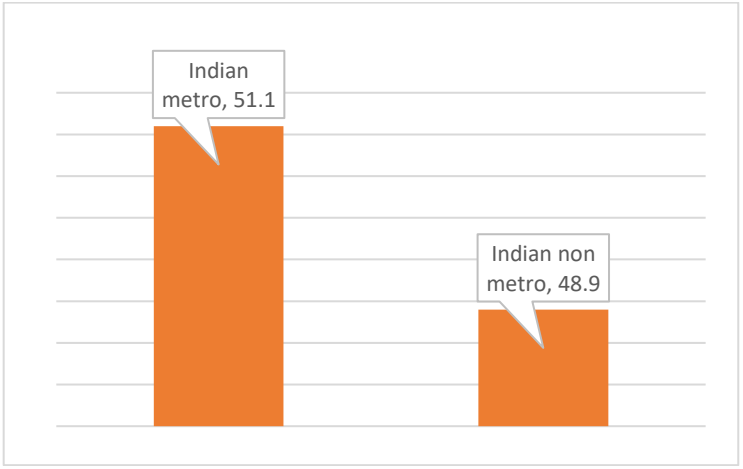

Figure 7 Residence city of the respondents

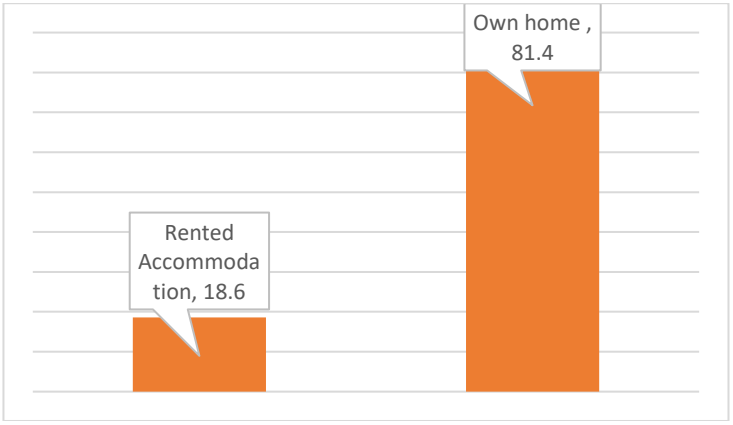

Figure 8 Residence type of the respondents:

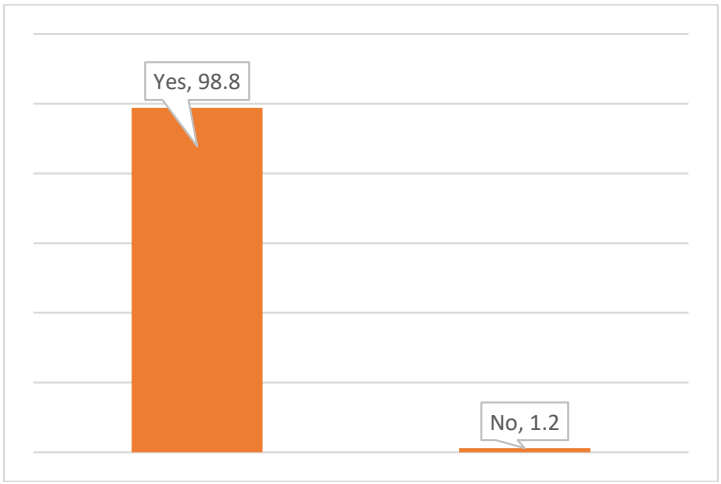

Figure 9 Is being environmentally conscious very important nowadays?

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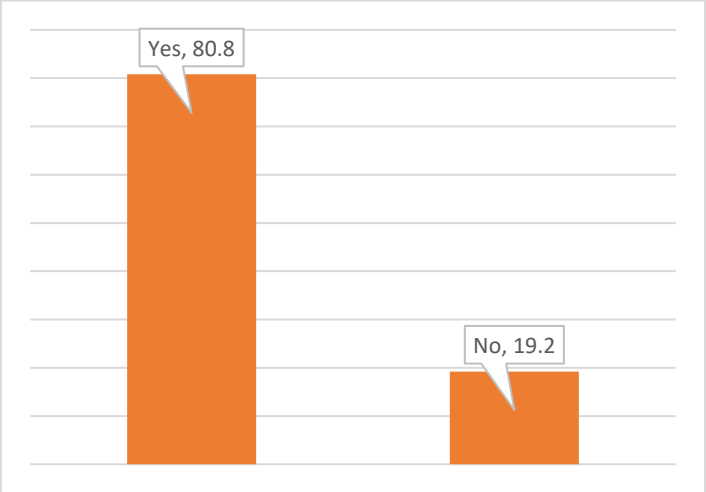

Figure 10 Are you aware of Green Buildings [GB] or Eco-friendly buildings [EB] or sustainable buildings [SB] as a concept?

