EXPLORATORY STUDY ON MARKETING OF GREEN BUILDINGS IN INDIA

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In

MANAGEMENT

By

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DECLARATION

I, **Kranti Chintakunta**, hereby declare that the thesis titled, "**EXPLORATORY STUDY ON MARKETING OF GREEN BUILDINGS IN INDIA**", submitted by me under the Research Supervision of **Dr. Chetan Srivastava** is an original and Independent research work free from plagiarism. I also declare that, it has not been submitted previously in part or in full to this University or any other University or Institution for the award of any Degree or Diploma. I hereby agree that my thesis can be deposited in Shodganga/ INFLIBNET.

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This is to certify that this thesis titled, "**EXPLORATORY STUDY ON MARKETING OF GREEN BUILDINGS IN INDIA**", submitted by Kranti Chintakunta, Research Scholar bearing Reg. No. 10MBPH05, enrolled for Ph.D. programme at the School of Management Studies, University of Hyderabad, is a bonafide work as prescribed under Ph.D. ordinances of the University and UGC.

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'Nanos Gigantum Humeris Insidentes'

The Latin phrase translated into English, means 'Standing on the shoulders of giants' which Isaac Newton popularly expressed saying, "If I have seen further, it is by standing on the shoulders of giants." Perched there, an individual may have greater insight not because of keener vision or greater height, but because he/ she is lifted up and borne aloft on the gigantic stature.

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Abstract

The building sector worldwide is extremely resource intensive accounting for a great proportion of worldwide resource consumption. Thrifty usage of existing resources and mitigating ecological footprint is an imminent need in this sector. Green Building solutions appear to be a sustainable answer in an otherwise resource hungry industry. A glance at Green Building Market Activity across the world suggests that Green is slowly moving from being niche to being mainstream in the world and in India as well. While the growth rate evidences an encouraging trend, the Indian Green Building Council (IGBC), a body that certifies green constructions in India states that Green construction occupies only 2-3% of the overall Construction sector. Going by these statistics, increasing the Green Building representation in Construction sector while taking advantage of the increasing Green construction growth rate seems imperative in Indian context.

Widespread adoption of the Green Building concept and its eventual internalization into mainstream construction is thus an immediate need. While various Green Building Certification programs are contributing to furthering the concept, as are Governments and agencies world over, several marketing challenges remain to be handled before the concept can be universalized. The Green Building Certification concept is of an 'Innovative nature' of and it is only a decade old in India. Green Building Customers are at the Innovator and Early adopter stages as are most contemporary Green Product customers. Given this context, Market Segmentation appears to be a viable tool here to reach homogenous groups of customers or segments which are both available and profitable thus leading to increased usage and adoption of the concept.

Amongst the Segmentation variables available, Benefit segmentation which is under the ambit of Behavioural segmentation is deemed effective given the unique nature of the Green

building Certification concept. It allows marketers to identify which products/ design they should offer and which benefits they should promote. The benefits segmentation process involves identifying benefits sought by customers and segregating them into segments in accordance with the benefits they are seeking. Each segment is profiled and assessed for targetability. By understanding segments, and profiling them based on consumption motivations, an understanding of market realities may be arrived at. In theory, Market segmentation which does not take consumer motivations into account is considered an approximation of the segment profile based on its characteristics which is not completely true.

Understanding these consumption motivations can support marketer with insights on consumer decision making process in customers of Green Buildings. An informative and tailored marketing communication with consumers that considers the focal benefits perceived and sought from Green Buildings becomes possible. In short, knowledge of segments, target markets and their motives/ preferences drive media planners to effective media strategies.

Effective communication strategies would further increased usage thus facilitating improved adoption of the Green Building concept would serve the ultimate objective of reducing the ecological footprint of the building sector and contributing to better environmental situation worldwide.

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CHAPTER I

INTRODUCTION

1.1 Statement of the Topic

The building sector worldwide is extremely resource intensive accounting for a third of emissions generated worldwide, half of worldwide energy usage, a quarter of worldwide water consumption and almost half of worldwide resource consumption. (United Nations Environmental Programme (UNEP) – SBCI). With the voluminous increase in world population foreseen at 2.7 billion by 2050 (World Business Council for Sustainable Design [WBCSD], 2009) and the successive growth in concrete edifices, the building industry only promises a larger economic and ecological footprint on the planet.

Considering the fact that natural resources, the backbone of world economy are being consumed at an unprecedented pace, and that nature is no hurry to create them, this industry as well as mankind in entirety is faced with a dilemma of panic proportions. The data on resource usage for construction, when extrapolated to as short a timeline as five years, suggests a resource scenario that appears to be in precarious imbalance. The only solution appears to be thrifty usage of existing resources and mitigating one's ecological footprint.

Green Buildings appear to be a sustainable answer in an otherwise resource hungry industry. Green buildings are designed to be ecologically sensitive throughout their lifecycle. When compared with conventional buildings, the demand on natural and finite resources such as energy, water and building materials can be reduced and contribution to environmental quality be enhanced by incorporating green building principles into design, construction and renovation. The WBCSD report (2009) suggests that Green construction enables opportunities to lower energy use at lower costs and higher returns than other sectors.

Considering the economic and ecological benefits, it may be logical to expect widespread presence and adoption of Green Buildings. A glance at Green Building Market Activity across the world suggests that Green is slowly moving from being niche to being mainstream. According to the World Green Building Council (2013), research on Green Building Market activity across a sample of 62 countries, 9 countries revealed statistically significant increase in Green Building activity in Construction firms participating in the research. Green share of Building project activity stood at 62% of the overall sample. Singapore, UAE and UK were leading with more than 50% of Green share of Building Project activity.

According to a 2016 report by Dodge Data & Analytics Conducted in nearly 70 countries, green activity above the global average of 24% is seen in South Africa, Singapore, India, Germany and Mexico. The same report suggests a 20% growth expectation in India in green building industry in the next three years ("Green Buildings to Grow", 2016).

While the growth rate evidences an encouraging trend, the Indian Green Building Council (IGBC), a body that certifies green constructions in India states that Green construction occupies 2-3% of all construction in India, which is on par with the US going by 2010 statistics (Pulla, 2010).

Going by these statistics, increasing the Green Building representation in Construction sector while taking advantage of the increasing Green construction growth rate seems imperative in Indian context.

1.2 Background about the Research Field

1.2.1 Building Sector and it's Environmental Implications

While the building sector statistics depict a picture of progress and economic development, on the construction industry's flip side is its energy intensive nature and capacity for massive global emissions.

According to the UNEP (2007), the building sector is the single largest contributor to global greenhouse gas emissions with one third of energy use taking place in offices and homes. Moreover, building-related CO_2 emissions are set to rise from 8.6 billion tonnes in 2004 to 11.1 billion tonnes in 2020.

The right mix of appropriate government regulation, greater use of energy saving technologies and behavioural change can substantially reduce carbon dioxide (CO2) emissions from the building sector which accounts for 30-40 % of global energy use.

The building sector worldwide could deliver emission reductions of 1.8 billion tonnes of CO2. This represents a significant quantum of CO2 emission reduction by one industry.

Cities are bound for a rapid expansion and an increase in investment over the next few decades, particularly in emerging economies. In India alone, an estimated 700-900 million square metres of residential and commercial space will have to be constructed each year until 2030 to accommodate this growth. Redirecting 2 percent of global GDP into a green transformation of agriculture, energy, buildings and other areas can trigger growth and create more jobs than a 'business as usual

scenario', while kick-starting a transition towards a low-carbon, resource-efficient global economy. (UNEP, 2007)

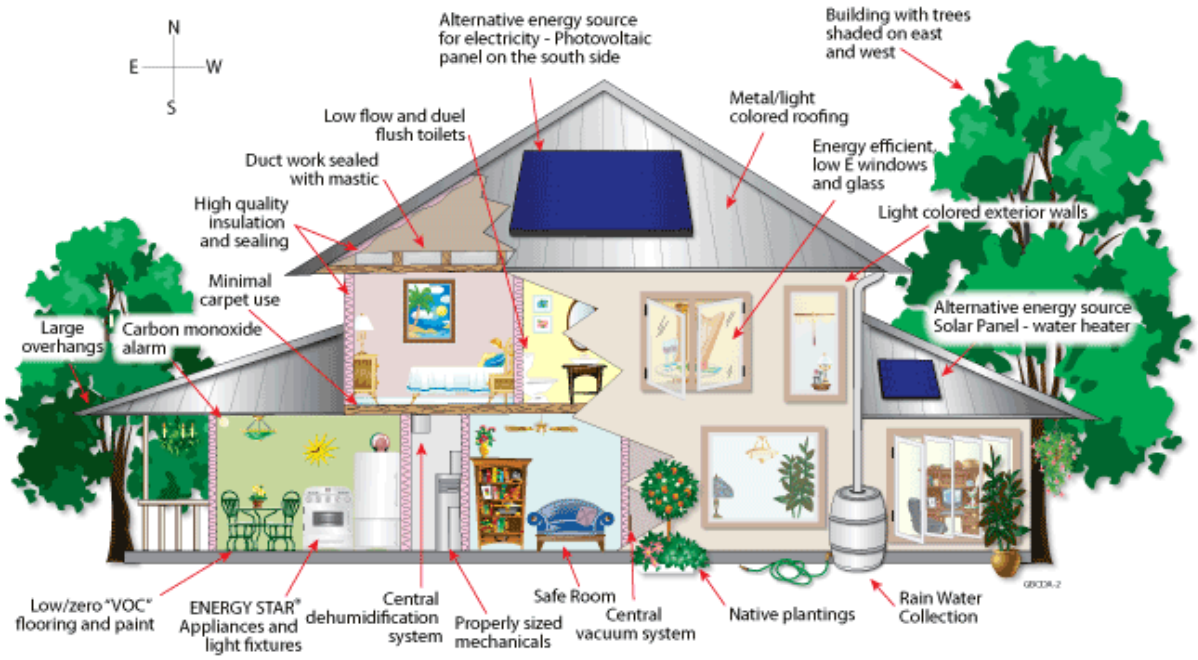
1.2.2 The Green Building Concept

The Green Building, also known as green construction or sustainable building, refers to a structure and using process that is environmentally responsible and resource-efficient throughout a building's life-cycle.

From Site location to design, construction, operation, maintenance, renovation, and demolition, Green Buildings add to economy, utility, durability, and comfort.

Green buildings are designed to address the following broad concerns:

Figure 1: Green Building Features. This figure illustrates the various Green Features incorporated into green buildings.



In addressing these concerns, Green Buildings accrue several benefits. Green buildings are designed to reduce the overall impact of the built environment on human health and the natural environment by,

- Efficiently using energy, water, and other resources
- Protecting occupant health and improving employee productivity
- Reducing waste, pollution and environmental degradation

While the aforementioned ones are the environmental benefits, several economic benefits too come into the picture:

- 30 to 40 per cent reduction in operation cost
- Resource efficiency and savings on resource expenditure
- Green corporate image
- Incorporates latest techniques and technologies and this has a positive impact on cost
- Green certified buildings have been known to secure higher rents and have greater saleability at better prices compared to conventional buildings

To understand the status of Green Building sector in India, an understanding of the Construction sector worldwide as well as in India, followed by a description of green building trends in India is imperative.

1.2.3 Construction Industry Worldwide

The report titled ‘Global Construction 2020’ sponsored by the Global advisory firm Pricewaterhouse Coopers, published on March 3, 2011, throws up interesting statistics on the construction industry.

Global construction is projected to surpass the world GDP growth over the next 10 years. The study, conducted by market research firms Global Construction Perspectives and Oxford Economics and sponsored by PWC, forecasts that 97.7 trillion USD will be paid out on construction worldwide during the next decade and the sector will expand by 5.2% on average every year.

The construction sector worldwide currently accounts for more than 11% of global GDP and the report predicts that it will account for 13.2% of world GDP by 2020.

Seven countries, China, India, the United States, Indonesia, Canada, Russia and Australia, will account for 65% of the growth in global construction to 2020. Developing nations, China and India will account for 38% of the 4.8 trillion US dollars increase in output by 2020.

The report also suggests that the construction industry in most developed countries will suffer issues such as large public deficits, austerity programs, slow population growth and limited economic expansion.

The United States will be the exception owing to its growing population suggests the report. An estimated 14.5 trillion USD will be spent on construction in the US by 2020, with growth averaging 7.8% per year over the next five years, driven by residential and non-residential markets.

Canada and Australia will also lead the growth in construction industry in developed countries, supported in particular by demand for natural resources and favourable demographics.

The pooled growth in construction in Canada and Australia will almost equal growth in the entire Latin American construction market, including Mexico, Brazil, Argentina, Chile and Colombia, indicating its less bright prospects.

France and other EU nations, on the other hand are set to register little construction growth.

Natural resources will play a key role in the Middle East and North Africa, where 4.3 trillion USD will be spent on construction across the region over the next decade, representing growth of almost 80% to 2020, the report points out.

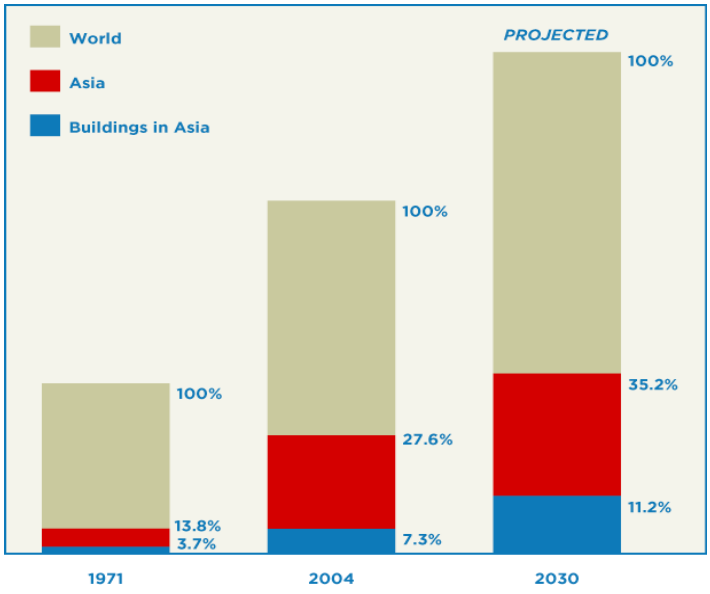


Figure 2: Buildings in Asia. The figure illustrates building growth rate in Asia and the World.

1.2.4 Building Sector in Asia

The statistics outlined in Global Construction 2020 are inclusive of elements of the infrastructure industry such as electricity, roads and bridges, ports, airports, telecommunications, railways, irrigation, water supply and sanitation, storage, and oil and gas pipelines, buildings and others.

The following information speaks of the status of the building sector in particular, from an Asian perspective. Asian statistics depict that building growth will be concentrated in cities in Asia. The growth of Asian cities is astounding, with many doubling their population every 15 to 20 years.

Currently, Asia holds more than half of the world's megacities with more than 10 million people, and that number is rapidly rising. China is now constructing almost half of the world's new floor space and built up area in India has more than doubled from 2000 to 2005.

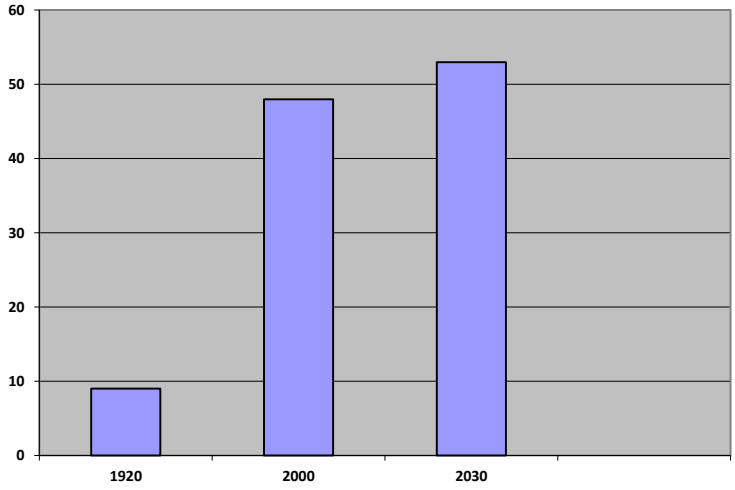


Figure 3: Asia's share of global urban population.
This figure illustrates Asia's share in %.

The need for buildings is increasing hand in hand with the rising population. By 2030, 60 percent of Asians i.e. around 5 billion people are expected to occupy these buildings *("Building Energy Efficiency"*, 2008).

1.2.5 Energy Intensive Building Sector in Asia

While Asian buildings occupy 2 percent of the world's surface area, they are responsible for 75 percent of the world's energy consumption. Asian energy has doubled in the last 30 years. Asian buildings' share of world energy consumption too is growing at similar rates. By 2020 energy use is projected to shoot up by 76 percent and about 70 percent of GHG emissions is expected from these buildings.

Over 80 percent of the nearly two billion square meters of new buildings constructed each year in China are categorized as high energy buildings, consuming two to three times more energy per unit of floor space than those in developed countries. New construction in China is the equivalent of two 500-megawatt coal plants per week. *("Building Energy Efficiency"*, 2008)

This implies a rather vigorous building scenario and immediate green measures are in need considering the emissions resulting from building activity.

1.2.6 Green Building Trends Worldwide

While construction using naturally occurring material has been indigenously practised since time immemorial, the modern Green Building concept has received attention since a few decades. Green Building Certification and Rating in particular has received popularity worldwide.

This research concerns itself with Certified Green Buildings and does not include natural building or non-certified or alternative construction. The reasons being the regulated nature of the Certified Green Building market which makes for convenient estimations. Also, most Green Building Certification and Rating systems across countries are endorsed by respective governments rendering them indicators of the Green Building trends in those countries.

While Green Building Certification and Rating systems are available across countries, widespread adoption is evident only in some markets.

In partnership with McGraw-Hill Construction, the World Green Building Council (World GBC) released a Smart Market Report in 2008 on Global Green Building Trends that assessed the market activity, attitudes, motivations and challenges facing the green building movement in different countries and regions. The survey collected input from over 700 early market adopters in 45 countries.

Key findings of this study include the following:

- *The green building portfolio*: Within the next four years, 94 per cent of responding firms plan to be building green on at least 16 per cent of their projects, with more than half dedicated to building green on more than 60 per cent of projects.
- *Alternative energy:* By 2013, 78 per cent of all respondents expect they will be using solar power and 62 per cent of North American respondents expect to be using wind power.
- *Top motivators for green building:* Reducing energy consumption was cited by 89 per cent of respondents as being the top environmental reason for green building, while encouraging

sustainable business practices was cited by 90 per cent as being the top social reason, and "doing the right thing" was cited by 42 per cent as being the top business reason.

- *Market growth*: The fastest growing green building market is in Asia, where the population of firms largely dedicated to green is expected to nearly triple between 2008 and 2013 (from 26 per cent to 73 per cent).

A rigour in Green Building activity and Policy level action is being witnessed in several Asian countries in particular:

- Energy efficiency policies: Japan's and Singapore's policies cover most stages of a building's life cycle and target both the suppliers and consumers of buildings.
- Policy implementation: Japan, Korea, Singapore, and Taiwan are witnessing rigorous voluntary programs going beyond the minimums and Green Building Codes are now well-accepted.
- Recent building energy efficiency policies in Asia: Hong Kong has proposed mandatory building energy efficiency standards and Singapore's Green Mark Incentive Scheme requires new public sector buildings and those undergoing major retrofitting works to be Green Mark certified from April 1, 2007 onward. *("Building Energy Efficiency",* 2008)

The proliferation of Green Building Rating systems can be considered indicative of the growing acceptance of these codes globally.

1.2.7 Green Building Rating and Certification

The potential for Green Buildings holds a promising note and Green Building Rating comes forth as a tool to enhance marketability of the concept. Rating also brings about market organisation, a sense of formality and confidence in the concept.

"As a result of the increased interest in green building concepts and practices, a number of organisations have developed standards, codes and rating systems that let government regulators, building professionals and consumers embrace green building with confidence. In some cases, codes are written so local governments can adopt them as bylaws to reduce the local environmental impact of buildings." (Green Buildings, 2016).

Some of the Green Building Rating systems in vogue globally are:

- LEED – The Leadership in Energy and Environmental Design by the US Green Building Council
- BREEAM – Building Research Establishment Environmental Assessment Method of Britain is the most widely used environmental assessment method for buildings with over 110,000 buildings certified and over half a million registered for certification.
- DGBN tool - Developed by the German Sustainable Building Council (German SBC).
- CASBEE (Comprehensive Assessment System for Building Environmental Efficiency) – Green building rating system in Japan
- GREEN MARK – Green building rating system in Singapore
- GREEN BUILDING LABEL – Green building rating system in China

- GREEN STAR – Comprehensive, national, voluntary environmental rating system that evaluates the environmental design and construction of buildings, developed by the GBC of Australia.
- Pearl rating System - for the Emirate of Abu Dhabi

These Green Building Rating systems specify standards to determine environmental performance of a building. Credits are assigned to optional building features in categories such as siting, energy and water conservation, building materials and occupant comfort and health.

Green Building Codes and standards on the other hand are rules set by standards development organizations that establish minimum requirements for elements of green building such as materials or heating and cooling.