Exploratory/Confirmatory Factory Analysis CFA

Table 3 demonstrates the descriptive statistics as well as the result of the Exploratory Factor Analysis EFA, that is used to recognize the fundamental relationships among measured variables of each factor. Cronbach's alpha, which is the reliability test has a value of .849 and its range of alpha is between .825 and .880. The scale is well constructed since all the values exceed the recommend value of greater than equal to 7.

Table 3 shows values of Means, Standard Deviation SD, Confidence Interval CI, Average Variance Extracted AVE (≥.5) and Composite Reliability CR (≥.7) that corroborate that the items belong to the factors.

Table 4 illustrates that the fit of the measurement model of CFA : Chi-square (X^2)/df (should be ≤ 3.0), Goodness-of-Fit index GFI (should be ≥ 0.9), Adjusted Goodness-of-Fit index AGFI (should be ≥ 0.8), Normed Fit Index NFI (should be ≥ 0.9), Comparative Fit Index CFI (should be ≥ 0.9), Root Mean Square Error of Approximation RMSEA (should be ≤ 0.08), Standardized Root Mean Square Residual SRMR (should be ≤ 0.08). The construct validity of the research model was confirmed based on the calculated parameters with the recommended values. Table 4 demonstrates the measurement model of CFA parameters. The hypothesis 2,3,4 and 5 were tested by using one-way ANOVA and the results are shown in Table 5.

Table 3 Descriptive statistics, factor validity reliability estimates

Factors and Items	Mean	SD	Factor Loading	Cronbach α	AVE	CR
Potential Greens				0.844	0.850	0.944
Using the right kind of Building material also constitutes as a part of Green Buildings	4.17	.925	0.863			
Green Buildings also reduce wastage of energy, water and materials used during construction	4.15	.910	0.83			
Green Buildings are exp0ensive to build	4.20	.971	0.807			
Ready Greens				0.828	0.811	0.928
Green buildings provide healthy living space	4.12	.979	0.732			
Green buildings provide access to energy services, enhanced indoor and outdoor air resulting in reducing the	4.18	.975	0.752			

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negative effect on the natural habitat						
Green Buildings include onsite generation of renewable energy through solar power, wind power, hydro power, or biomass	4.29	.892	0.722			
Green Buildings focus on reducing water consumption and protecting water	4.09	1.004	0.748			
Green Building minimize the total environmental impact associated with all life-cycle stages of the building project	4.24	.954	0.785			
Ignorant Greens				0.809	0.715	0.809
Green Buildings are for the rich	4.14	.978	0.709			
Green Buildings are expensive to maintain	4.27	.916	0.755			
Ensuring operations and maintenance(O&M) on a regular basis is an expensive aspect of Green Buildings	4.22	.903	0.741			
Indoor air quality (IAQ), thermal quality, and lighting quality needs to be maintained hence proves expensive	4.02	.931	0.749			

Table 4 Measurement fit model

Fit statistics	Study model	Recommended value
(X^2) df	1.546	Less than or equal to 3.0
NFI	.968	Greater than or equal to 0.9
CFI	.993	Greater than or equal to 0.9
GFI	.982	Greater than or equal to 0.9
AGFI	.899	Greater than or equal to 0.8
SRMR	.036	Less than or equal to 0.08
RMSEA	.061	Less than or equal to 0.08

Table 5 Hypothesis Model

Hypothesis	**Path**	**Statistical test**	**Sig. results**	**Hypothesis supported**
Hypothesis 2	Gender → Awareness	One-way Anova	0.008	Yes
Hypothesis 3	Age → Awareness	One-way Anova	0.001	Yes
Hypothesis 4	Education → Awareness	One-way Anova	0.023	Yes
Hypothesis 5	Annual family income → Awareness	One-way Anova	0.032	Yes

Discussion and Implications

The results of the descriptive statistics and the Exploratory Factor Analysis EFA, which are used to identify the underlying relationships among measured variables of each factor indicates the formation of three clusters - Potential Green, Ready Greens and Ignorant Greens. The awareness and the perception that the consumers have towards Green Buildings is extremely important for India to go Green.

Potential Greens – This set of consumers believe that Green Buildings do reduce wastage of energy, water and material during construction and that the usage of building material is an integral portion of Green buildings but also think that Green buildings are expensive to build. This indicates that some amount of awareness toward the concept exists but the long term financial benefits need to communicate. This would result in more Potential Greens converting to Ready Greens.

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Ready Greens – The understanding of Green buildings of this cluster is relatively high. They understand that Green buildings provide healthy living space, while being energy efficient by onsite generation of solar power, wind power, hydro power as well as improving the quality of air both indoors and outdoors. Reduction of water consumption and protecting water was also understood. Moreover, to minimize the total environmental impact associated with all life cycle stages of the buildings project. This set of citizens have relatively good idea about Green buildings and its advantages. More people need to be in this set to take India toward Green.

Ignorant Greens – Citizens belonging to this cluster believe that Green Buildings can be built only by the rich people and are expensive to maintain. This myth needs to be changed since Green Buildings contribute towards financial sustainability in the long run. Awareness needs to be generated that Green Buildings consider the cost over the whole life of the building while conventional building look only at the design and construction cost.