1.2.8 A Glance at the Building Sector in India

Construction Industry in India is the second largest contributor to the National economy.

The Construction sector has been contributing around 8 per cent to the nation's GDP (at constant prices) in the last five years (2006–07 to 2010–11). GDP from Construction at factor cost (at constant prices) increased to `3.85 lakh crore (7.9 per cent of the total GDP) in 2010–11 from `2.85 lakh crore (8 per cent of the total GDP) in 2006–07. GDP in Construction has been growing in percentage from 10.3% in 2006–07 to 8.1% in 2010–11.

Forecasts for the market size of construction industry for the Twelfth Plan period indicate that that the aggregate output of the industry during the period 2012–13 to 2016–2017 is likely to be

52.31 lakh crores increasing from 7.67 lakh crores in 2012–13 to 13.59 lakh crores in 2016–17 (GoI::Planning Commission, 2016).

India needs Rs 31 trillion (US$ 465 billion) to be spent on infrastructure development over the next five years, with 70 per cent of funds needed for power, roads and urban infrastructure segments. The Indian construction equipment industry is reviving after a gap of four years and is expected to grow to US$ 5 billion by FY2019-20 from current size of US$ 2.8 billion, according to a report released by the Indian Construction Equipment Manufacturers' Association (Icema) (Infrastructure Sector in India, 2016).

Flow of FDI in Construction Activities (including Roads and Highways) is 42,072 crore in the Cumulative period from April 2000–August 2011. Foreign direct investment (FDI) received in construction development sector from April 2000 to September 2015 stood at US$ 24.16 billion, according to the Department of Industrial Policy and Promotion (DIPP) (Infrastructure Sector in India, 2016).

Investment in infrastructure in India is on the rise. In line with Vision 2020, the Indian government has been stepping up investment in infrastructure. 2016 budget reveals a record budgetary allocation of Rs. 2.21 lakh crore for infrastructure sector in a crucial move to revive investments in the sector with the participation of the private players (GoI::Planning Commission, 2016).

Indian construction industry has always been the second largest employment generation avenue in India after agriculture. Construction Industry needs infusion of at least 6 million persons.

Against a requirement of over 3.5 million trained tested and certified workers, the capacity available is about 0.5 million per annum (GoI::Planning Commission, 2016).

According to the Construction Industry Development Council (CIDC), construction of commercial buildings has been growing at eight per cent per annum. This was estimated to account for nearly 22 million square meters in 2005. The commercial building sector alone in India is expected to go to 1.9 billion square meter by 2030.

The sector is also riddled with several issues including, availability of financing, lack of innovation, lack of advanced technology, latest equipment, absence of a standardized certification process, environmental impact, politics within the country (bribery, embezzlement of funds resulting in poor quality and delay in construction.) The industry also is replete with environmental issues.

While all construction projects undertake mandatory Environment Impact Assessment as per the guidelines of Ministry of Environment and Forest and the concerned State Governments, it is now being increasingly realised that application of sustainability concepts have benefit potential across a diversity of areas.

The building sector is also a voluminous energy guzzler in India. It is estimated that more than 25 per cent of electricity is consumed in houses, office buildings, shops and malls. According to the International Energy Agency (IEA), the building sector accounted for the largest share of India's final energy use between 1995 and 2005. In 2005, this sector consumed 47% of the total final energy use. Residential buildings accounted for 93% of the total building energy used in the same year.

As per Central Electricity Authority, the growth of energy consumption in the commercial sector, which includes offices, hotels, hospitals, retail shops etc., has been highest at over 14 per cent in 2011.

Building Materials and Technology Promotion Council was set up in the Urban Development Ministry to address the issues of environment friendly and energy efficient building materials and technologies.

The Twelfth Plan suggests that Construction Industry needs to work in unison with Bureau of Energy Efficiency to develop Green Building Guidelines based on energy efficiency and use of renewable energy; direct and indirect environmental impact; resource conservation and recycling; minimisation of waste; water-harvesting; indoor environmental quality and community and site related issues.

Construction industry should develop typical green building guidelines for different geo-climatic regions. Energy Consumption Indices should be developed for different types of building occupancies, site conditions, and climatic zones. Governments at Central, State and Local levels should also encourage use of green construction.

Construction Industry Development Council is now taking an initiative along with a few states to facilitate development of technologies and building guidelines and promoting practice of green construction. CIDC is collaborating with Building Construction Authority of Singapore to evolve a Green Mark for Buildings. The Government may also consider giving fiscal incentives for use of building materials produced from recycling of wastes and by-products from agricultural,

forestry and industrial operations. Concrete steps will be taken during the Twelfth Plan period to promote the concept of green building. (GoI::Planning Commission, 2016).

Several Green initiatives have been taken up by the Government and private sectors alike.

- The Hyderabad Metropolitan Development Authority allows 'automatic fast track clearance' through Green channel for buildings which adopt the IGBC norms

- The State of Maharashtra's Environmental panel has decided that all building projects, residential and commercial, across the state will have to become eco-friendly. The Department has tied up with the CII to work out guidelines which will be mandatory at first for commercial buildings and residential buildings on more than 20,000 sq. mts

- MNRE (Ministry for Non Renewable Energy) reimburses buildings that have signed up for the GRIHA rating system based on certain criteria. The Ministry is also encouraging urban local bodies to formulate green building promotion policies through discounts on premium and property tax by giving them a onetime grant of up to Rs 50 lakhs to facilitate the process of policy formulation and awareness building. *(Akshayurja, 2011).*

1.2.9 Indian Green Building Trends

The commercially accepted Green Building scenario in India has been rather encouraging when compared to the other developing nations. India boasts of the second highest number of LEED rated Green Buildings after the USA. The Twelfth Five Year Plan states that a national level comprehensive Green Rating Initiative has been made ready and is ready to be launched.

Significant codes/regulations that have been developed by National bodies in India include:

National Building code (NBC) by The Bureau of Indian Standards (BIS). This covers all aspects of building design and construction. BIS developed the NBC in the early 1980s as a guiding code for municipalities and development authorities to follow in formulating and adopting building bye laws.

The revised NBC 2005, in its latest version provides guidance on aspects of energy conservation as well as aspects of sustainable development. A new chapter on sustainability is being added to the NBC to provide a holistic approach to designing and constructing sustainable buildings. The chapter focuses on the integrated nature of design and adopts a cradle to grave approach for buildings.

Energy Conservation Building Codes (ECBC) of The Bureau of Energy Efficiency (BEE). ECBC was formally launched in May 2005 as a provision of the Energy Conservation Act of 2001. As per the Act, ECBC will be mandatory for buildings with a connected load of 100 kW or a contract demand of 120 kVA or more. Analysis done during the development of the ECBC shows energy savings in the range of 27%–40% in an ECBC-compliant building over a typical commercial building with annual energy consumption of 200 kWh/m2.

ECBC focuses only on the operation energy use impact of a building and specific maximum and minimum limitations on a number of key building features to reduce a buildings energy use. The EC Act and ECBC do not directly address the small commercial and residential building segment.

Environmental Impact Assessment (EIA) of The Ministry of Environment and Forests (MoEF). The MoEF's EIA is an important measure for ensuring optimal use of natural resources for sustainable development. EIA was made mandatory in India under the Environmental Protection Act (1986) for 29 categories of large scale developmental activities. The requirement for building energy performance in the EIA is a combination of related terms in NBC and ECBC. In fact, buildings complying with the requirements of the MoEF's EIA will fulfil most of the requirements of popular green building rating systems.

Independent Green Building Rating systems also have made their mark in India. The Indian Green Building Council's (IGBC) Rating programme, the Leadership in Energy & Environmental Design (LEED) by the US Green Building Council (USGBC) and GRIHA (Green Rating for Integrated Habitat Assessment) conceived by TERI (The Energy and Research Institute) are the ones with greatest acceptance.

Figure 4: CII –Sohrabji Godrej Green Business Centre, Hyderabad, India. The first LEED Rated building in India.

Indian Green Building Council. The Indian Green Building Council (IGBC), was formed in the year 2001 by Confederation of Indian Industry (CII). The vision of the council is to usher in a green building movement in India and facilitate India to become one of the global leaders in green buildings by 2015.

The launch of LEED – India (Leadership in Energy and Environmental Design) green building rating programme by the CII- Indian Green Building Council (IGBC) was a major milestone in the Indian green building movement.

With the technical support of the US Green Building Council and LEED India Committee, CII-IGBC has launched the indigenized version of the US LEED rating system (LEED – India) to meet the Indian priorities and environmental conditions.

Leadership in Energy & Environmental Design (LEED) is an internationally recognized green building certification system, providing third-party verification for a building or community designed and built using strategies intended to improve performance in metrics such as energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.

As of 2016, IGBC has developed the following Green Building Rating Systems for different types of buildings.

- IGBC Green New Buildings
- IGBC Green Homes
- IGBC Green Landscaping
- IGBC Green Existing Buildings
- IGBC Green Schools
- IGBC Green Mass Rapid Transit System

- IGBC Green Factory Buildings
- IGBC Green Townships
- IGBC Green SEZs
- IGBC Green Interiors
- IGBC Existing Building O&M Projects
- LEED India Rating for New Construction and Core and Shell

The performance of the LEED rating system offers an illustration of the status of Green Building concept in India.

The CII - Sohrabji Godrej Green Business Centre was the first LEED certified Green Building in India in 2003. The number of IGBC Certified Green Buildings in India today stands at 750 and is growing. The number of building projects who have registered for the Rating has also swelled from 40 in 2006 to 3657 in 2016, displaying a 99% increase over a decade.

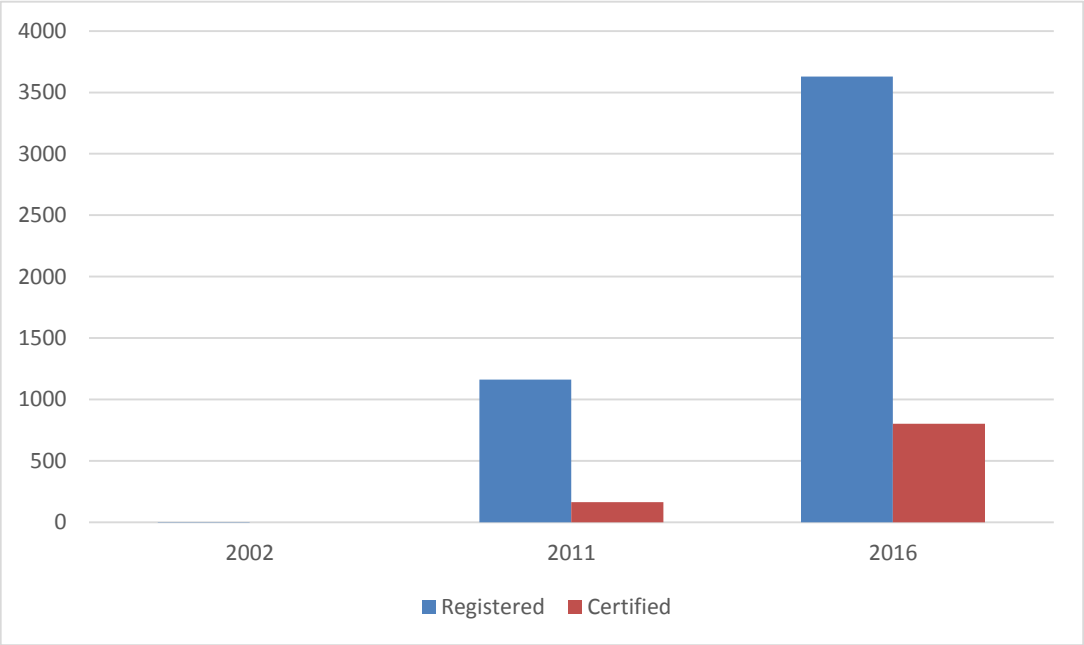


Figure 5. IGBC Projects Growth Rate in India. Growth rate of Registered and Certified projects is depicted.

The present green built- up area (the area covered by a Green Building in square feet) in India is about 3.82 Billion sq.ft. which is a commendable improvement from a modest beginning of 20,000sq ft. in 2003. The graph above illustrates the steady growth of green buildings in India till the year 2016.

The figures seem encouraging but when compared with the size of the conventional building market, the share of certified green buildings stands at about 2 – 3%.

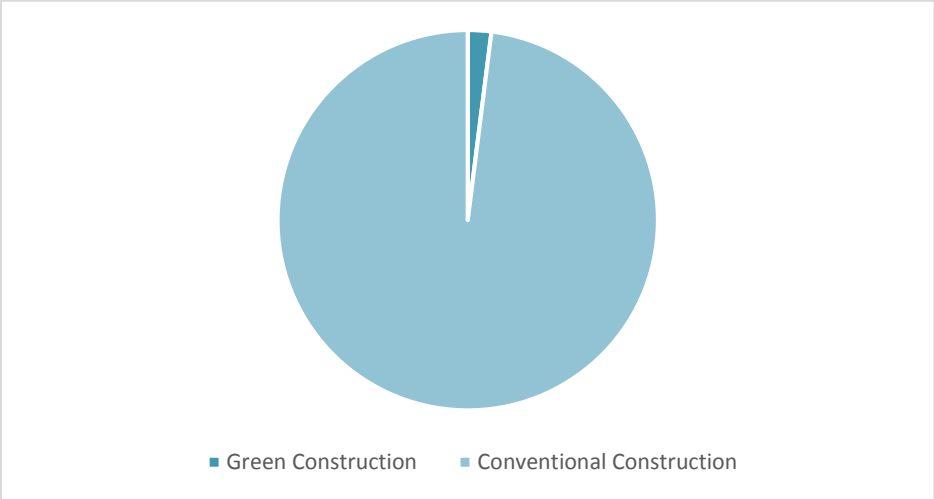


Figure 6. Green Buildings share in overall construction in India. They occupy 2-3 % of the overall Construction industry.

This is a significant gap and if National energy, emission and resource objectives have to be realized, measures have to be taken to address this gap on a priority basis.

GRIHA (Green Rating for Integrated Habitat Assessment). The GRIHA is a Green Building Rating System conceived by TERI (The Energy and Research Institute) and developed jointly with the Ministry of New and Renewable Energy, Government of India.

It is a green building 'design evaluation system', and is suitable for all kinds of buildings in different climatic zones of the country. GRIHA attempts to minimize a building's resource consumption, waste generation, and overall ecological/ environmental impact by comparing them to certain nationally acceptable limits/ benchmarks.

GRIHA is an integrated framework for ensuring design, construction, operation and in turn rating of Energy Conservation Building Code (ECBC) compliant Green Buildings. The rating system is suitable to the Indian climate and is in harmony with the National Building Code (NBC) 2005, ECBC 2007 and other Indian Standard (IS) codes.

Renewable energy integration is mandated under GRIHA. It has derived useful inputs from the building codes/ guidelines being developed by the MNRE, Ministry of Environment and Forests (MoEF), Bureau of Energy Efficiency (BEE) and the Bureau of Indian Standards (BIS).

Rating. GRIHA has 100 points distributed across 34 criteria, some of which are mandatory while the others are optional. Different levels of rating – 1 star to 5 stars - are awarded based on the number of points earned.

Performance of GRIHA. 108 projects are being evaluated by GRIHA and three buildings have been rated so far

Type of buildings being evaluated by GRIHA. Institutional; Commercial; Residential

Some of the buildings rated by GRIHA:

- Earth System and Environment Science Engineering Building, IIT Kanpur
- Fortis Hospital, Shalimar Bagh, New Delhi

- 2010 Commonwealth Games Village, Near Akshardham Temple, New Delhi[20]
- Hindustan Lever Limited, Andheri (E), Mumbai

The Non-rated building market. Sustainable building concepts have existed for quite some time but not all have been assigned a rating system and nor have all been documented against a set of popularly accepted codes as rigorously as the LEED or GRIHA rated buildings. An example is that of award-winning British-born Indian architect, Mr. Laurence Wilfred Baker, renowned for his initiatives in cost-effective energy-efficient architecture and for his unique space utilisation and simple but beautiful aesthetic sensibility. In time he made a name for himself both in sustainable architecture as well as in organic architecture.

Several such architects and architectural organisations or bodies have been implementing sustainable practices across the country for over some time. These entities continue to exist as Islands of excellence. An understanding of such practitioners, practices, their material selection and procurement (so as to understand the supply chain involved), technological and conceptual dissimilarities and linkages with rated buildings, and other elements will complete the perspective on the Green Building market in India. Much scope exists for further research here.

1.3 Need for Green Building Customer Segmentation and Profiling Based on Consumption Motivations

The Green Building growth rate in India and the World reveals an encouraging trend. However, as mentioned earlier, the share of Green construction in the overall construction sector in India is

only 2-3% and is in need of immediate measures if energy, environmental and sustainability goals set by the United Nations are to be accomplished by 2030.

Widespread adoption of the Green Building concept and its eventual internalization into mainstream construction is thus an immediate need as discussed in the beginning of this chapter.

Effective marketing of the Green Building concept is key to widespread adoption.

While various Green Building Certification programs are contributing to furthering the concept, as are Governments and agencies world over, several marketing challenges remain to be handled before the concept can be universalized.

Before beginning the discussion on 'widespread and accelerated adoption', it is important to understand the 'Innovative nature' of the Green Building concept. Yudelson (2008) suggests that more than the Green Building Concept, the rating and certification of buildings is to be considered as innovative especially when applying the classical theory of Diffusion of Innovation to forecast market demand.

The sample for this research hence is drawn from the customers of the Indian Green Building Council certification, which is the leading Green Building Certification in India.

Elaborating on marketing Green Building Rating, Yudelson (2008) cites Pip Coburn who posits two critical factors to success: the 'Total Perceived Pain of Adoption' (TPPA) and the degree of 'Crisis' involved.

Reducing TPPA (by reducing the costs of adoption) and enhancing the sense of Crisis position a compelling case in the minds of consumers suggests Coburn and Yudelson(2008) supports the same approach in the context of marketing Green Building Certification.

Apart from the challenges of TPPA, degree of Crisis, Yudelson (2008) also discusses the Theory of Innovation Diffusion proposed by Everett Rogers in relation to marketing Green Building Rating.

The Theory of Innovation Diffusion establishes psychographic categories of adopters of new technologies at various stages of adoption vis a vis innovators, early adopters, early majority, late majority, laggards. The theory also explains that the rate of adoption of an innovative product depends on several factors. “The relative economic or social advantage, (still being debated for green buildings, but generally considered a positive factor), Compatibility with existing methods (generally this is the case for sustainable design), Ease of trial at relatively low cost (not the case for new building technologies), Observability by those who would try it (this is definitely the case for green buildings) and Simplicity of use (which LEED and sustainable design are not, at this time).” (Yudelson 2008).

In the same text, Yudelson posits statistics regarding the Green building certification for various building types and suggests that these Certifications are at differing stages of adoption and there is no uniformity. Which implies that marketing mechanisms that work for adopter stage of one building type may not work for others.

“Many technology companies have experienced difficulty going beyond innovators and early adopters to reach the early majority. Often they try to use the same marketing mechanisms and

communications tools for the larger audience that worked for the smaller, more specialized and risk-tolerant group of innovators and early adopters."(Yudelson 2008).

In applying this one size fits all approach, valuable marketing opportunities may be lost. Yudelson proposes Market Segmentation as a viable tool here to reach homogenous groups of customers or segments which are both available and profitable. In his seminal work on Segmentation, Haley suggests that, "it is easier to take advantage of market segments that already exist than to attempt to create new ones. Once a marketer understands the kinds of segments that exist in his market, he is often able to see new product opportunities or particularly effective ways of positioning the products emerging from his research and development operation." (Haley, 1968).

Figure 7. Segmenting, targeting, positioning and differentiation. This figure illustrates the four steps to competitive success in green building marketing.

Segmentation variables can include considerations of demographics, geographics, firmographics, psychographics and other issues. Under the head, psychographic segmentation, "Behavioural segmentation is a broad term which includes market segmentation based on variables like usage pattern, occasion for use, benefits sought by the consumer from a particular product, loyalty, attitudes, and user status." (Kotler, 2002).

Extending the work done by Yudelson and given the status of Green Buildings as an innovative product, benefit segmentation comes across as the effective segmentation means for Green Buildings. This segmentation approach "identifies individual customers who desire similar benefits and exhibit similar behaviour and thereby forms (relatively) homogeneous segments, such that there is heterogeneity across segments" (Wedel and Kamakura, 1999).

"Benefit segmentation starts from the assumption that 'the benefits which people are seeking in consuming a given product are the basic reasons for the existence of true market segments'". (Haley, 1968).

Benefit segmentation uses Causal factors rather than descriptive factors and "Experience with this approach has shown that benefits sought by consumers determine their behavior much more accurately than do demographic characteristics or volume of consumption." (Haley, 1968).

This is a very effective segmentation method for companies that offer products that have unique features, as this will allow them to identify which products/ design they should offer and which benefits they should promote. (Which segmentation base to use? 2015). This seems to hold good for segmenting Green Building Rating market considering the unique features of this service.

Benefit segmentation is widely acknowledged as one of the best ways to segment markets. (Haley, 1968). It was, therefore, decided to use the 'benefit' approach to segment Green building customers in this research.

Systematic benefit segmentation is likely to produce a higher proportion of successes as per Haley, 1995. Borrowing from Beane and Ennis (1987), a benefit segmentation study should attempt to do three things:

1. Determine the benefits people look for in a product

2. The kinds of people looking for each benefit

3. The proximity of existing brands to these benefit needs.

"Once people have been classified into segments in accordance with the benefits they are seeking, each segment is contrasted with all the other segments in terms of demographics, volume of consumption, brand perceptions, media habits, personality and lifestyle and so forth which are customer values and consumption motivations driving benefit seeking behavior". (Beane and Ennis, 1987).

This approach is replicated in segmentation in this research and partially drawn from developing consumer profiles. The research begins with identifying benefits sought by customers of the IGBC, segmenting customers and then attempting to profile customer segments based on the benefit seeking behavior, consumption motivations and demographic detail.

Treating Green Building consumers as a uniform group pursuing identical benefits which are equally important does not make effective segmentation possible resulting in targeting and positioning efforts which are compromised.

By understanding segments, and profiling them based on consumption motivations, an understanding of market realities may be arrived at. Understanding these consumption motivations can support marketer with insights on consumer decision making process in customers of Green Buildings.

Investigating motivations in the consumption of Green Buildings is grounded in quite a few important reasons. The first one is that, Green Building benefits are heavily discussed across literature and in the news, such as Energy efficiency, Water Efficiency, Resource efficiency, potential cost savings and such.

Second, the Green building market has grown worldwide. Third, despite various efforts in Green Building research, there is little research on segmentation using benefits sought, and consumer profiling of these segments based on consumption motivations.

Speaking of consumer motivations, "Customer-oriented approaches, based on multi attribute theories of consumer behaviour, have been used widely in studies on market segmentation" (Wind, 1978). These approaches provide a consumer's perspective of the market as they are based on the paradigm that consumers want products because of the benefits they provide.

Proceeding on the same lines, a multi-attribute approach for consumer profiling which encompasses attributes characteristic of consumers such as behavioral, psychographic, social, and demographic factors appears significant. For this investigation three consumption motivations are

chosen for their relevance to benefit segmentation of Green Building customers. These include Prior Knowledge Level, Level of Involvement, and Product Usage Level. These will be examined and used alongside benefits sought by consumer segments in developing segment profiles. The rationale for the examination of these three in particular is that, these motivations are linked to benefits of products/services and widely explored in existing marketing studies.

Through a benefit segmentation and a study of profiles based on consumer attributes, the research extends original insights for marketers and researchers.

From a larger perspective, the research attempts to arrive at an understanding of Green Building customer segments which can assist Green building marketers in understanding consumption motivations which drive benefit seeking behavior and applying this knowledge to convince existing and future customers.

1.4 Statement of the Problem or 'Gap' in the Research

There exists much literature on marketing Green buildings and the rating systems. Discussion about the drivers, challenges, obstacles, growth potential exists but literature review is silent on segmenting the customers of the Green Building Rating in India or profiling customers based on the consumption motivations.

Literature on who exactly is the Indian Green Consumer is still emerging and subsequently, research on who exactly is the Green Building customer is also incomplete. Further questions arise on if the Green Building Rating customers are indeed a group which is identical with shared motivations, needs or behavior equally, or do they differ? What do these customers seek in a Green

Building? How can benefits and value in Green Building choice and adoption be highlighted and consumer concerns alleviated?

These research questions are to be realised to provide marketers the necessary inputs for designing target segment specific marketing programmes.

The present research intends to plumb this gap by applying the concept of benefit segmentation to segment the customers of Green Building Rating and also profile them according to consumption motivations thus contributing to finding some answers to these questions.

1.5 Aims of the Project

The purpose of this dissertation is to provide insights to Green Building marketers into the nature of Green Building customer segments. The overarching purpose is to contribute to bolstering the adoption and proliferation of Green Buildings in India.

Towards this goal, the first key objective is the identification of the benefits sought by Green building customers. The subsequent aim is to segment customers seeking similar benefits into heterogenous groups.

The research also aims to delve into the consumption motivations driving consumer benefit seeking behavior to arrive at a deeper understanding of segments and their nature.

By studying consumer requirements from a Green building and organizing the motivations driving behavior, utilising a benefit-segmentation approach and formulating singular and targetable consumer profiles, the research will support marketers in targeting the right customers and positioning Green Buildings in a compelling fashion.

The research offers a detailed account of psychographic, social, and behavioural drivers behind Green Building adoption.

For marketers, this study clearly supports a better understanding of motivational benefits sought or preferred by consumers in a product or service. Managers can then design marketing programs which are communicate relevantly to each target segment based on consumption motivations.

The research also guides Green Building service providers in recognizing how consumers prioritise Green Building benefits and differentiate them based on consumer behavior attributes.

It is more effective to communicate motivation based marketing messages positioned at target market segments by linking consumption motivations to benefits sought.

These messages can be propagated to customers based on their profiles through relevant communication channels. Thus, the research recommends a more informative and tailored marketing communication with consumers that considers the focal benefits perceived and sought from Green Buildings.

As per Yoon and Kim (2001), "knowledge of the relative concentration of target markets in each medium, as well as knowledge of audience motives or preferences, will undeniably drive media planners to effective media strategies".

1.5.1 Research Questions Addressed

The following research questions were investigated in the context of IGBC certified Green Buildings.

- What are the benefits sought by customers of Green Buildings?
- What are the customer segments according to the benefits they seek?
- How are the segments different in their motivations?
- How are they different in demographics?
- What are the different consumer segments?

1.6 Thesis Plan

While much research has taken place in understanding the drivers and challenges of the Green building market, there exists a significant gap in research on marketing Green Buildings. Especially where segmentation is used as a means of targeting individual segments, literature yields little.

This gap has emerged as a key issue in research on green building segmentation and marketing.

The purpose of this research is to segment green building customers, specifically those of the Indian Green Building Council's Certification based on benefits sought, consumption motivations and demographic characteristics.

This study is presented in five chapters. Introduction, which is Chapter 1, provides an overview of the focus of this dissertation. It illustrates the background of the problem, purpose of the research, statement of the problem, research and questions.

Chapter II, Review of the Literature, develops the theoretical foundations of market segmentation and benefit segmentation. It also presents literature relevant to consumption motivations and the importance to understanding the green building customers.

Chapter III, Methodology, details the research design and methodology utilized in this dissertation. It describes the population, research hypotheses, survey instrument, data collection processes, and data analysis.

Chapter IV, Analysis and Presentation of Findings, presents demographics of the sample, the statistical analysis of the data, and interpretation of the findings.

Chapter V, Summary and Conclusions, presents a summary of the overall research effort, marketing and academic implications, and conclusions. Recommendations for future research directions also are developed.

CHAPTER II

REVIEW OF LITERATURE

2.1 Market Segmentation

The chapter on Review of Literature establishes the theoretical bases on which the research is constructed.

The literature review begins with a discussion of the Need for Segmentation and proceeds to elaborate on the Segmentation Process and Benefit Segmentation in particular. Literature on Consumption Motivations used in the study is then presented.

2.1.1 Need for Segmentation

A Product's usage may be maximized via three sources:

(1) Fresh customers who are interested in the brand for the first time

(2) By maximizing loyalty of existing customers, and

(3) By prompting present customers to repeat purchase the product class, either by increased usage or in new situation.

Segments can be these sources as well as others. While the marketer attempts to increase usage in customers, it is impossible to satisfy customer needs in large, broad or diverse markets. (Phillip Kotler, 2004).

In the context of increasing product usage, it is imperative to understand consumer needs, behavior, consumer market dynamics and the marketing stimulus they respond to. Given the dynamic nature of consumer markets, it is important that marketers track customer behavior extensively. (David A. Aaker, 1992)

The needs in a consumer market can be diverse and yet form homogenous groups. Grouping customers with homogenous needs gives an opportunity to marketers to assess which groups can be served effectively. This understanding assists the marketer in devising a marketing strategy appropriate to the chosen segment.

"Marketers of the twenty first century, faced with a fast changing and increasing market have to be superb segmenters to survive and thrive." (Weinstein A., 2004)

Many authors have underscored the heterogeneity in customers as being at the root of segmentation. "The underlying logic is that customers demonstrate heterogeneity in their product preferences and buying behavior." (Wind, Y. (1978), Green, (1977)).

Yoram and Wind say that a marketing or business strategy is rendered effective when the market is segregated into homogenous segments, each segment's needs understood, products and services crafted as per these needs and delivered though marketing programs relevant to the segments.

Choffray and Lilien (1980) suggest that homogenous groups of customers are inclined to evince a similar response to marketing communication. Hence businesses adopting segmentation can focus their efforts on select customer groups and effectively address the diversity.

Apart from dividing customers into likeminded groups, Segmentation is also needed in business for its other benefits. There are widespread benefits associated with adopting a market segmentation approach. (Weinstein. A, 1987).

Segmentation makes for efficient delegation of resources for effective targeting of customer offerings. (Beane and Ennis, (1987), Blattberg and Sen, (1976)).

Businesses adopting segmentation need to perform customer and competitor analysis which offers deep insights into customer and competitor behavior. This grasp of customers' needs and wants, makes for enhanced responsiveness in crafting the offer. The understanding of the competitive environment can also assist in taking well informed targeting and positioning decisions. Furthermore, the segmentation approach can make the marketing planning process clearer by directing marketers towards particular customer groups and their requirements. (McDonald and Dunbar, 1995).

2.1.2 Evolution of Segmentation

Segmentation is a key marketing planning tool for organizations the world over as well as the basis for effective strategy formulation.

'Segmentation' as a term came to be only after late 1950. (David A. Aaker, 1992).

As a management philosophy, it is a product of the coming together of microeconomic theory and the shift to the customer from the product orientation from the 1940s and 1950s (Day, Shocker and Srivastava, 1979; Webster, 1991; Danneels, 1995).

Segmentation is based on the premise that potential customers are diverse and a firm can address this diversity by developing marketing programmes suited to differing subgroups or adhere to a singular marketing programme aimed at only one segment. (Paul E. Green, 1978)

Levitt wrote in 1960 that "Marketing is preoccupied with the idea of satisfying the needs of the customer by means of the product and the whole cluster of things associated with creating, delivering, and finally consuming it". Smith (1956) posited that segmentation concept is established on the demand side of the market and serves as a logical as well as rather exact movement of product and marketing effort to consumer or user requirements.

This shift implies an enhanced ability on part of the firm to appeal to a heterogeneous market by stressing on the exactitude with which individual segment requirements may be satisfied. This perspective has gained popularity as the marketing concept.

Market segmentation eventually evolved from the marketing concept, which allows for operationalization of the marketing concept by situating the consumer at the locus of marketing effort (Ames, 1970; Choffray and Lilien, 1980; Dibb and Simpkin, 1994). The hallmarks of the marketing concept are its customer focus and a comprehensive futuristic approach that renders the organization responsive to its dynamic environment. Further to this, every economic effort on part of the organization subscribing to the marketing concept, is nothing but the identification of the customer and creation of customer satisfaction (Johnson and Flodhammer, 1980; Webster, 1991).

2.1.3 Purpose of segmentation:

Kotler (2002) defines market segment as “a group of customers who share a similar set of wants. The customers are too numerous and so diverse in their buying requirements that a company needs to identify the segments it can serve effectively.”

Given this background, the purpose of market segmentation can be understood as determining individual customers with a homogenous benefit pursuit and evidencing comparable behaviour and thus forming relatively homogeneous segments, such that there is heterogeneity across segments (Wedel and Kamakura, 2000). In short, it is the process of segregating the entire market into smaller homogenous subsets which are termed market segments (Danneels, 1996).

With a choice of target segments at hand, a firm can compete selectively and improve its competitive position. (Beik and Buzby, 1973).

"The objective of segmentation research is to analyze markets, find niche opportunities, and capitalize on a superior competitive position. This can be accomplished by selecting one or more groups of users as targets for marketing activity and developing unique marketing programs to reach these prime prospects (market segments)." (Weinstein, 2013)

Elaborating on this objective, the purposes of segmentation have been explained thus:

- To ascertain the needs of likeminded and singular groups of customers and to create products that satisfy the particular groups
- To give direction to positioning or repositioning of a product
- To determine the most relevant media vehicles for advertising (Schiffman et al., 2006)

Prior to these propositions, Ginter explained that "as long as companies have been competing for sales, markets have been separated into smaller homogenous markets." (Ginter, 1956).

2.1.4 Definitions of Segmentation

Smith (1956) proposed the earliest definition of Market segmentation. According to Smith, "Market Segmentation is viewing a heterogeneous market (one characterized by divergent demand) as a number of smaller homogeneous markets in response to differing product preferences among important market segments."

The same definition is echoed by recent authors also. "Market segmentation is the process of splitting customers, or potential customers, in a market into different groups, or segments." (McDonald and Dunbar, 2005).

Weinstein explains Segmentation marketing as understanding customers, serving their needs and wants appropriately, establishing robust networks with channel and co-marketing partners, and reaching out to the market through precisely targeted promotional media.

Market segmentation is defined as a pivotal strategic decision area for businesses in all industries. (Wind, (1978), Piercy (1997)).

Dibb and Simkin (2008) consider Market segmentation as an essential strategy which closes the gap between diverse customer needs and behavior and limited resources of the business.

Frank, Massy, and Wind (1972) define Market segmentation as a strategy. Mahajan and Jain (1978) describe market segmentation as research based market analysis executed with the purpose of identification and allocation of resources among market segments.

Alongside the definitions stating Segmentation as a strategy, there exist other definitions which elaborate on Segmentation as the process of segregating customers into likeminded groups and then addressing them according to segment needs or wants.

Segmentation involves segregating customers into groups with common characteristics, purchasing behavior, needs, usage and attitudes. Customers belonging to different market segments would share different sets of traits and behaviors (Engel, 1972; Bonoma and Shapiro, 1984; Weinstein, 2004)

The same sentiment is echoed by other definitions of Segmentation.

Kotler defines market segment as "a group of customers who share a similar set of wants. The customers are too numerous and so diverse in their buying requirements that a company needs to identify the segments it can serve effectively."

Reaching a mass market, in the backdrop of massive media and distribution channel presence, is rendered rather difficult. Segmentation allows marketers to issue tailored products/ services and communication specific to sub markets. The goal of market segmentation, hence is to arrive at relatively homogeneous customer segments, such that there is heterogeneity across segments (Wedel and Kamakura, 1999).

"These distinct but homogenous subsets of consumers are expected to respond to specific products or services in a similar way." (Kotler 1999).

Weinstein defines Segmentation as “the process of partitioning the market into groups of potential customers with similar needs / characteristics who are likely to exhibit similar purchase behavior.” (Weinstein A., 2004)

2.1.5 The Market Segmentation Procedure

Market segmentation refers to the process of subdividing a market into individual and distinct segments that respond similarly to similar needs. That said, each segment of the market can be appealed to via a singular marketing strategy designed for that segment. Segmentation precedes Target marketing and Positioning. Once segments are identified, the firm embarks on Target marketing which comprises efforts to serve the targeted or selected segment within the marketplace. Deciding on the target segments is based on the competitive positioning of the firm and its environmental conditions, both internal and external. Depending on the target segment characteristics, the firm establishes a positioning strategy. (Dahlstrom.R, 2011)

McDonald and Dunbar (1995) say that the segmentation process is central to every corporate function. They proposed a cyclical model as depicted in Figure. They posited that the marketing department should take charge of ‘Understand value’ and ‘Determine value proposition’ while the entire organization is responsible for the ‘Deliver value’. The choices involved in this cyclical process are affected by the external environment and the organization’s asset base.

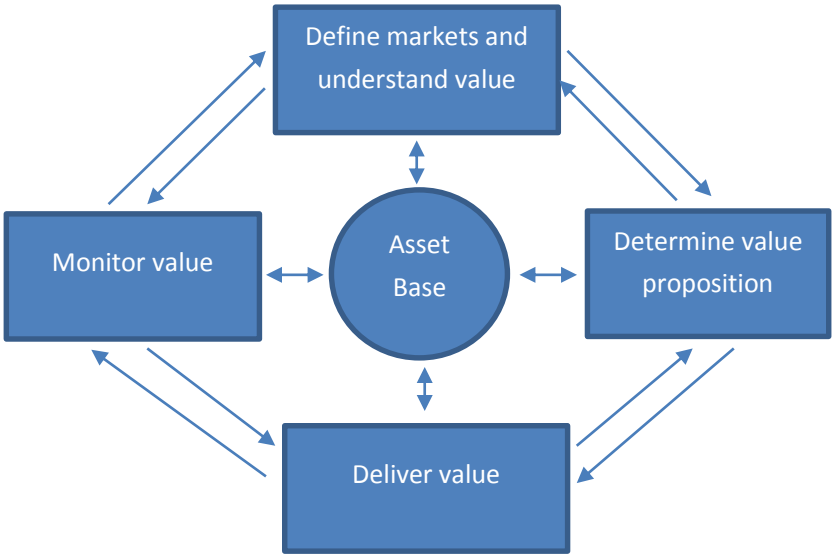


Figure 8: The Marketing Domain (Source: McDonald, M. (2002). Marketing Plans: How to Prepare Them, How to Use Them. Oxford: Butterworth Heinemann.)

Green (1978) elaborates on the three-step procedure used by marketers for identifying targetable market segments:

1. Survey stage: The researcher utilises exploratory interviews and focus groups to secure knowledge of customer motivations, attitudes, and behavior. A Questionnaire is prepared based on these insights and data is collected on the variables such as attributes and their importance ratings, brand awareness and brand ratings, product-usage patterns, attitudes toward the product category, and respondents' demographics, geographics, psychographics, and mediagraphics.

2. Analysis stage: Factor analysis is used to remove highly correlated variables followed by cluster analysis to arrive at an intended number of heterogenous segments.

3. Profiling stage: Each clusters profile is then defined in terms of its distinguishing attitudes, behavior, demographics, psychographics, and media patterns, then each segment is given a name based on its dominant characteristic.

By examining the prioritization of attributes customers make when selecting a brand, companies can discover hereto unreached segments. The attribute the segment gives dominant preference to determines the type of the segment and what they respond to readily. By analyzing demographics, psychographics, and mediagraphics, customers can be addressed with relevance through marketing programs.

But before profiling segments, they must be examined if they satisfy a few criteria for effectiveness. “The four basic criteria for market segmentation as depicted by segmentation scholars are as follows:

1. The segments must exist in reality (and not be a figment of the researcher's imagination),

2. The segments must be identifiable (repeatedly and consistently),

3. The segments must be reasonably stable over time, and

4. One must be able to efficiently reach segments (through specifically targeted distribution and communication initiatives).” (Paul E. Green, 1978)

2.1.6 Bases for segmentation

“A segmentation base is defined as a set of variables or characteristics used to assign, potential customers to homogenous groups." (Wedel and Kamakura, 1999).

Since Market segmentation theory involves artificial segregation of consumers, the identification of correct bases (variable or criteria) and the methods used to define them are crucial to creating market segments. (Wedel and Kamakura, 1999).

While demographic and geographic are the traditionally held segmentation bases, they are increasingly being deemed unsuitable as indicators of consumer behavior. Arguments exist about the efficacy of demographics excepting education in predicting consumer behavior. (Bieda and Kassarjian, 1969). Demographic segmentation also suffers from its inadequacy in describing the consumer for strategy development (Louden and Della Bitta, 2002). Given these limitations, marketers are increasingly choosing Segmentation approaches based on psychographics and behavior for better assessment of the consumer.

Leading strategists support the same argument stating product, product market and customer characteristics are inadequate indicators of customer behaviour and target market strategies should be in line with targeted customers’ behaviours and attitudes. (Christensen et al., 2007).

“Market segmentation has several forms. The common ones being:

- Geographic segmentation: using criteria — nations, states, regions, countries, cities, neighborhoods, or postal codes

- Demographic segmentation: based on variables such as age, sex, generation, religion, occupation and education level
- Behavioral segmentation: divides consumers into groups according to their knowledge of, attitude towards, usage rate, response, loyalty status, and readiness stage to a product
- Psychographic segmentation: based on activities, interests, opinions (AIOs) of customers
- Occasional segmentation: focuses on analyzing occasions, independent of customers
- Benefit segmentation: segmentation according to benefits sought by customer
- Cultural segmentation: classifies markets based on cultural origin." (Kotler et al., 2013)

Major segmentation variables for business market

Demographics	industry	Which industry to focus?
	Company size	What size of company to serve?
	location	What geographical area to serve?
Operating variable	technology	What customer technology to focus?
	User or non user status	Heavy users, medium users, light users or no users?
	Customer capabilities	Should we serve customers needing many or few services?
Purchasing approaches	Purchasing function organization	Should we serve companies with highly centralized or decentralized purchasing power?
	Power structure	Should we serve companies that are engineering dominated , financially dominated and so on?
	Nature of exiting relationship	Should we serve companies with which we have strong relationship or simply go after the most desirable companies?
	General purchasing policies	Should we serve companies that prefer leasing, service contract, system purchasing? Sealed bidding?
	Purchasing criteria	Should we serve companies that seeking quality ? Service ?price ?
Situational Factors	Urgency	Should we serve companies that need quick and sudden delivery or service?
	Specific application	Should we focus on certain application of our products Ruther that all application?
	Size or order	Should we focus on large or small orders?
Personal characteristics	Buyer seller similarities	Should we serve companies whose people and values are similar to us?
	Attitude toward risk	Should we serve risk taking or risk avoiding customers?
	loyalty	Should we serve companies that show high loyalty to their suppliers?