H1[a] was supported and this indicates that perceived environmental concern positively affects the buying behaviour towards green buildings. Perception of green buildings plays a very critical role in willingness to adopt and behaviour toward taking decision to invest in sustainable buildings. The overall value perception was found to have a significant positive influence on residents' intention to purchase green buildings. Green buildings are resource as well as energy efficient and inflict minimal damage to the environment. This concern for the environment warms the respondents towards an open mind.

H1[b] was accepted. High initial investment, limited financial resources and budget constraints act as major barriers towards adoption or implantation of Green buildings. Moreover, as of now, there are no extra benefits provided by the government in terms of subsidy towards construction of Green buildings. The return of investment is relatively long and hence at times the justification of the benefits might deter the people from Green buildings. Green buildings are more resource and energy efficient and hence the immediate tangible benefit might not be understood or comprehended. Hence, financial investments act as a barrier towards implementation of Green buildings.

H1[c] was proved and it can be backed with literature review that perceived Information asymmetry indicating lack of knowledge and expertise effects the green building buying behaviour by deterring the consumers. The construction sector has abundant asymmetric information both on the technical as well as the management aspect. This drastically affects the decision making of the firms and stakeholders. The asymmetric information leads to ambiguity in issues like cost, energy efficiency, wastage manage, energy labelling, building acts among others. Moreover, the cost of resources as well time spend on researching and understanding the products which resource efficient (energy, waste, water) are high. Moreover, the tangible as well as the intangible economic, health, environmental benefits are not clearly understood which impacts the investment towards Green building.

Hypothesis 2 was supported by one-way Anova. This signified that women are more prone to positive perception and behaviour as well as a positive willingness to adopt Green buildings compared to men. Literature review supports this hypothesis. Since, men and women have a different views, different marketing concepts should be used to appeal with them (Abdelkader and Abdelkader, 2019)

Hypothesis 3 was supported by one-way Anova which indicates that age has a positive perception towards green buildings. One major factor that can be attributed for increasing awareness towards green buildings is the social media. A study by Sahu (2013), indicated that age has an impact on attitude, behaviour and their perception towards adoption of green lifestyle. The paper further concluded that behaviour of consumers changes with age, i.e., the younger generation was more towards saving the environment compared to the elder generation.

Hypothesis 4 was supported by one-way Anova which indicates that education of the respondents has a positive awareness towards green buildings. Numerous research conducted in this area have postulated that education pilots the way to increased knowledge regarding the environment resulting in increased or better environmental behaviour (Frick, Kaiser and Wilson, 2004; Mobley et al., 2010). This indicates that respondents with higher education were more likely to demonstrate more awareness towards green buildings. According to Klein, D'Mello and Wiernik (2012), a quantum of literature shows that more highly educated individuals have higher likelihood for environmentally responsible behaviours vis- a -vis those with less education.

Hypothesis 5 was supported by one-way Anova which indicates that annual family income has a positive awareness towards green buildings. One of the major barriers hindering implementation of Green buildings is financial cost. People might be more prone to Green building but the increased cost and long return on investment might be deterring them. But,

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with the increasing double income families and more of disposable income availability coupled with higher education the need to invest in green buildings for future growth and environmental sustainability has risen drastically.

Conclusion and Implications

The study concludes that citizens of India are making some progress in terms of the awareness and perception of Green Buildings but it is far from what is needed for India to make its mark. There are three clusters Potential Greens, Ready Greens and Ignorant Greens identified by the study. For the country to move towards Green buildings, more citizens are needed in the Ready green cluster and almost nil in the Ignorant Green cluster. For this to happen, the government will need to intervene and mandate laws for implementing of Green building for all residential as well as commercial buildings. Awareness needs to be generated that people working and residing in these buildings tend to more efficient at their workplace and lead healthier lives. Corporate should be made to understand that not only do the operating cost of energy, water among others is reduced but productivity is also increased.

There seems to be a concern showcased among the respondents towards perceived environmental damage, perceived financial risk and perceived asymmetrical views but all these can be addressed via a strategic educational campaign run by the government and other NGOS targeting the citizens and making them more knowledgeable. For instance, the person while building his house might not be aware of the significance of insulated ceiling which might seem expensive to begin with but in the long run outweighs the cost and most importantly saves energy. In case of water, to install low flow plumbing fixtures like faucets, shower heads and toilets. So large quantities of water can be saved on a regular basis.

Social Media reach has increased multi fold in the last decade. Social media should be used extensively to spread the awareness as well change the perception towards Green Buildings. The government can smoothen the process by creating and presenting policies which provide monetary relief or support to the builders/developers via tax benefits, loans, tax subsidies, easier permission among others to promote green buildings. Moreover, the government can provide cheaper housing loans towards environmentally friendlier green buildings to consumers. The government can also make the evaluation procedures of Green building transparent for more enterprises to be lured towards it.

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