Figure 9: Major segmentation variables for business market

While the above discussed variables are widely used in consumer markets, Segmentation bases used in Business markets can differ. ((Kotler et al., 2013)

Given that the Green Building market is an Industrial market, it is imperative to understand Industrial segmentation bases so as to offer Green Building marketers a better segmentation strategy.

2.1.7 Industrial Segmentation

"Because of the inherent differences between consumer and business markets, marketers cannot use exactly the same variables to segment both. Instead, they use one broad group of variables as the basis for consumer segmentation and another broad group for business segmentation." (Kotler, 2000).

Webster (1991) suggests that "industrial marketing calls for and creates conditions leading to a more complete application of the marketing concept than consumer marketing". He argues that, industrial marketing naturally necessitates that all business functions and marketing decisions be customer-oriented and based on a profound understanding of customer needs.

Supporting the idea, Cardozo (1968) suggests that applying segmentation approaches from consumer markets in industrial markets can further the science of marketing.

Other supporters of this approach include Wind (1978), Cheron and Kleinschmidt (1985), and Dibb and Simkin (1994).

Consumer and industrial market segmentation differs only in the specific bases used as indicated by Frank, Massy, and Wind (1972). Abratt (1993) posited that consumer segmentation bases may be adapted and applied in industrial markets.

While it is held that industrial purchasers are more rational and less emotional, recent work indicates that industrial purchases are not without emotional reaction (Johnson and Flodhammer, 1980).

For the specific purpose of segmenting the market for Green Buildings, a variation of these thoughts should apply. This is because the Green Building Service provider markets a product/ service (Green Building facilitation service/ Building Certification) to owners, tenants, builders, government body or corporate entity who commission buildings for sale to the end-user or for personal use. This is largely a business-to-business market. However, in creating the Green Building, the Green Building Service provider has to anticipate the needs and wants of the end-user and create the resource efficiency or market differentiation necessary to appeal to the consumer. Otherwise, it will be extremely difficult to market Green Buildings.

2.1.8 Benefit Segmentation

Geographic and demographic segmentation bases are considered less effective when compared to psychographic and behavioral segmentation bases.

Psychological segmentation takes Motivations, Personality, Perceptions, Learning, Attitudes into consideration. Rate of Usage Segmentation is based on usage intensity, Heavy vs. Light. The

focus here is on converting light users to medium or heavy users by identifying new uses for the product. Usage segmentation also attempts to satisfy heavy users as well by ensuring their needs are met by the product continuously. Awareness Status and Brand Loyalty also fall under the ambit of Usage segmentation. Satisfying and rewarding brand loyalty by providing rewards for continued usage and averting brand switching are important here. (Schiffman et al., 2006).

Behavioural segmentation relies on variables such as usage pattern, occasion for use, benefits sought by the consumer from a particular product, loyalty, attitudes, and user status (Kotler, 2002).

Among the behavioural segmentation bases, benefit segmentation is considered more effective than, other bases such as demographic, geographic, and psychological segmentation. (Haley 1968).

Reiterating the same thought, Haley suggested in 1999 that "there is nothing to suggest that benefits have lost their role as one of the best possible starting points for segment definition."

Given that different buyers pursue varied benefits from a product or service, benefits can be used to segment them. The classical case of successful benefit segmentation is the market for toothpaste (Schiffman and Kanuk, 2002). Especially in the food market where variety influences behavior, Benefit segmentation has been used by several food product marketers, such as Cadbury's, Kellogg's, and Knorr soups.

The underlying reason for making a purchase is that consumers are trying to satisfy particular needs and wants. Customers are not exactly seeking products but the 'benefits' that satisfy their needs. (Belch and Belch, 2006).

Benefits are the cumulative satisfactions derived of customer's needs or wants. They are not limited to product features but serve to appease physical, emotional, or psychological needs. Benefit segmentation segregates customers by similarities in buying motives. (Weinstein, 2004).

"Benefit segmentation divides a heterogenous population into homogenous groups on the basis of product benefits consumers perceive as important". (Chang and Chen, 1995).

This idea was also posited in 1978 by Wind. According to Wind, "Customer-oriented approaches, based on multiattribute theories of consumer behaviour, have been used widely in studies on market segmentation". These approaches reflect the consumer's market opinion as they are based on the fact that consumers purchase products for the benefits they beget.

"Benefit segmentation is widely acknowledged as one of the best ways to segment markets. Some of the benefits in the benefit dimension are: benefit segments are based on causal factors than descriptive factors and this is a method with great flexibility. The benefits which people are seeking in consuming a given product are the basic reasons for the existence of true market segments. This approach provides a more direct measure of the differences in preferences among customers and offers a more action-oriented analysis for managers" (Haley, 1968).

"To satisfy the target consumer's needs, benefit needs and product attributes are the most popular variables for segmenting the market". (Calantone and Sawyer, 1978, Dubow, 1992, Haley, 1995, Toombs and Bailey, 1995).

John and Miaoulis (1992) evidenced that "benefit needs variables integrated with benefit segmentation analysis can contribute to more focused and effective marketing strategies for health-

related products and services". Myers (1976) posited that 'benefit structure analysis' is an effective avenue for discovering fresh product opportunities in "very broad product/service categories."

Adoption of a benefit segmentation strategy renders a distinct competitive edge for a marketer. If the marketer can unearth the benefit segment which allows the brand to capitalize on the satisfaction that this brand offers better than other brands, the marketer can assuredly dominate within that segment. (Baker. M.J., 2001)

Knowledge of Benefit segmentation gives the marketer a sense of direction when choosing promotional material, media which will yield effective results for select target markets. (Haley, 1968).

Given the dynamic nature of consumer markets with regard to increased competition in industries and transitioning consumer behavior, it is imperative that organizations adopt market segmentation that is relevant to consumer's needs and behavioural patterns. (Mohsen and Dacko, 2013).

Affirming that consumers will not put in efforts a product without some benefit emphasizes how perceived benefits drive behavior. (Feldman & Hornik, 1981).

Day (1990) established, "a comprehensive understanding of possible benefits that customers may seek is a fundamental basis for marketers to formulate sound marketing strategies, specifically product differentiation or positioning."

Giving credence to benefits in marketing, Haley posited benefit segmentation as an effective method for determining target markets as it bases itself on consumer values and opinions. In

addition the benefit segmentation approach relies on causal factors contributing to consumer's future purchase behaviour and not just descriptive factors. (Haley, 1968)

Hollywood, Armstrong, and Durkin (2007) also support the argument saying traditional segmentation approaches may not offer marketers an insight into how consumers behave in reality

Benefit segmentation's ultimate purpose is assist managers in delegating scarce resources efficiently, tailoring products/services as per the segment's requirements, and finally engage with the most lucrative segments. These purposes would be obsolete if an in depth understanding of customer segments is not arrived at through segmentation and profiling. "Segment profiling provides not only a description of each subset, but also a confirmation of the profile and segment correspondence" (Hair et al. 1998).

2.2 Green Marketing

Green marketing has its roots in the importance ascribed to environmental concern in the 1970s. (Hennison and Kinnear, 1976).

"Green marketing is the marketing of products that are presumed to be environmentally preferable to others. Thus green marketing incorporates a broad range of activities, including product modification, changes to the production process, sustainable packaging, as well as modifying advertising." This definition is commonly found across literature.

Green marketing was defined by Michael Polonsky (1994) as “marketing that consists of all activities designed to generate and facilitate any exchanges intended to satisfy human needs or wants, such that the satisfaction of these needs and wants occurs, with minimal detrimental impact on the natural environment.”

The holistic management process responsible for identifying, anticipating and satisfying the needs of customers and society, in a profitable and sustainable way. (Peattie and Charter, 2003).

Green Marketing can help organizations to gain a competitive advantage and a strong consumer base. (Renfro L A, 2010).

Consumer concern for environment has been on the rise. (Chitra, 2007). Along with this trend, the consumer concern over the effect of consumption on earth has also grown. (Carlson et. al., 1996; Laroche, Bergeron, & Barbaro-Forleo, 2001).

Businesses are now aware that in future, environmental concern could motivate consumers’ purchase decisions. This realisation has led to the development of green products and green marketing (Pickett-Baker & Ozaki, 2008; Banerjee, Gulas, & Iyer, 1995).

Before delving deeper into Green Marketing concepts, definitions of the elements of Green Marketing are in order.

A Green Consumer is defined as an environmentally conscious consumer. (Henion and Kinnear, 1976) and Green Consumerism is defined as a type of socially conscious consumer behavior with a focus on environmental conservation. (Antil, 1984).

Ottman (1992) defines green consumers as “individuals looking to protect themselves and their world through the power of their purchasing decisions. In their efforts to protect themselves and their world, they are scrutinizing products for environmental safety”.

Another definitions says that Green consumers are environmentally conscious consumers for whom environmental considerations are important motivations driving their purchase. (Singh, 2011)

While the Green consumer is on the receiving side, supply side definitions are offered by a few authors.

Green products are defined as products that “minimize the environmental impact of their consumption” (Janssen and Jager 2002).

Grant defined a Green Brand as “one that offers a significant eco-advantage over the incumbents and which hence appeals to those who are willing to making green a high priority.”

Green advertising comprises marketing directed at promoting the environmental characteristics of business efforts (Kilbourne, 1995), as being committed to the environment and the environmentally conscious customer.

Green advertising is defined as a marketing tool to communicate the efforts and commitment of the enterprise to the market. (Keller, 2001).

2.2.1 Issues with green product adoption:

Consumption by its very nature has an impact on the environment and entails consumption/ depletion of natural resources. Green products bring down environmental impact of consumption making it less burdensome to the environment. It is then important to convince consumers to choose green products so as to minimize the environmental footprint caused by consumption.

Notwithstanding the increasing environmental concern and green marketing, green product demand is not as high as anticipated. It is found that significant barriers exist towards diffusion of ecological consumption.

Mintel (1995) discovered a significant gap between consumers concern and actual green purchasing.

Lack of honesty in consumer responses contributes to unclear understanding of consumer perceptions as well as green product adoption. While consumers exhibit the socially acceptable favorable intentions, they may not necessarily take action according to intention.

Very few customers are willing to invest in green products or pay a premium for the same. This could indicate that only the innovators and some early adopters of all the diffusion of innovation categories (Rogers 1995) are willing to spend a premium on environmentally friendly products. Thus pro environmental consumer intentions may not necessarily drive up green product sales.

Consumer's lack of trust in green product performance or claims also contributes to adoption issues. (Oliver, 2007).

Green product penetration is much lesser than that of conventional products. From Rogers' Diffusion of innovations (1995) perspective, innovation adoption is slow at market entry, peaks and then tapers off at higher penetration, but green product adoption is even slower.

This gap in diffusion is prominent between the innovator/early adopter stages and the early majority stage (Moore 1991). "Green product adoption is not moving past the early adopter stage, or beyond the earliest 15% of adopters (including innovators), and these products have not reached the early majority". (Wiser, Bolinger, Hart and Swezey 2001).

While most popular green products currently reach 2-4% of the market, they have not completely disappeared. Diffusion of green products thus appears to be steady with products suspended in mid-air, not succeeding nor failing.

Most of the research in green marketing has dealt with low involvement products (e.g. Brown and Wahlers 1998; Sriram and Forman 1993). Hence insight into consumer decision making especially when high risk/ involvement products are in question is limited.

The adoption issue could be because of price or quality issues associated with green products. Peattie (2001) suggests that, the minimum required of an environmental product is that it be equal to its traditional counterpart in price and quality with the ecological aspect as a tie breaker.

A report by the World Wildlife Federation (WWF) socially responsible endeavors, including producing environmentally friendly products, is a key way to earn and keep customers (Marketing News 2006).

2.2.2 Need for Segmentation when marketing Green Products

Sufficient empirical evidence exists to support the claim that environmental concern is important in consumer decision making (Hackett, 1992, 1993; Zimmer et al., 1994; Meffert and Bruhn, 1996; Grunert-Beckmann et al., 1997; Kilbourne and Beckmann, 1998).

Given that consumers for green products exist but barriers too are prevalent, it is imperative that strategies be researched which can overcome barriers and increase green product consumption, adoption and proliferation.

Though there exists a section of consumers who consistently search for green products driven by environmental interests, their identity, characteristics and sincerity has been a subject of discussion. This discussion may not be completely relevant because the definition of the green consumer is still evolving and also because the impacts of environmental concerns have more to do with the consumer than marketing. (Drumwright, 1994; Morton, 1996).

Schlegelmilchet al. (1996) suggest that segmenting and targeting markets based on pro environmental purchase behavior are essential when companies position their green products.

Segmentation analysis assists companies in effectively targeting consumers who consider environment in purchase decisions (Meffert and Bruhn, 1996; Prendergast and Thompson, 1997).

The awareness of ecological sensitivity began in the 1960s in the United States, but 'green consumers segmentation' did not make a formal academic entry until the 1990s with the publication of the Roper Organization's Green Gauge Study for 1993 (Stisser, 1994). "Consumers had become more educated about the environment and were beginning to make their purchases based on their growing green consciousness" (Stisser, 1994).

In the discussion on marketing Green products, the value derived by the customer is the key factor in the pursuit of sustainability. The economic, relational, and ecological returns desired by the consumer are the basis of sustainable value. Analysis of markets and segments to discover, identify and derive strategies that generate value are a must for successful organizations. (Dahlstrom.R, 2011)

Towards this the market must gain an appreciation of customers, their needs and wants which reflect the economic, social, and ecological value expected from the product. The firm with a sustainable orientation possesses greater ability to emphasis on the returns sought. The customers purchasing capacity and willingness also assume importance in his context as an inability to acknowledge these would only lead to the failure of the green marketing proposition. (Dahlstrom.R, 2011)

Once this assessment takes place, the firm needs to investigate unique value statements in the market and the segments corresponding to these. The firm then transitions from market analysis to marketing mix positioning as depicted in Figure 8.

This development from market identification addressing individual segments is termed as STP - Segmentation, Targeting, and Positioning. (Dahlstrom.R, 2011).

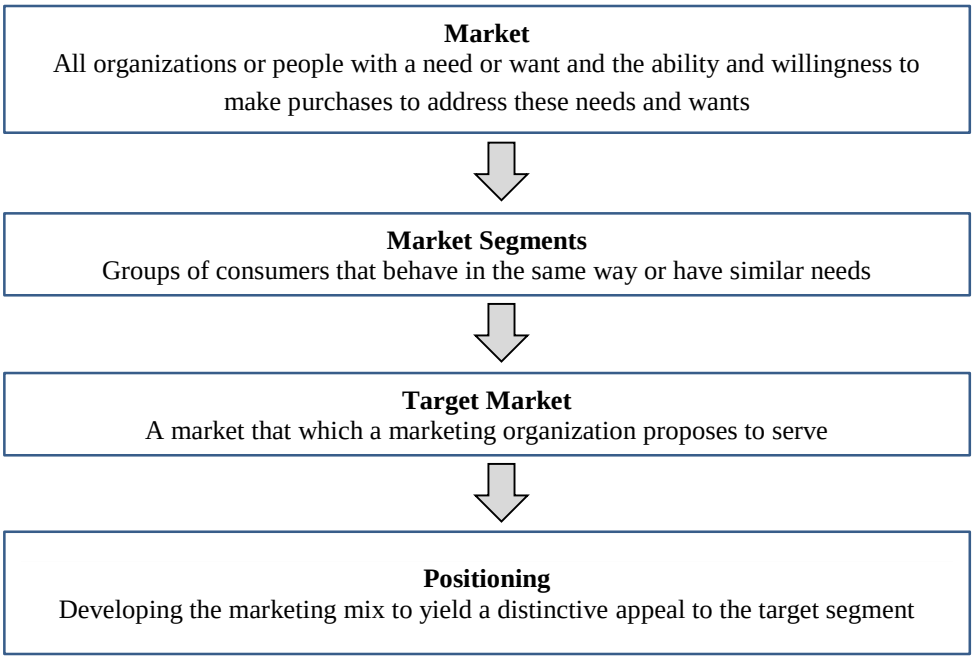


Figure 10. STP Process- Segmentation, Target Markets, and Positioning. Source: From O'Quinn, Allen, Semenik, Advertising and Integrated Brand Promotion (with InfoTrac®), 4E. © 2006 South-Western, a part of Cengage Learning, Inc. Reproduced by permission. www.cengage.com/permissions

2.2.3 Relevance of benefits as a base for green product segmentation

Efforts abound to discover the relevant segmentation bases for defining and targeting green consumers. (Diamantopoulos et al., 2003).

Green marketing literature suggests a variety of variables used in profiling green consumer segments (Kilbourne and Beckmann, 1998). These include:

- Geographic measures (e.g., Tremblay and Dunlap, 1978; Samdahl and Robertson, 1989; Pickett et al., 1993; Gooch, 1995),

- Cultural measures (e.g., Anderson et al., 1974; Webster, 1975; Murphy et al., 1978),
- Personality measures (e.g., Kinnear et al., 1974; Crosby et al., 1981), as well as
- Socio-demographic characteristics.

Socio-demographic characteristics have yielded little value in segmenting and targeting environmentally conscious consumers (Samdahl and Robertson, 1989; Scott and Willits, 1994; Stern et al., 1995). At the same time, ‘‘many consumer products and services companies focus primarily or even completely on demographics’’ (McDonald and Dunbar, 1998, p.22) because socio-demographic variables are convenient in terms of availability and application (Myers, 1996). Considering the apparent inadequacy of socio-demographics for profiling green consumers, marketers need to find more relevant, complex segmentation and targeting approaches (Wedel and Kamakura, 2000).

Wagner (1997) comments that “Socio-demographic attempts to profile the green consumer have not always yielded strongly indicative results, and the results produced in one study have been repeatedly contradicted in another.”

Apart from socio-demographics, environmental attitudes, environmental knowledge, level of education, social consciousness or related behaviours have also been tried for their adequacy as segmentation bases. However, once again “results of these studies were frequently inconclusive and sometimes contradictory” (Kilbourne and Beckmann, 1998).

Further research has been happening in this direction since. Given that green products are still at the innovator stage in the theory of diffusion, segmentation bases suitable for innovation may apply better. Benefit segmentation may then prove to be a better base for segmenting green products.

"Consumers want value-added attributes, such as green benefits, with their products; however, just because a product has this value it does not translate into consumer purchase behavior". (Mintz, 2011).

2.3 Segment Profiling

"The ultimate purpose of benefit segmentation is to assist managers in allocating scarce resources efficiently, customizing products/services appropriately, and retaining the most profitable segments. These objectives would not be met without a profound understanding of the customer segments through proper delineation and profiling. Segment profiling provides not only a description of each subset, but also a confirmation of the profile and segment correspondence" (Hair et al. 1998).

Profiling is the conclusive step in defining segments. After understanding customers' needs and segregating customers based on homogenous benefit need seeking behavior, Profiling is executed to gain a deeper understanding of the segment characteristics.

"Once people have been classified into segments in accordance with the benefits they are seeking, each segment is contrasted with all the other segments in terms of demographics, volume of consumption, brand perceptions, media habits, personality and lifestyle and so forth which are customer values and consumption motivations driving benefit seeking behavior". (Beane and Ennis, 1987).

Echoing this statement and as mentioned in the Introduction Chapter, a multi-attribute approach for consumer profiling seems relevant to this study.

Typically benefit segmentation studies use two groups of variables. Social - demographical variables, such as age, gender, education, marital status, constitute the first group and Behavioural variables such as benefits sought constitute the second. Such information offers a clear picture of segment demographic and benefits sought and assist in customizing product/ service offers and design promotional plans. (Huang and Sarigollu)

To arrive at deeper segment profiles, this study uses customer motivations too to profile segments.

"Rich profiling of segments enable destination managers to develop effective marketing plans through selection of suitable target segments, product design and communication strategy." (Huang and Sarigollu)

2.3.1 Significance of consumption motivations in profiling Benefit Segments

Smith states that market segmentation which ignores consumption motivations "is simply an approximation based on the assumption that descriptors (i.e. characteristics) and motivations (i.e. needs/behaviour) are closely aligned" while in reality they are not so.

Market Segmentation approach proposed by Smith is an accepted method for devising the marketing mix for a variety of products. All markets invariably have singular sub segments and

they are all segmented by price and quality issues. While price and quality cannot be effective as indicators, product or service uses and importance attached to production attributes by consumers can contribute to better segmentation. "Market segmentation and consumer profiling strategies have been used in agribusiness management analysis to understand consumer response to a number of issues" (Smith, W. 1956).

Several other support this idea. Segmentation based on benefits, needs or motivations carries greater impact than demographic factors or product features in gaining an understanding of the market. (Plummer, 1974, Wind, 1978, Lesser and Hughes, 1986, Cermak, File and Prince, 1994).

The idea is further supported by Weinstein who states that it is possible to use benefit segmentation in conjunction with several other variables such as product/ firm loyalty, psychographics, perceptions, preferences, purchase intention and purchase situation/ occasions. (Weinstein, 1987).

Many factors are deemed to effect green consumer behaviour such as changing consumer values, demographic factors, prior knowledge of environmental issues and alternative products, perceived personal relevance, and the individual's ability to contribute positively to the environmental situation. (Peattie and Charter, 2003).

In this context, it seems logical for marketers, to identify 'green consumers' by assessing their purchase motivations. Doing this can lead to creation of appropriate market offerings and achievement of competitive advantage outlined by Porter. (Peattie and Charter, 2003).

Study of Consumption Motivations appears invariable in Segment Profiling. From a cognitive perspective, consumer behavior is the sum total of efforts expended in selecting, purchasing, and

using products and services to satisfy needs and desires. Combining need satisfying, benefit seeking, consumption motivation and related perspectives allows for an exhaustive comprehension of benefit segments and the behaviour within.

"Linking consumption motivations to benefits sought provides a better understanding of customers' needs and wants and thus allows more effective targeting with appropriate service." (Zanoli and Naspetti, 2002).

In fact, even Psychographic segmentation that does take consumer motivations into account while determining and categorising consumers; may not reveal much about consumer psyche. Hence developing relevant motivation-based segmentation approaches is invaluable for marketers seeking deeper insights into the nature of the consumer decision process and into the core value sought in the consumer purchase decision. (Mohsen and Dacko, 2013).

Research on perceived benefits as motivations classifies benefits from products into functional, hedonic, social, epistemic, aesthetic and other categories. (Lai, 1995; Sheth, Newman, & Gross, 1991).

As mentioned in the Introduction chapter, "by understanding segments, and profiling them based on consumption motivations, an understanding of market realities may be arrived at. Understanding these consumption motivations can support marketer with insights on consumer decision making process in customers of Green Buildings."

2.3.2 Specific consumption motivations chosen for the study: Prior Knowledge, Level of Involvement and Usage Level

Consumption motivations specifically selected for this study include Prior Knowledge Level, Involvement and Product Usage Level. These consumption motivations are chosen they are widely linked to benefits of products/services across literature and hence relevant in benefit segmentation of Green Building customers and also as they have been explored extensively in existing marketing studies.

According to Kotler (2011) "a need becomes a motive when it has come to an adequate level of intensity. A motive or drive is a need that is affecting the person to seek fulfillment." (Kotler, 2011).

With regard to eco-labelled products, "Consumer's adoption process may depend on several factors such as motivation and ability." (Thøgersen, Haugaard & Olesen, 2010).

Motivation is considered fundamental to the search for eco-labelled products, actual purchase of green products and also plays an important role in the "Causal path model" proposed by Thøgersen. (Leire & Thidell, 2004 and Thøgersen, 2000).

Motivation is considered a contributing factor in research concerning green consumer purchasing behavior (Young et. al, 2010, p. 28). Consumers' motivation level is further connected to the increasing gap between consumer and producers which could possibly result in trust issues between the two parties. (Nilsson, Tuncer & Thidell, 2004).

Eco-motivation may also require consideration in the context of trust issues on part of consumers with respect to green marketing, labeling and product's environmental footprint. (Devinney, Auger & Eckhardt, 2011).

Thøgersen´s (2000) "Causal path model" includes Motivation as a factor when highlighting factors affecting consumers' purchase of eco-labelled products.

Schiffman et al propose a series of steps towards segmentation considering consumer motivations:

- Identify the needs and goals of the target market
- Identify both latent and manifest motives
- Use knowledge of needs to segment the market and to position the product
- Use knowledge of needs to develop promotional strategies (schiffman, kanuk, das)

2.3.2.1 Prior Knowledge

"Prior product knowledge is proposed in consumer research as one of the cognitive traits existing at the background of consumer perceptions, influencing valuation of a product's perceived benefits, costs, and value" (Lai, 1995).

Product knowledge comprises two important elements: familiarity and expertise (Alba & Hutchinson, 1987). Familiarity describes the frequency of product experiences on part of the consumer. Expertise on the other hand is about experiences in the past which shapes present and/or future purchase decisions.

Possession of relevant knowledge of environmental issues is one of the early and important stages in the green purchasing decision process. (Young, Hwang, McDonald & Oates, 2010).

This assumes importance as lack of information on the environmental and social performance of products and manufacturers is considered a possible barrier for green consumption. (Young et. al, 2010).

Thøgersen´s (2000) "Causal path model" includes Motivation and knowledge among others as factors when highlighting factors affecting consumers' purchase of eco-labelled products.

This is supported by another study which has investigated factors that carry import in terms of environmental concern in consumer behavior. This study includes knowledge among others. (Fransson & Gärling, 1999).

It is understood that consumers' green values affect motivation behind green purchase inclination. Here, consumer's knowledge about relevant issues and earlier purchase experience are estimated to influence motivation. (Young et. al, 2010, p. 28). Informed product choices are considered a prerequisite for consumers being able to make greener decisions.

The increase in Green marketing activities countries can be deemed to effect heightened consumer knowledge and resulting in influence consumers into purchasing green products (Cohen, 1973).

Towards effecting a larger scale of change in consumer purchasing behavior, it is proposed that marketers should give prominence to ecological knowledge across their organizations, their products and their advertising. (Mendleson, 1994).

However, Peattie cautions against relating environmental knowledge to green consumption under the assumption that increasing environmental knowledge will lead to an increased desire to purchase green products. Peattie suggests that an increase in environmental knowledge may result in reduction of consumers' confidence in market-based solutions for environmental challenges. Consumers may end up avoiding green labelled products when their product knowledge and hence awareness of product shortcomings is greater. (Peattie, 2001).

2.3.2.2 Level of Involvement

Mittal posits that Level of Involvement, which is the "enduring interest in and general concern with a product category, may stimulate information search and thus affect choice behaviour in consumption decisions". (Mittal, 1989).

Level of Involvement is also defined as "The level of personal relevance that a consumer sees in a product." (Schiffman et al., 2006).

Types of involvement:

- Enduring Involvement : long-lasting involvement that arises out of a sense of high personal relevance
- Situational involvement: Short-term involvement in a product of low personal relevance
- Cognitive Involvement - Rational level involvement in products that are considered to be major purchases
- Affective Involvement - Emotional level involvement in products

Factors leading to high involvement:

- Level of perceived risk (social, financial or physical)
- Level of personal interest in product category
- Probability of making a mistake or buying the wrong product
- Extent of pleasure in buying and using a product
- Number and similarity of competitive brands available

Considering the types, intensities and factors influencing involvement, a one size fits all marketing strategy may be irrelevant especially in the context of green products. Ginsberg and Bloom (2004) claim that marketing strategies must be tailored to different markets and degree of environmental concern present in those markets.

Research acknowledges that there are consumer segments that exhibit different levels of environmental behaviors. Ginsberg and Bloom (2004) expand on the results of the Green Gauge 2002 study emphasizing that certain types of consumers possess greater willingness to adopt green than others.pg 15

Most of the research in green marketing has dealt with low involvement products (e.g. Brown and Wahlers 1998; Sriram and Forman 1993). The authors contend that research on low involvement products does not offer sufficient insight into consumer decision-making regarding high involvement green products. When search/risk/price/learning is higher, the factors affecting choice may differ from the low risk presented in low involvement situations.

To bring about a change in consumer behavior and increase the adoption of environmentally friendly products, it is important to grasp varying consumer motivations in high involvement product situations.

Involvement assumes relevance in high product involvement situations as consumers are more concerned with the consequences of product choices and find the product of greater relevance in the context of their needs and values (Bloch and Richins 1983).

According to Hartmann and Iba ´n ˜ez (2006) "green marketing generally focuses on the efficiency of cognitive persuasion strategies, and believes that the consumer's high involvement concerning environmental issues is an effect of growing environmental knowledge."

2.3.2.3 Product Usage Level

Product usage level is a behavioral variable. "Research shows that frequent users have more idealistic cognitive structures than occasional consumers, which may be considered as a symptom of a higher level of interest" (Zanoli & Naspetti, 2002). It may be assumed that heavy users assume they have acquired product knowledge and even skills which they may want to capitalize on by growing product usage. (Hoch & Deighton, 1989).

Chan, 1999 sought to segment the market, based on green product usage rate and attempted to delineate segments based on demographic profile, perception and attitude towards green product purchase. Consumers with high environmental concern, influenced by peer groups and a strong sense of identity evinced a high usage rate of these products (Heavy Green Consumers). The

consumers with low usage (Light Green Consumers) assumed that ecological products were difficult to find compared to conventional products.

Balderjahn (1988) concluded that individuals with a pro-environment attitude participated more in the buying and consumption of green products. Several researches investigating the relationship between attitudes towards the environment and the buying of products (Schwepker and Cornwell, 1991; Rios et al., 2006) or the intentions of use (Alwitt and Berger, 1993) reveal that the two are directly proportional. (Schuhwerk and Lefkokk-Hagius, 1995). But, on the other hand, it cannot be taken for granted that consumers with high environmental inclinations have greater usage rates. (Vlosky et al., 1999).

2.4 Conceptual Framework - Benefit Segmentation of Green Buildings

The Green Building, also known as green construction or sustainable building, refers to a structure and using process that is environmentally responsible and resource-efficient throughout a building's life-cycle. (Yudelson, 2004).

It is implied from the definition that a ‘Green Building’ is intrinsically green, ie. ‘Green by Design’ from the concept through design stage to post occupancy. The concept of LCA or Life Cycle Assessment concept also validates this understanding about Green Buildings. “During the late 1980´s new instruments such as Life Cycle Assessment (short: LCA) were invented which allowed ecological considerations to be introduced into marketing decisions. The Life Cycle

Assessment model seeks to identify the main types of environmental impact throughout the life cycle of a product. LCA was developed according to ISO 14040." (Spiegel and Meadows, 2012).

This understanding can be applied to the IGBC Certified green buildings which are the subject of research in this study.

In this context, it may be expected that the barriers to marketing Green Products discussed in earlier sections may be easier to address in case of Green Buildings.

Lack of trust in green product performance has been discussed earlier as an issue in adoption as well as deterring consumer willingness to pay a premium for Green Products. However, in case of Green Buildings, performance can be documented as well as measured offering customers a testimony of the same.

Research suggests that Green product and Green marketing claims often meet with skepticism in consumers. This is owing to the prevalence of Greenwashing which is the intentional or inadvertent presentation of non-green claims as green. Banerjee et al, state that "Although many advertisements today include green claims, very few clearly articulate the true benefit of the product or state the specific environmental action taken by the company to make their product eco-friendly.

IGBC Certified Green Buildings carry a 'label' that is accepted by Governments worldwide. This renders the IGBC Certified building a clean claim making it easier for customers to trust the Label.

As mentioned earlier, IGBC Certified Green Buildings satisfy the criteria set forth by the LCA which was developed from ISO 14040. Quality, which is considered an issue in Green Products, is addressed by design in Green Buildings.

Apart from the green aspects of IGBC Green Buildings discussed so far, several benefits also accrues to customers as explained in the Introduction Chapter. These benefits are at the core of the benefit segmentation process of IGBC Green Buildings.

2.4.1 Segmenting IGBC Certified Green Building Customers as per Benefits sought

Yudelson (2004) suggests seven keys to marketing green buildings. These are a combination of two familiar principles of marketing:

1) Segment your market, target key segments and position your company, and then,
2) Use the building blocks of competitive strategy—differentiation, cost and focus—to achieve success.

This study focuses on the first principle of segmentation. As established in the previous chapter, given the status of Green Buildings as an innovative product, benefit segmentation comes across as an effective segmentation means for Green Buildings.

The research is planned to identify benefits sought by customers of the Indian Green Building Council, segment customers and then attempt to profile customer segments based on the benefit seeking behavior, consumption motivations and demographic detail. Figure 11 depicts the Conceptual Framework applicable to this research.

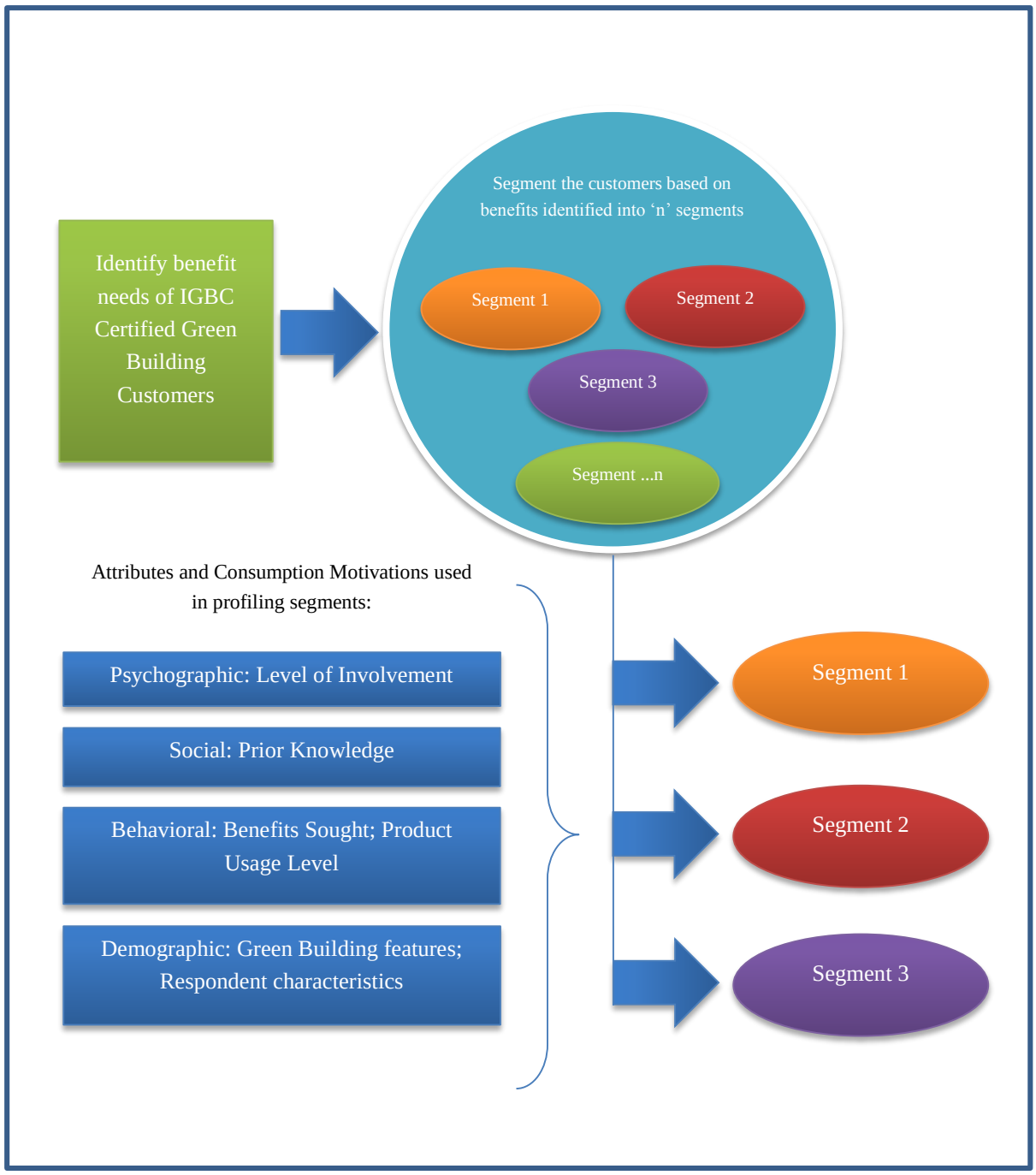


Figure 11: Research Conceptual Framework

2.4.2 Profiling Green Building customers

As depicted in the Conceptual Framework, several attributes make a segment profile.

Psychographic Variables: ‘Level of Involvement’ is a Psychographic variable used as a Consumption Motivation for profiling IGBC Customer segments. Level of Involvement may stimulate information search and affect behavior.

Social Variables: ‘Prior Knowledge’ possessed by the IGBC Customer segments characterized by their familiarity and expertise in the domain which affect consumer choice making.

Behavioural Variables:

- **‘**Product usage’ or Purchase characteristics to understand usage, involvement and knowledge dynamics as suggested in theory to grasp. “Perhaps the solution to understanding green purchasing behaviour is to try and understand the purchase rather than the purchaser.” (Peattie and Charter, 2003).
- Benefits sought: Benefit factors are the reasons affecting consumer choice behavior. Different customer segments are drawn to a market offering based on the benefits they seek. To have a focused marketing initiative, segmenting through analyzing benefits sought is imperative. (Weinstein, 2004).

Demographic Aspects:

- Green building project and Certifications related aspect: Geographic location is a prime variable to consider in deciding where green building services can be successfully marketed. (Yudelson,

2004). Additionally, Certification and Rating aspired for, Gross built up area, Location, Type of Building, Incremental Cost and Payback Period are considered for Profiling.

- Respondent characteristics: define decision making gravity, risk propensity. These include age, qualification and years of experience.

Summary

Arriving at IGBC Certified Green Building Consumer Segments would offer marketers an understanding of the customer typologies in the Green Building market in India. This would serve as a starting point for Targeting and Positioning activities which follow as per Segmentation theory.

By understanding IGBC Customer Segment Profiles via consumption motivations, demographics and benefit sought, marketers can choose Target segments based on the identifiability, accessibility, affordability and other criteria suggested in Segmentation theory. Once the Target segments are selected, marketers can assess the promotional strategies which best suit the target segments and position accordingly.

To summarise, the study offer IGBC Green Building marketers an avenue to serve existing customers insightfully, and attract pre-qualified customers meaningfully using relevant marketing strategies.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Introduction

The present chapter describes the research methodology followed for this study. The chapter commences with an elaboration of the research process. It then describes the Research Purpose, Approach, Objectives and reprises the Conceptual Model.

The Research Design is then outlined followed by an explanation of Methodology and Variables used. Research strategy is then explained after which Sampling, Instrument Design and Data collection are discussed. Data Analysis methods are detailed followed by Validity and Reliability aspects. Finally, Limitations and Future Research Direction are expressed.

3.2 Research Process

The Research process is the road map of methods and strategies used to gain an understanding of the research scenario. It is an application of scientific methods of research to arrive at valid conclusions. Research is a set of activities directed at the research aim which need not be in a sequence but which are highly interrelated. However establishing a pattern of research is possible as described in Figure 12. (Zikmund, 2002).

The entire research process is not linear but cyclical and often times the conclusions of the study become inputs for further investigation. (Ibid). This study applies the research process to arrive at an understanding of customer segments seeking common benefits so as to offer marketers relevant insights for target marketing and positioning IGBC Certified Green Buildings.

Figure 12: Research Purpose

3.3. Research Purpose

Saunders, Lewis & Thornhill (2003) classify research into exploratory, descriptive or explanatory while Cooper and Schindler (2003) categorize it as descriptive and causal. Yin and Zikmund (2002) classify research based on purpose as exploratory research, descriptive research and explanatory research.

3.3.1. Exploratory Research

Exploratory research is used to understand and define the nature of a problem, where the purpose is to gain insight and not prove anything in conclusive fashion. Exploratory research is usually followed by subsequent research (Ibid). Exploratory research is flexible and is used as a beginning step when the research problem is not specifically defined in a study of a new

phenomenon. Exploratory research may develop hypotheses, but it does not seek to test them (Darabi, 2007).

The present study falls into the ambit of Exploratory Research.

3.4. Research Approach

Research approaches can be of two types: deductive and inductive.

The deductive approach is where hypothesis is developed from the theory and where the research strategy is designed to test the hypothesis. It is executed without delving into meanings that humans attach to their behaviour (Saunders, Lewis and Thornhill, 2003).

The inductive approach, develops an empirical generalization that describes patterns of data and it seeks to identify or develop a theoretical proposition that is consistent with those patterns (Schutt, 1996).

This research is partially deductive and partially inductive.

Research typologies also are divided as Quantitative and Qualitative (Cooper and Schindler, 2003).

Quantitative research determine the relationship between one thing (an independent variable) and another (a dependent variable) in a population. In a quantitative approach the conclusion is based on statistical data and the researcher is a mere spectator of the research problem.

Qualitative research methods focus on the phenomenon at large and on understanding social processes and interrelations. The purpose is to develop a deeper understanding of the research problem through gathering information by being a part of the study. (Holme & Solvang, 1997).

This thesis borrows from quantitative as well as qualitative research approach, as the combination seems relevant for the research objectives at hand.

3.5 Objectives of the Study

Literature on Green Buildings in India reveals much about the drivers, challenges, obstacles and growth potential of green buildings. But research on who exactly is the green building customer is incomplete. That said, information on what motivates customers and what drives green building adoption is inadequate. Green building customer typologies also are not described clearly especially as research on segmenting the green building customers in India has not yet taken place. Since segmentation has not been done, gap exists where insights into consumption motivations or benefit seeking behavior are required for marketers to formulate sound marketing strategies.

Based on the gaps found in literature, the following objectives have been established for this study:

- To Segment the customers of (IGBC) Indian Green Building Council based on benefits sought
    - To Identify the benefits sought by customers when adopting IGBC Rating for Green Buildings
    - To Cluster customers into segments based on benefits sought

- To Develop segment profiles
    - ➢ To understand the preference patterns towards benefits within clusters
    - ➢ To understand Level of Involvement, Prior Knowledge and Usage within segments
- To Suggest marketing communication to the IGBC in accordance with segment profiles

3.6 Conceptual Model

The Conceptual Model has been elaborated on in the Conceptual Framework section in the Review of Literature. The same model is presented here for the purpose of elucidating the methodology aspect. The Conceptual Model presented earlier is presented in two consequent parts. The first part of the model (as depicted in Figure 5) deals with:

- Identifying the benefit needs of IGBC Certified Green Building customers
- Segmenting the customers based on the needs

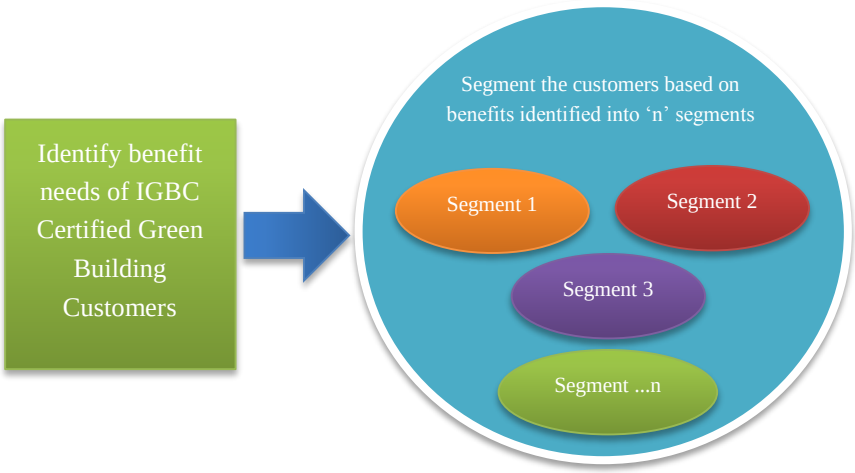


Figure 13: Conceptual Framework - Part 1

The second part deals with developing Segment profiles using Demographics, Consumption Motivations and Benefit Seeking Behavior aspects as depicted in the Figure 14.

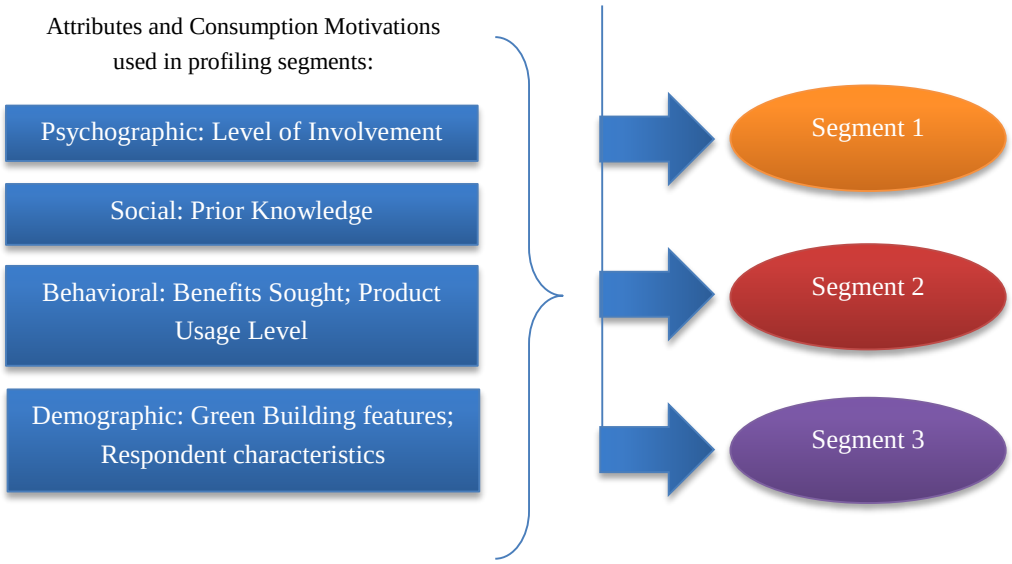


Figure 14: Conceptual Framework - Part 2

3.7 Research Design

The research design is the blueprint for the collection, measurement and analysis of data. "A research design expresses both the structure of the research problem and the plan of investigation used to obtain empirical evidence on relations of the problem" (Cooper & Schindler, 2003).

3.8 Research Methodology

The Research methodology is critical to conducting research. The Study employs both Qualitative and Quantitative aspects as mentioned earlier. As established in the previous sections, it is an Exploratory Study to define customer typologies in the Indian context and is hence sans hypothesis. It must be emphasized here that the focus of the research is on marketing of Green Buildings and not on the environmental efficacy of a Green building solution.

Qualitative research entails two major methods which are In-depth Interviews and Focused Group Discussions (FGDs). FGDs were not favored as the likely discussion participants were widely separated geographically and spread across organisations. Providing a common platform for FGD was considered time consuming and burdensome and was dropped in favour of In-depth interviews.

The study began with In-depth interviews of the IGBC Certified Green Building stakeholders including Customers, IGBC Certified Professionals, and Architects involved in Green Building process to understand the benefits sought by customers from a Green building.

A list of terms corresponding to benefits sought from Green Buildings was compiled. From this list, prominent and frequently used terms were selected in consultation with Green Building Industry experts, Professionals and the Research Supervisor. The selected terms then were used to develop a range of variables connected to benefit seeking behavior.

A preliminary questionnaire was prepared as the initial survey instrument based on the insights acquired during the qualitative stage of research. Variables identified from literature were also used to make the questionnaire exhaustive.

This questionnaire was subjected to content analysis by experts in the Green Building domain and a Structured Questionnaire was developed. This survey instrument was used to conduct a pilot study on 30 Green Building projects.

The questionnaire's comprehension was tested at the Piloting stage to eliminate potential problems. Several questions were rephrased, and a few statements were dropped. Based on the pilot survey results and observations, the final version survey instrument was confirmed.

3.9 Geographical area of the study

The study was conducted on Green Building Projects spread across India. The Southern, Western and Northern regions had greater presence of Green Building projects followed by Central India and the lowest numbers exist in Eastern India.

The explanation offered by Green Building domain experts is that most of the Green buildings seeking or acquiring Certification are corporate bodies or IT companies which are largely present in the regions mentioned.

3.10 Research Variable

The term variable is used as synonym for 'construct' or 'property' being studied. According to this, a variable "is a symbol to which numerals or values are assigned". Distinguishing variables is necessary in order to process them in research. Three types of variables are used in research namely, Independent, Dependent and Moderating variables.

The present research has identified ten variables from:

- Personal interviews of Green Building Professionals and members of the Decision Making Unit in the Green Building facilitation process
- Personal interviews of Green Building customers
- From participatory observation in the Green Building facilitation process
- Discourses at Green building Events
- Literature on Benefit Segmentation, Marketing Green Buildings etc.

The variables identified are depicted in Table 1.

Table 1: Green Building Benefit Variables Identified
Concern for ecology
Indoor environmental quality
Financial benefits over the buildings lifetime
PR, Differentiation and related marketing aspects
Prestige, demonstration of commitment to stakeholders

These variables, leading to 19 questions corresponding to Benefits sought were tested using a 5 point Likert Scale for Level of Agreement.

Scales for measuring Consumption motivation Variables were adapted from other scales as described by Mohsen and Dacko (2013).

Table 2: Constructs, scale reliability, and measurement scales used:

Variable	Measurement items	Scale reliability	Measurement scale source
Level of involvement	To what extent do you agree or disagree with the following statements about Green Buildings in general? Please choose along the scale provided: - It is something that interests me. - I get bored when people talk to me about it. - It is only natural that people become interested in it. - It offers nothing more than conventional food in my opinion. - I do not pay attention to information about it in magazines, on TV, or in stores. - When I am with a friend, we seldom talk about it. (along a Strongly Disagree–Strongly Agree five-point Likert scale)	.8	Adapted from the Personal Involvement Inventory scale (Zaichkowsky 1985), and the Enduring Involvement Index (Bloch et al., 1986)
Prior product knowledge	Please indicate your opinion on each of the following statements about your knowledge of Green Buildings, by choosing along the scale provided: - I would describe my familiarity with it as ... [Unfamiliar–Familiar] - I understand enough about it to evaluate it. [Strongly Disagree–Strongly Agree] - I can rate my knowledge of it as... [High–Low] (along five-point Likert scales)	0.9	Adapted from Alba and Hutchinson (1987)
Product usage level	Is this the first Green Building project for the project owner?	Single question	

Since the study is exploratory in nature, variables have not been distinguished for any interdependencies especially since the research is sans hypothesis and there is no causal relation to prove.

3.11 Research Strategy

According to Yin (2003) there are three common research strategies that are used in empirical studies: Surveys, experiments and case studies.

3.11.1 Survey

Survey is a widely used business research method. A researcher uses a questionnaire or an interview to investigate a large delimited group. A survey allows for a collection of large quantities of data from a sizeable population in a highly economical way. Most often, questionnaire data is standardized, comparison is easy and also easily understood via a survey.

3.12 Pilot Study

Pilot study is the first stage in the research process. A pilot test is executed to weed out weaknesses in instrument deign and provide proxy data for selection of a probability sample.

After the in-depth literature review, survey instrument was designed and pilot test was conducted for one month with the total sample of 30 respondents. Pilot test was conducted in order to assess the questionnaire's comprehension and eliminate potential problems. As a result of the pilot test, several questions were rephrased, and a few statements were made more applicable to the study. Based on the pilot survey results and observations, the final survey instrument was designed.

3.13 Population of the study

Since the research gap highlights inadequacy in segmentation and consumer profiling of Green Building consumers, the Certified Green buildings have been considered as the Population. Certified buildings have received the Green Building Rating and Certification as opposed to Registered projects which have only applied but not received Certification making them less revealing candidates for gaining consumer insights.

Table 3: IGBC Projects	
IGBC Certified Projects	827
IGBC Registered Projects	3,667

3.13.1 Target Population

The target population of the study is the members of the Decision Making Unit from each building project. The Green Building Certification decision is high risk, high involvement and high

investment decision and appears to be vested with the DMU and not so much with Lower level management. It was deemed that the members of the DMU are the best sources of securing responses pertaining to consumer choice behavior in this context.

Philip Kotler defines the Decision Making Unit or DMU as "all individuals and groups that take part in the decision-making process relating to the negotiation of products /services". The Decision Making Unit or DMU consists of six roles as defined by Kotler who take collective decisions about the purchasing of goods and/or services.

The DMU composition in Green building projects is observed to be as follows:

Table 4: Composition of a Decision Making Unit	
Users	Occupants of a Green Building. They include owners and tenants who influence specifications
Influencers	IGBC Accredited Professionals (IGBC APs) who consult/ market Green Buildings or Architects or Consultant or any Decision Maker within the purchasing organisation who exerts influence over the purchase by setting preconditions
Buyers	The individual or organisation which pays for constructing the Green Building and negotiates the deal
Initiators	Architects or Owners or Consultants who identify a problem and find Green Building as a solution
Deciders	Owner who decides on Architects/ Consultants or Certification chosen
Gatekeepers	Architects, Consultants, IGBC Aps who influence the kind of information disseminated to the other members of the DMU

(Kotler, P. (1965). *Competitive strategies for new product marketing over the life cycle*. Management Science, 12(4), B-104.)

From the preliminary research, it has been observed that Architects, Consultants, IGBC APs and Owners (the Buyers included), Developers, Builders play a prominent role in the Green Building Construction and Certification Decision. Each green building project has at least three of the DMU members listed in the Indian Green Building Council's customer database.

3.14 Sampling Method

Simple Random sampling was performed on the list of IGBC Certified Green Building Projects. Certified projects were taken into account as the purpose was to investigate actual organizational buying behavior rather than perceived or potential organizational buying behavior. It being an Industrial study, a 20% sample of 150 projects was targeted out of a population of 750 certified projects as on the date of research.

3.15 Target Respondents

Respondents were drawn from each selected project's Decision Making Unit as they are key to decision making regarding Green Construction.

From the preliminary research, it was evident that the Green Building Benefits sought by projects do not vary greatly irrespective of Type of Building, Geographical location, Rating or Certification aspired for. Green Building Rating appears dependent on the Type of Building, if it's an Office Building or a Residential one and so on.

Certification however can be understood as the degree of 'Greenness'. IGBC offers 4 levels of Certification; Platinum, Gold, Silver and Plain Vanilla Certified in the descending order of 'Greenness'. An examination of the differences in costs of these Certifications reveals that Platinum and Gold are not too far apart and are also the leading Certifications.

Notwithstanding the specifications of each Green Building, the benefits sought by the DMU did not vary much. Which is why Simple Random Sampling was considered appropriate especially as the research is on examining consumer behavior which exists across projects.

Details of the respondents as well as their responses have been masked in the interest of confidentiality.

The responses provided are aggregated and reported as summary statistics only. Hence, the conclusions made in the present study are only the perceptions of the respondents and cannot be generalized to any single Green building project.

3.16 Sample Distribution and Sample Size

Out of the 150 responses targeted for the survey, 113 were received. Out of these 82 responses were useful for analysis and the remaining were discarded either for being incomplete or for being flawed in their response quality.

The survey was administered for the most part personally (65%) as well as via email (35%) using a structured questionnaire.

The sample distribution and the valid sample collected are as shown in the table.

Table 5: Sample Distribution			
Certified Green Building projects	Sample distributed	Valid sample	Response rate (%)
	150	113	75%

The whole valid sample is used to conduct an exploratory factor analysis to identify the underlying factors of benefit seeking behavior in Green Building customers.

3.17 Sample Justification

The study followed the concept of "Five subjects for one variable" as suggested by Hair et. al., (2008) for the determination of the total number of subjects in the sample of the exploratory factor analysis. Since there are 41 attributes identified for the study, the ideal sample size should be 205 (41 X 5= 205). But the sample of the present study is 150. As mentioned earlier, the study is being carried out in an Industrial context and hence a sample of 150 is considered adequate in literature.

3.18 Demographic Profile of Respondents

Significant demographic aspects of the respondents are highlighted in the tables.

Table 6: DMU representation in percentage across sample	
Consultants and Green Building Facilitators	46%
Owners	29%
Developers	11%
Architects	11%
Tenants	3%

Consultants and Green Building Facilitators play a significant role in a Green Building Project. They assume a spectrum of responsibilities in the Decision Making Unit spanning Influencers, Initiators, Deciders and Gatekeepers. They are also the largest set of respondents in the sample.

Table 7: Managerial Levels across Sample	
Top level managers including CEO's of firms involved in Green Building Construction	59%
Mid-level managers	13%
Low Level Managers	28%

Top level managers including CEO's of firms involved in Green Building Construction are the largest response group and constitute more than half of the respondent set. The Top level managers in the response group occupy a diverse set of roles in the various Green Building Projects which include CEO's, Heads of Architectural and Consulting Firms. Top Level

Managers also fall into the ambit of key members of the DMU including Users, Buyers, Influencers, Initiators and Deciders.

Low level managers are the next highest response group and constitute Operational level managers and staff who play Gatekeeper and User roles.

Table 8: Respondents' experience range in percentage	
Up to 10 years	48%
Between 11 and 20 years of experience	29%
More than 21 years of experience	23%

Respondents with an experience of up to 10 years is the largest response group. This group has representation from top level, mid-level as well as low level managers. Maximum experience of more than 21 years is possessed by 23% of respondents. 29% of respondents possess between 11 and 20 years of experience.

3.19 Survey Instrument (Questionnaire)

Based on the variables identified in the preliminary research, a structured questionnaire was finalized upon. The final data is collected by finalized survey instrument from Certified Green Building projects selected via sampling. The questionnaire consisted of 41 questions organized as depicted in Table 9.

Table 9: Questionnaire Structure	
Section 1	Questions on demographic details pertaining to project characteristics, respondent characteristics and purchase characteristics
Section 2	Statements on Level of Involvement using a 5 point Likert scale
Section 3	Statements on Prior Knowledge using a 5 point Likert scale
Section 4	Statements asking for respondents' Level of Agreement to Green Building benefits on a 5 point Likert scale

A Five-Point Likert Scale was used to engage responses on Level of Agreement. All indicators are measured on a five-point Likert scale ranging from 1= strongly agree to 5= strongly disagree. The Likert scale was used in reverse to avoid response bias.

3.20 Data Collection

The study used both the primary and secondary data and it is mainly based on the primary data collected from the DMU members of select IGBC Certified Green Buildings.

3.20.1 Primary Data

The present study utilized the survey research method because the purpose of the research is to gather data regarding green building benefits sought as well as their consumption motivations.

Two surveys – a pilot survey and main survey – are conducted during the study.

The present study used two methods of primary data collection, i.e. In-depth interviews and the structured questionnaire. The study initially conducted in-depth interviews on 30 Green Building Professionals to arrive at the variables of benefit seeking behavior. These were supplemented by data gleaned from secondary sources as well as from observation. The pilot study is conducted to finalize the questionnaire and ensure feasibility for large scale study.

Primary data was collected using a structured questionnaire on the benefit seeking behavior of customers. Insights were also drawn from participatory observation on benefit seeking behavior as well as other aspects pertinent to the objectives of the study.

3.20.2 Secondary Data

The present study also used the secondary data. It includes reports and publications of the Indian Green Building Council and both National and International reports from construction and research organizations such as Pricewaterhouse Coopers, Turner Construction, The Energy and Research Institute and so on. In addition to these, secondary sources such as published books and the various articles published in national and international journals are utilized in the study.

Demographic details pertaining to respondents were drawn from the existing IGBC customer database instead of adding to the questionnaire length.

3.21 Data Analysis

Data collected in the study is analyzed using software tools such as MS Excel and Statistical Package for Social Sciences (SPSS-18).

Exploratory Factor Analysis (EFA) was done on the 'benefits sought' in the 82 statistically useful responses to identify the underlying benefit factors.

Using these benefit factors, Cluster Analysis was performed on the sample to arrive at benefit segments which are homogenous within and heterogeneous without. Ward's clustering algorithm was used for this purpose.

The statistical tools used in analysis for this study briefly described here.

3.22 Factor Analysis

The main purpose of factor analysis is to reduce a larger number of original variables into a smaller set of factors while losing minimum of information. Factor analysis was performed by investigating correlation patterns (or covariance) in observed measures. The result is a manageably small set of variables.

As mentioned in the above paras, Factor Analysis is useful for data reduction and detecting structures with the aim of uncovering latent relationships amongst variables. Factor analysis is indispensable in building a questionnaire to measure a hidden variable.

3.22.1 Factor Rotation Method

Factor rotation is used to make each factor highly responsive to a small subset of items. Factor rotations fall into two categories:

- "Orthogonal rotations" which yield uncorrelated factors
- "Oblique rotations", producing correlated factors.

Varimax factor rotation, an orthogonal rotation is used in the study. It seeks the rotated loadings that maximize the variance of the squared loadings for each factor. The goal is to make some of these loadings as large as possible, and the rest as small as possible in absolute value. This method often produces a clearer and simpler structure which is easy to interpret (Conway & Huffcut, 2003; Field, 2005).

3.22.2 Factor Extraction Method

Kaiser's criterion (Latent root criterion) and scree test criterion are commonly used factor extraction methods in social science research.

Kaiser's Criterion (Latent-root Criterion): Factors with an eigenvalue greater than 1 are retained and those with latent root less than 1 are discarded. This is because eigenvalue 1 represents a substantial amount of variation explained by a factor (Field, 2005 & Pallant J. 2005).

Scree Test Criterion: Cattell's Scree plot (1966) is based on the level of eigenvalue attributed to factors. A scree plot which is a graph of each eigenvalue (Y-axis) against the factor with which it is associated (X-axis) is plotted. The main principle in this criterion is that each factor comes with

an attached eigenvalue and as many factors as there are variables can be obtained and the level of variance explained is different for each factor. The maximum number of factors to extract is indicated by the cutoff point of the curve. (Hair et al., 2008; Cattell 1966).

After factor extraction, it was decided to have five factors as existing studies assert the use of five to seven factors as ideal.

3.22.3 Interpretation of Factor Matrix

Interpretation is executed by identifying the variables that have large loadings on the same factor. The study used cross loading variables and compared multiple analyses to evaluate data patterns and arrive at an understanding of variable factor loading.

3.23 Validity

Validity refers to the extent to which a test measures what we actually wish to measure. Validity can be explained in two forms i.e. external and internal validity. The external validity of research findings imply the generalizability of results across persons, settings and times. The Internal validity is further limited in this discussion to the ability of a research instrument to measure what it is purported to measure.

"Validity in this context is the extent to which difference found with a measuring tool reflects true difference among respondents being tested" (Cooper and Schindler, 2000). Content validity, criterion related validity and construct validity are the various methods available.

Content validity method is used to study the elements composing a measurement tool. Content validity is found appropriate for this study as the sampling technique used is representative.

Face validity or content validity is measured through common consensus expressed by respondents and experts on whether the questionnaire covers all aspects of the variable being measured (Saraph, Benson, & Schroeder, 1989).

The questionnaire was designed based on an exhaustive review of relevant literature and then fined-tuned based on the suggestions from various experts, research advisor and supervisor thus ensuring validity of the instrument. (Kaplan & Sacuzzo, 1993).

3.24 Reliability of Measurement Tool

Reliability is the consistency with which the test when repeated under similar conditions yields similar results. Reliability is concerned with estimates of the degree to which a measurement is free of random or unstable error (Cooper and Schindler, 2000). Different methods are available to measure the reliability such as retest method, split half method, parallel (equivalence) method, Richardson method and, Cronbach alpha coefficient method.

Cronbach's alpha is the popular and commonly used method to assess internal consistency. Hair et al. (2007) indicates that an alpha of .70 or higher is an appropriate of reliability.

The Cronbach's Alpha value in this study is 0.762 (76%) which is more than the minimum level (70%). indicating that the questionnaire has relatively high internal consistency.

3.25 Limitations of the Study

- Many respondents found it difficult to spare time and effort owing to busy schedules as Heads of organisations
- Direct interaction with respondents was cumbersome and time consuming
- Respondents sometimes displayed a lackadaisical attitude towards the questionnaire rendering some responses unfit for analysis

3.26 Direction for Future Study

- The next steps to the segmentation process, ie the targeting and positioning steps need to be explored
- The impact of the suggestions on the segments arrived at needs to be observed
- Further research on clusters is needed
- The relationship between variables could be explored further
- Further research into customer satisfaction, post purchase behavior is needed
- Research on non-conversion in customers is needed

CHAPTER 1V

DATA ANALYSIS

DATA ANALYSIS

The purpose of this Research as outlined in earlier chapters is to arrive at Green Building Customer Segments in India. Towards accomplishing this objective, a series of statistical tools have been listed in the Methodology Chapter.

The customers of the Indian Green Building Council, the leading Green Building Certification body in India have been chosen for sampling as the IGBC is the leading Certifying body and is deemed to represent the market best.

The Research Conceptual Framework describes the steps involved in arriving at the Customer Segments and is represented in Tabular form here. The same table describes the statistical tools used to achieve each step.

Table 10: Research Tools Used

Research Objective	Statistical and other methods
Reducing the benefits identified at survey inception	Factor analysis to remove highly correlated variables
Segregating customers with similar benefit seeking behaviours into homogenous segments	Cluster analysis to create different segments
Profiling clusters/ segments	• Each cluster was profiled in terms of its distinguishing demographics, consumption motivations and benefits sought • Within the cluster, the agreement to benefit factors was observed to understand what aspects clusters readily respond to • Each segment was then given a name based on its dominant characteristic
Suggestions to Green Building marketers	Suggestions from profile characteristics; based on established marketing theory and through participative observation

4.1 Factor Analysis

The first analytical procedure used on data in this research is Factor Analysis. In particular, Exploratory Factor Analysis also known as Principal Component Analysis is used. The purpose is to reduce the greater number of variables into a smaller and manageable number of factors.

Before running the Factor Analysis, data has to be checked for suitability using Kaiser-Meyer-Olkin (KMO) measure of sample adequacy and Bartlett's test of Sphericity. Unless the two tests are satisfied the factor analysis is deemed inadequate.

According to KMO measure, if the sum of the partial correlations is larger than sum of correlations, diffusion is considered to exist in pattern of correlation. Hence factor analysis is likely to be inappropriate. A value close to 1.0 indicates that patterns of correlations are relatively compact and so factor analysis should yield distinct and reliable factors. The Kaiser-Meyer-Olkin measure of sampling adequacy is 0.721 indicating that the factors extracted account for a fair amount of variance. Therefore factor analysis is appropriate for data.

For factor analysis to work, the R-Matrix must not be an identity matrix and the correlation co-efficient must be significant i.e. less than 0.05 which indicates that there is some relationship between the variables. For the present data the Bartlett's test is highly significant ($p<0.001$), and has an approximate χ^2 value of 658.085 which is significant at 5% level of significance indicating that the sample inter-correlation matrix did not come from a population that has an identity matrix for inter correlation matrix. This means that dimension reduction is needed to discard some weak dimensions and therefore factor analysis can be applied.

4.1.1 Factor Extraction

To understand the inherent factors of the study, Unweighted Least Squares as an extraction method considering Varimax rotation is used. Five factors are derived which are mentioned in the below table with their respective variances.

Table 11: Communalities

Variable	Initial	Extraction
Savings on energy (electricity), water, maintenance and other utility bills are a priority in this project	.370	.343
Conserving natural resources is one of the principal aims of the project	.698	.777
The opportunity to use material and equipment certified as eco-friendly is important for this project	.648	.624
Waste management practices are a key reason for adopting Green practices in this project	.639	.630
Enhancing occupant well-being and productivity (to reduce employee absenteeism and ensure employee retention) is a significant priority in this project	.435	.355
Integrated design process (reduces rework and save construction cost and time) is a strong reason for choosing Green Building Certification	.453	.271
The project chose Green Building certification as it involves Accredited professionals (who ensure best design and technology inputs)	.623	.999
This project went green because the payback period is attractive	.441	.296
Securing premium prices on sale and higher rents are key reasons for going green	.538	.589
Buyers/ tenants of this project demanded a Green Building	.528	.438
The project went Green as depreciation is lesser in Green Buildings than in conventional buildings	.469	.433
The project chose Green Building Certification to attract increased availability of funding	.523	.567

The project wants to benefit from government incentives (such as Extra Floor Area Ratio, Fast track clearance, Preferred status, Tax benefits, Subsidies etc) by securing Green Building Certification	.546	.563
The project chose Green Building certification for the advertising and marketing benefits attached	.653	.719
The project adopted Green Building Certification as competitors and peers have adopted the same	.647	.652
Green Building Certification is a matter of prestige for this project owner	.547	.532
Once Certified, the project would appear more trustworthy to Global and local clients	.689	.781
The project is a key opportunity to demonstrate environmental stewardship to stakeholders	.427	.419
The project owner's company policy makes Green Building Certification compulsory	.379	.306
Extraction Method: Unweighted Least Squares.		

The communalities presented above denote the proportion of each variable's variance that can be explained by the factors obtained from implementation of factor analysis. From the above table, it can be concluded that:

- 34.3 % of the variance in "Savings on energy (electricity), water, maintenance and other utility bills are a priority in this project" is explained by the extracted factor.
- 77.7% of the variance in "Conserving natural resources is one of the principal aims of the project" is explained by the extracted factor.
- 62.4% of the variance in "Opportunity to use material and equipment certified as eco-friendly is important for this project" is explained by the extracted factor.
- 63% of the variance in "Waste management practices are a key reason for adopting Green practices in this project" is explained by the extracted factor.

- 35.5% of the variance in “Enhancing occupant well-being and productivity (to reduce employee absenteeism and ensure employee retention) is a significant priority in this project” is explained by the extracted factor.
- 27.1% of the variance in “Integrated design process (reduces rework and save construction cost and time) is a strong reason for choosing Green Building Certification” is explained by the extracted factor.
- 99.9% of the variance in “The project chose Green Building certification as it involves Accredited professionals (who ensure best design and technology inputs)” is explained by the extracted factor.
- 29.6% of the variance in “This project went green because the payback period is attractive” is explained by the extracted factor.
- 58.9% of the variance in “Securing premium prices on sale and higher rents are key reasons for going green” is explained by the extracted factor.
- 43.8% of the variance in “Buyers/ tenants of this project demanded a Green Building” is explained by the extracted factor.
- 43.3% of the variance in “The project went Green as depreciation is lesser in Green Buildings than in conventional buildings” is explained by the extracted factor.
- 56.7% of the variance in “The project chose Green Building Certification to attract increased availability of funding” is explained by the extracted factor.
- 56.3% of the variance in “The project wants to benefit from government incentives (such as Extra Floor Area Ratio, Fast track clearance, Preferred status, Tax benefits, Subsidies etc) by securing Green Building Certification” is explained by the extracted factor.

- 71.9% of the variance in “The project chose Green Building certification for the advertising and marketing benefits attached” is explained by the extracted factor.
- 65.2% of the variance in “The project adopted Green Building Certification as competitors and peers have adopted the same” is explained by the extracted factor.
- 53.2% of the variance in “Green Building Certification is a matter of prestige for this project owner” is explained by the extracted factor.
- 78.1% of the variance in “Once Certified, the project would appear more trustworthy to Global and local clients” is explained by the extracted factor.
- 41.9% of the variance in “The project is a key opportunity to demonstrate environmental stewardship to stakeholders” is explained by the extracted factor.
- 30.6% of the variance in “The project owner’s company policy makes Green Building Certification compulsory” is explained by the extracted factor.

4.1.2 Total Variance Explained

The table titled “Total Variance Explained” summarizes the total variance explained by the 19 factors. “Initial Eigen Values” denote the variance explained by all possible factors.

Eigen values are used to analyze variance in linear components (factors). On the basis of Eigen values that are greater than one, there are five factors which explain 54.274% of the variance. The Total column displays the Eigen values or Amount of Variance in the original variables accounted for by each component. The table lists Eigen values associated with each linear component before extraction, after extraction and after rotation. Before extraction 19 linear

components are displayed. There are as many components as variables and in a correlations analysis the sum of the Eigen values equals the number of components.

Table 12: Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**4.266**	22.451	22.451	3.881	20.426	20.426	2.956	15.559	15.559
2	**3.761**	19.792	42.243	3.330	17.525	37.950	2.265	11.923	27.482
3	**2.064**	10.862	53.105	1.625	8.553	46.504	2.180	11.474	38.955
4	**1.177**	6.194	59.299	.815	4.288	50.792	1.550	8.157	47.112
5	**1.108**	5.830	65.129	.662	3.482	54.274	1.361	7.162	54.274
6	.972	5.114	70.243						
7	.842	4.433	74.676						
8	.769	4.049	78.724						
9	.628	3.303	82.028						
10	.602	3.168	85.195						
11	.545	2.866	88.062						
12	.473	2.488	90.549						
13	.438	2.306	92.855						
14	.318	1.672	94.527						
15	.262	1.381	95.907						
16	.221	1.162	97.070						
17	.207	1.089	98.158						
18	.182	.958	99.116						
19	.168	.884	100.000						

The Table also displays the Eigen values in terms of percentage of variance explained by each factor. Of these, the first factor explains 15.559% of variation, the second factor 11.923% of variation, the third factor 11.474% of variation, the fourth factor 8.157% of variation and the fifth factor 7.162% of variation. The Eigen values associated with these factors are again displayed in the columns labels ‘Extraction sum of squared loading’. The extracted values in this part of the

table are the same as the value before extraction, except that the values for the discarded factor are ignored.

Under ‘Rotation Sum of Squared Loadings’, the Eigen values of the factors after rotation are displayed. Rotation has the effect of optimizing the factor structure and a consequence of rotation, the relative importance of the four factors is equalized. It can be observed that the factors with lesser correlation (less than 0.5) have been dropped from the analysis to find suitable factors in the process.

4.1.3 Scree Plot

Scree plot helps in determining the optimal number of components. Components on a Scree plot are usually extracted on the steep slope. The components on the shallow slope do not contribute much to the solution.

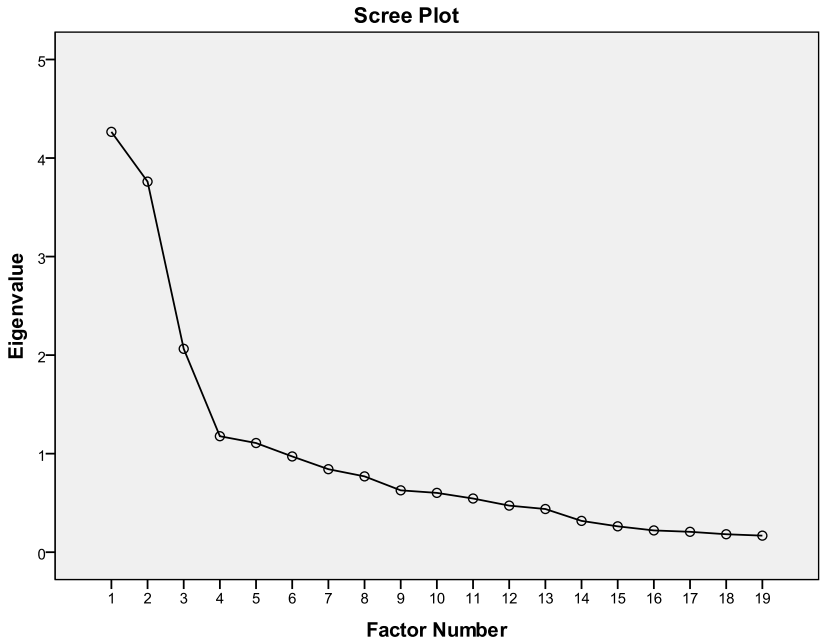


Figure 15: Scree Plot depicting Eigen Values

It can be observed that in the Eigen values depicted in scree plot above, a steeper descent is observed after Factor 5 and the curve gradually goes parallel to the x-axis. This means that five factors are significant in explaining the variance.

4.1.4 Factor Rotation

After factor extraction it might be difficult to interpret and name the factors / components on the basis of their factor loadings. A solution for this difficulty is factor rotation. Factor rotation alters the pattern of the factor loadings, and hence can improve interpretation.

The most commonly used method is Varimax, an orthogonal rotation method that produces independent factors with no multicollinearity. It minimizes the number of variables that have high loadings on each factor.

Table 13: Rotated Factor Matrix

	Factor				
	1	2	3	4	5
Savings on energy (electricity), water, maintenance and other utility bills are a priority in this project	**.574**				
Conserving natural resources is one of the principal aims of the project	**.826**				
The opportunity to use material and equipment certified as eco-friendly is important for this project	**.736**				
Waste management practices are a key reason for adopting Green practices in this project	**.723**				
Enhancing occupant well-being and productivity (to reduce employee absenteeism and ensure employee retention) is a significant priority in this project	**.540**				

Integrated design process (reduces rework and save construction cost and time) is a strong reason for choosing Green Building Certification					**.482**
The project chose Green Building certification as it involves Accredited professionals (who ensure best design and technology inputs)					**.923**
This project went green because the payback period is attractive					**.481**
Securing premium prices on sale and higher rents are key reasons for going green		**.720**			
Buyers/ tenants of this project demanded a Green Building		**.635**			
The project went Green as depreciation is lesser in Green Buildings than in conventional buildings		**.545**			
The project chose Green Building Certification to attract increased availability of funding		**.705**			
The project wants to benefit from government incentives (such as Extra Floor Area Ratio, Fast track clearance, Preferred status, Tax benefits, Subsidies etc) by securing Green Building Certification				**.557**	
The project chose Green Building certification for the advertising and marketing benefits attached				**.705**	
The project adopted Green Building Certification as competitors and peers have adopted the same				**.655**	
Green Building Certification is a matter of prestige for this project owner			**.709**		
Once Certified, the project would appear more trustworthy to Global and local clients			**.843**		
The project is a key opportunity to demonstrate environmental stewardship to stakeholders			**.618**		
The project owner's company policy makes Green Building Certification compulsory			**.409**		
Extraction Method: Unweighted Least Squares. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 8 iterations.					

In the above table, the values in bold font indicate that the variable belongs to that particular factor. Also, questions belonging to the same factor are highlighted in same color. The rotated

component matrix helps to determine what the components represent. The rotation of factors structure reveals that there are five factors and variables load very highly onto only five factors.

4.1.5 Factor Naming

Once the factors are identified, the next step is to give a name to each factor. By looking at the contents of questions that load onto the same factors, common themes are identified. In short, a set of variables is segregated into subgroups based on shared characteristics. New factors names are given to the newly divided groups of variables thus.

The names of the factors depend on the items retained in each sub group. A term is chosen which seems to describe a common aspect to items that have an important weight within each factor. Each factor then corresponds to one dimension and can be calculated by adding the coefficients from the rotated matrix.

Factor 1: The variables which load highly on Factor 1 relate to resource conservation, opportunity to use responsible sourced and certified building material, waste management and indoor environment. Therefore this factor is labeled as ‘Environmental Concern’.

Factor 2: The variables which load highly on Factor 2 relate to securing premium prices on sales, attracting funding, lowering depreciation and buyer demand. Therefore this factor is labeled as ‘Financial Appeal’.

Factor 3: The variables which load highly on Factor 3 relate to demonstration of pride in Certification, trustworthiness corresponding to environmental responsibility to customers and

stakeholders. Since the focus is on conveying the 'trust' aspect, the factor is labeled 'Trustworthiness'.

Factor 4: The variables which load highly on Factor 4 relate to benefits from the market including government incentives, positive image in the market via ability to advertise 'greenness' and staying abreast of peers. Therefore this factor is labeled as 'Marketing Mileage'.

Factor 5: The variables which load highly on Factor 4 relate to the benefits derived from the Green Design, construction and attached advantages inherent to a Green Building such as saving time and cost via Integrated Design and ensuring best design via Certification process. Therefore this factor is labeled as 'Green Design Efficacy'.

Finally, this analysis reveals that the questionnaire is composed of five sub scales which are the factors described above. The same factors have been observed in the Scree plot above.

4.2 Cluster Analysis

The second Research Objective in this study is to segregate customers with similar benefit seeking behaviors into homogenous segments. To this end, Ward's Clustering Algorithm with Squared Euclidean Distance has been implemented on the factor scores obtained from the results of Factor Analysis. From the available hierarchical clustering methods, Ward's linkage is the best suited for quantitative variables and helps in locating remote clusters (Lorr, 1983).

Also, the application of squared Euclidean distance is found to be the most appropriate for Ward's linkage. Ward's linkage starts out with each of the 'n' records as a single cluster, proceeds with finding similar data points and terminates with each observation being a part of a cluster that exhibits homogeneity within itself and is heterogeneous with respect to the other clusters. The approach attempts to minimize the variance associated with the '*homogeneous*' observations within the cluster. As a result of the Cluster Analysis, three clusters are arrived at.

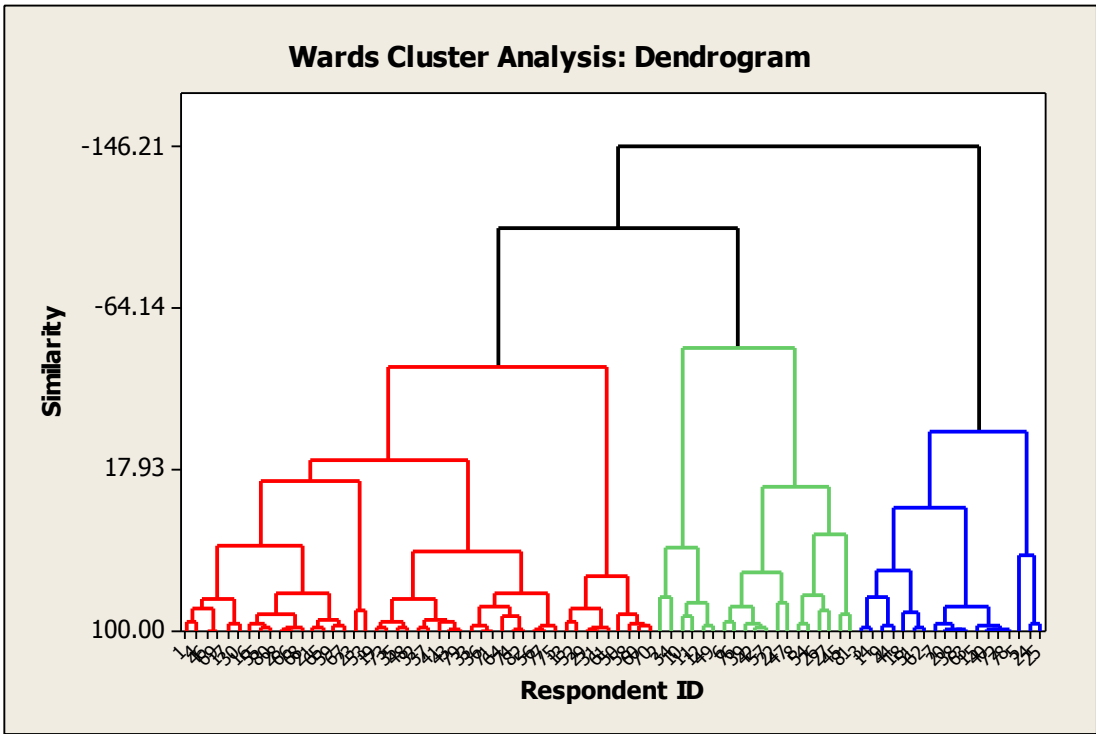


Figure 16: Wards Clustering Algorithm (Combined Dendogram)

Cluster 1 (highlighted in Red) corresponds to:

- Respondents feel that choosing a Green Building is extremely beneficial in terms of cost, efficiency, health and its overall appeal.

- The respondents strongly believe that Green Buildings are the need of the hour.
- This cluster consists of highly experienced and well qualified senior professionals who are experts in this domain.

Cluster 2 (highlighted in Green) denotes:

- Respondents have a significant difference of opinion when compared with the respondents in Cluster 1.
- The respondents in general, have neutral to slight disagreement on different aspects of Green Buildings.
- This calls for a need to emphasize and spread awareness on the pros of this technology.

Cluster 3 (highlighted in Blue) represents:

- Respondents have expressed moderate agreement to the perks of opting for Green Buildings.
- This can be observed from their moderate support to the benefits associated with the Green Buildings technology.

To conclude, it is noted that in general, all the respondents who have taken part in the study understand the relevance of the need to "Go Green" in the construction sector. This can be seen in their clear understanding of the short-term as well as long-term benefits of this technology.

4.3 Cluster Profiling

Cluster profiling is the task of developing a summary of each cluster for marketers to study, analyse and decide if the cluster satisfies Targeting criteria. The selected clusters are the Target Clusters and Positioning efforts would entail marketing strategies devised to best appeal to the clusters. Such highly targeted marketing would elicit the desired responses from these customers satisfying the ultimate objective of increasing adoption of Green buildings.

The cluster profiling process is outlines in Figure:

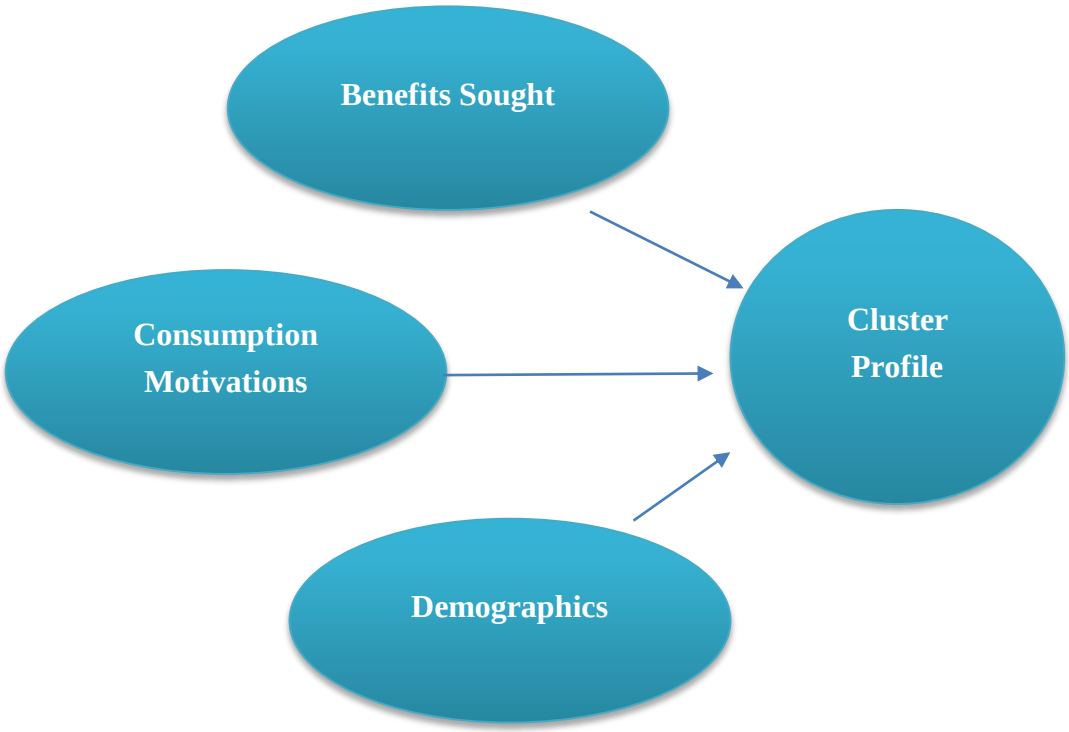


Figure 17: Cluster Profiling

Benefits sought as inputs to Cluster Profiling: The benefit factors serve the dual purpose of serving as the bases for segmentation and also explain the benefits that cluster members are in closest agreement to. The summary of mean Benefit Factor scores across clusters in given in Table.

Table 14: Average Factor Scores across Clusters			
Factors	**Cluster 1**	**Cluster 2**	**Cluster 3**
	Mean	Mean	Mean
Factor 1 (Environmental concern)	2.33	2.97	3.00
Factor 2 (Financial Appeal)	2.13	2.18	2.45
Factor 3 (Trustworthiness)	2.22	1.68	2.10
Factor 4 (Marketing Mileage)	1.86	1.70	3.05
Factor 5 (Green Design Efficacy)	1.87	2.23	1.73

The Factor mean scores indicate agreement to the factors in each cluster but are not representative of the order of preference as it wasn't asked in the Questionnaire. Since the Likert scale was reversed in the Questionnaire (so as to avoid response bias), the scale assigned '1' to Strongly Agree. Hence the value closest to 1 indicates strongest agreement. The Mean Factor Scores are graphically represented here:

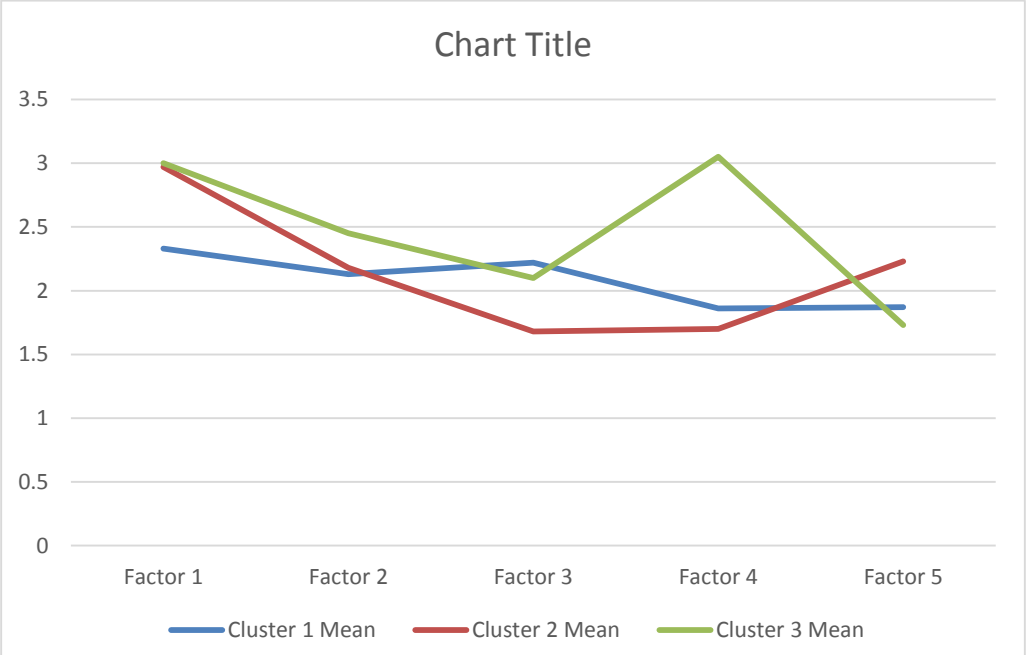


Figure 18: Mean Factor Scores across Clusters

The three clusters evince a varied pattern of agreement to Benefit Factors. The factors they are closest in agreement to may be given greater priority while addressing clusters.

Consumption Motivations as inputs to Cluster Profiling: Mean value of Consumption Motivations are used to arrive at an understanding of select motivations of each cluster. The Consumption Motivations used in this study include Level of Involvement, Prior Knowledge and Usage level which have been elaborated upon in the chapters on Review of Literature and Methodology. The Mean Values arrived at for each cluster in the three Consumption Motivations are listed here.

Table 15: Mean Consumption Motivations across Clusters

Consumption Motivations	Cluster 1	Cluster 2	Cluster 3
	Mean	Mean	Mean
Mean Level of Involvement	3.72	4.13	3.63
Mean Prior Knowledge	1.91	1.43	1.53
Mean Usage Level	4	2	2

The Mean Values of each Consumption Motivation are compared among clusters. The highest mean value belonging to a cluster for a given Consumption Motivation indicates that the associated cluster is dominant in that particular motivation. The Mean Factor Scores are graphically represented in Figure 19.

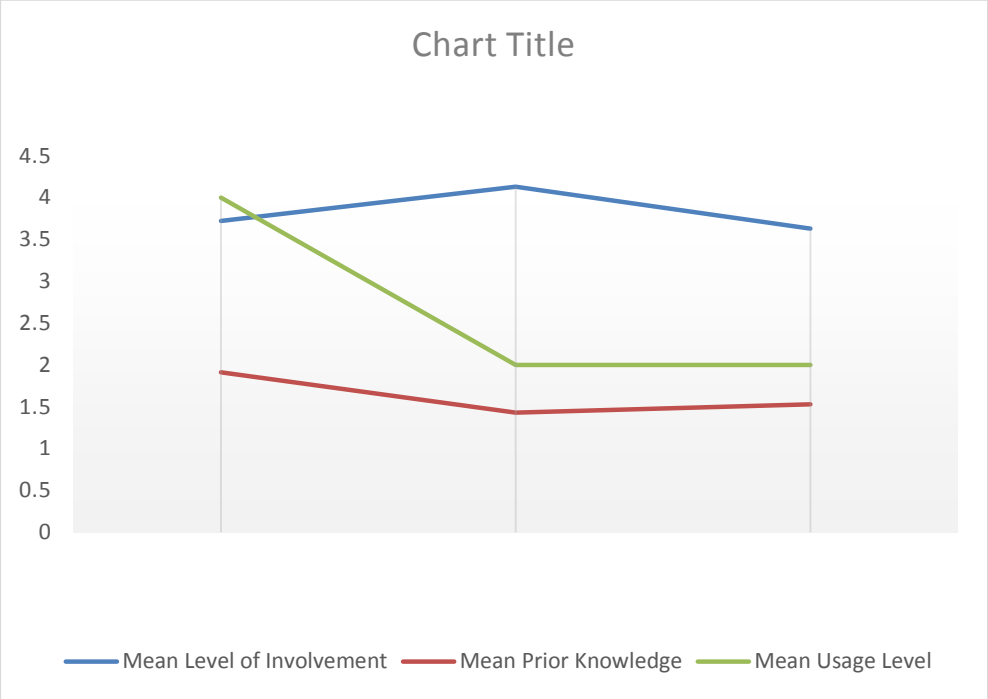


Figure 19: Mean Consumption Motivations across Clusters

Clusters evince a varied pattern in Consumption Motivations. Dominance of a cluster in a given Consumption Motivation reveals the cluster's behavior to the marketer.

Demographic details as inputs to Cluster Profiling: Demographics offer insights into the Certification chosen and the demographic nature of customers who choose the Ratings or Certifications they do in each cluster.

Together, the three inputs offer an understanding of the geographic, socio-demographic and behavioural aspects of clusters for marketers to base their decisions on.

4.4 Cluster 1 – Profiling

4.4.1 Average Factor Scores across Clusters

Table 16: Factor means in Cluster 1	
Factors	**Mean scores across cluster**
Factor 4 (Marketing Mileage)	1.86
Factor 5 (Green Design Efficacy)	1.87
Factor 2 (Financial Appeal)	2.13
Factor 3 (Trustworthiness)	2.22
Factor 1 (Environmental concern)	2.33

- Gaining marketing mileage has highest agreement as a reason for choosing green Building Certification
- Green Design Efficacy, ie, the technologically superior nature of the Green Building project and the processes involved has the next highest agreement
- Financial returns ie premium prices, reduced depreciation etc evince moderate agreement
- The Demonstration of Environmental stewardship to stakeholders has lower agreement
- Environmental Concern and ‘doing the right thing’ has the furthest agreement

4.4.2 Consumption Motivation – Mean Values in Cluster 1

Table 17: Consumption Motivation mean values in Cluster 1	
Consumption Motivations	**Mean Values of Cluster 1**
Mean Level of Involvement	3.72
Mean Prior Knowledge	1.91
Mean Usage Level	4

- Cluster 1 is the largest cluster and ranks second in Level of involvement
- The Prior knowledge possessed by this cluster is highest among clusters
- Usage level of Green buildings in this cluster is highest among clusters
- It may be inferred that this cluster bases its decisions on Prior Knowledge and prior usage followed by involvement

4.4.3 Demographic Profile: Project Characteristics:

Table 18: Demographic Profile of Cluster 1		
Project Characteristics		**%**
Economic sector the Project belongs to	Tertiary	77
	Secondary	18
	Government	5
Type of building	Corporate	49
	Apartment	22
	Factory	13
	Hotel	9
	Institution	6
	Bank	2

Company Size in terms of number of employees	Medium (250-1000)	40
	Small (<250)	33
	Large (>1000)	27
Region	South	25
	West	10
	North	8
	East	2

- 77% of projects belong to the tertiary ie Corporate sector which is leading
- IT and Corporate Offices are leading by 49% followed by Apartments at 22%
- Medium sized companies with 250-1000 employees are leading in this cluster
- Building Projects in this cluster are concentrated in South primarily and West next

Respondent Characteristics:

Table 19: Respondent Characteristics of Cluster 1		
Respondent Characteristics		**%**
Individual respondent's level within the organization	Top level managers	53
	Low level managers	35
	Mid-level managers	7
Respondents' experience in years	less than 10 years	56
	21 - 30 and above	24
	11 - 20 years	20
Respondents' Qualification	Graduate	50
	Post Graduate	50
Respondents' age group	30-39	31
	40-49	29
	21-29	27
	50-59	13

- Top level and low level managers are in greater numbers among respondents at 53% and 35% respectively
- Respondents with an experience of up to 10 years are more in number at 56%. The remaining respondents at 44% fall between 11 and 30 years of experience
- Post graduates and graduates are in equal numbers
- Percentage of respondents in 30-39 age group is highest at 31%

Green Building Certification Details

Table 20: Green Building Certification Details of Cluster 1		
Green Building Certification Details		**%**
IGBC Green Rating Programme applicable	IGBC New Buildings	56
	IGBC Green Homes	20
	IGBC Factory Buildings	13
	IGBC Existing Buildings	4
	IGBC Green SEZs	4
	IGBC Green Interiors	2
Certification applicable to this project	Gold	49
	Platinum	36
	Silver	9
	Certified	7
Gross Built-up area (in Square feet)	<50k sft	64
	50k sft to 1 lakh sft	27
	Above 1 lakh sft	9
Approximate incremental cost experienced	Up to 10%	80
	11% to 20%	18

	21% to 30%	2
Anticipated payback period on incremental cost	2-5 years	53
	1-2 years	20
	5-10 years	16
	Less than 1 year	11
Size of purchase (Number of Buildings acquired by this project owner)	1 Building	30
	2-5 buildings	29
	6 and above	4

- IGBC Rating for New Buildings is leading at 56%
- Gold is the leading certification at 49% and Platinum comes a close second at 36%
- Buildings with a Gross Built Up area of less than 50,000 sft are leading at 64%
- 80% of the projects have experienced an incremental cost of up to 10% while only 18% of projects fall into the 11 to 20% category
- 53% of the projects are expecting a payback period of 2-5 years; 20% are expecting returns within two years; 16% are expecting payback in 5-10 years. 11% are expecting payback within an year
- For 70% of respondents, this is the first Green Building Project while 30% of respondents are repeat customers

4.4.4 Conclusive Profile: Benefits Factors, Consumption Motivations, Demographics

Table 21: Conclusive Profile: Benefits Factors, Consumption Motivations, Demographics

Cluster 1 Profile	Business Implications
• Largest cluster consisting of mainly medium sized IT and Corporate projects concentrated in Southern India • IGBC Rating for New Buildings is leading at 56%	• Cluster respondents belong to the Tertiary economic sector, IT in particular • Building maintenance expenditure and expenses on utilities are often cited as issues
• Top level managers comprise almost half of the cluster	• More than 50% of the top level managers have >20 years of experience, and predominantly belong to > 40 age group
• Buildings with a Gross Built Up area of less than 50,000 sft are leading at 64%	• Projects are concentrated in cities
• Gold is the leading certification at 49% • Platinum comes a close second at 36%	• Moderate Financial Appeal and preference for marketing benefits could drive choice of Gold and Platinum Certification
• 80% of projects experienced incremental cost of up to 10% • 33% of these are Platinum and 50% are Gold Certified	• Among the 80%, repeat users account for 33%, 42% of these are platinum and 33% are gold • Lower incremental cost could influence repeat users in choosing Gold and Platinum Certifications
• 64% expected a payback period of less than 5 years	• Payback period is a lesser priority compared to the other factors

• Usage level is highest among clusters	• 70% of respondents are first time customers • 30% of respondents are repeat customers responsible for the high 'Usage'
• Prior knowledge is highest among clusters	• Respondents are most familiar with the concept, consider themselves highly knowledgeable and can best evaluate the pros and cons of the concept • Usage and prior Knowledge apparently influence each other in this cluster
• Ranks second in Level of involvement	• Enduring interest in and general concern for Green Buildings is moderate compared to the others. • Since Environmental concern is low, this cluster is moderately likely to go the extra mile in its Green concerns compared to the remaining segments
• 'Marketing Mileage' gets highest agreement to this cluster	• 73% agreed to marketing and advertising benefits • 62% disagreed to influence of competition or peers • 42% agreed to govt. incentives as a reason
• Green design Efficacy is of next higher agreement	• Strong agreement exists towards to Accredited professionals and Integrated design process but moderate agreement exists towards low payback as a priority

• Financial appeal is moderate priority	• Moderate agreement exists across cluster to securing premium prices on sale; attracting increased availability of funding; buyer side demand; lower depreciation as a reason for choosing Green Buildings • This agreement could indicate choice of expensive but more Environmentally impactful solution • Higher usage leading to greater familiarity with cost aspects could have influenced the choice of Certification
• Trustworthiness has lower agreement	• Healthy agreement to appearing trustworthy to global and local clients; prestigiousness; demonstration of environmental commitment to stakeholders • 71% of respondents mandate Green Construction
• Environmental concern has lower agreement in comparison	• Agreement exists across cluster to Resource conservation; usage of certified material; waste management practices; savings on utilities and occupant well being

4.5 Cluster 2 – Profiling

4.5.1 Average Factor Scores across Clusters

Table 22: Factor means in Cluster 2	
Factors	**Mean scores across cluster**
Factor 3 (Trustworthiness)	1.68
Factor 4 (Marketing Mileage)	1.7
Factor 2 (Financial Appeal)	2.18
Factor 5 (Green Design Efficacy)	2.23
Factor 1 (Environmental concern)	2.97

- Demonstration of Environmental stewardship to stakeholders has highest agreement
- Being able to gain marketing mileage has next highest agreement
- Financial returns are of moderate priority like in Cluster 1
- Green Design Efficacy has lower agreement
- Environmental Concern has least agreement

4.5.2 Consumption Motivation – Mean Values across Clusters

Table 23: Mean Consumption Motivations across Clusters	
Consumption Motivations	**Mean Values Of Cluster 2**
Mean Level of Involvement	4.13
Mean Prior Knowledge	1.43
Mean Usage Level	2

- Cluster 2 is the second largest cluster and ranks highest in Level of involvement.
- Prior knowledge does not appear to be as significant a motivator as for other clusters given that it is least among clusters
- Usage is on par with Cluster 3 and is less than Cluster 1. Moderate usage could be ascribed to low prior knowledge and moderate priority to financial returns

4.5.3 Demographic Profile: Project Characteristics:

Table 24: Demographic Profile of Cluster 2		
Project Characteristics		**%**
Economic sector the Project belongs to	Secondary	47
	Tertiary	47
	Government	5
Type of building	Office	32
	Apartment	26
	Factory	21
	Institution	11
	Bank	5
	School	5
Company Size in terms of number of employees	Medium (250-1000)	58
	Small (<250)	32
	Large (>1000)	11
Region	South	53
	West	32
	North	16
	East	0

- 47% of projects belong to the Secondary sector which is leading
- IT and Corporate Offices leading at 32%
- Medium sized companies with 250-1000 employees are leading at 58%
- Building Projects concentrated in South and in the West

Respondent Characteristics:

Table 25: Respondent Characteristics of Cluster 2		
Respondent Characteristics		**%**
Individual respondent's level within the organization	Top level managers	68
	Low level managers	21
	Mid-level managers	16
Respondents' experience in years	less than 10 years	42
	11 - 20 years	32
	21 - 30 and above	26
Respondents' Qualification	Post Graduate	58
	Graduate	42
Respondents' age group	30-39	47
	40-49	26
	21-29	21
	50-59	5

- Top level managers are the maximum in this cluster at 68%
- Respondents with an experience of less than 10 years are more in number at 42%
- Post graduates are in greater numbers
- Percentage of respondents in 30-39 age group is highest at 47%

Green Building Certification Details

Table 26: Green Building Certification Details of Cluster 2		
Green Building Certification Details		**%**
IGBC Green Rating Programme applicable	IGBC New Buildings	**37**
	IGBC Green Factory	26
	IGBC Green Home	26
	IGBC Green Interiors	11
	IGBC Green Schools	5
Certification applicable to this project	Platinum	**47**
	Gold	32
	Certified	11
	Silver	11
Gross Built-up area (in Square feet)	Above 1 lakh sft	**42**
	<50k sft	32
	50k sft to 1 lakh sft	26
Approximate incremental cost experienced	Up to 10%	**95**
	11% to 20%	5
	21% to 30%	0
Anticipated payback period on incremental cost	Less than 1 year	**32**
	1-2 years	26
	2-5 years	26
	5-10 years	16
Size of purchase (Number of Buildings acquired by this project owner)	1 Green Building	**74**
	2-5 buildings	26
	6 and above	0

- IGBC Green Rating for New Buildings is leading at 37%
- Platinum is the leading certification at 47% and Gold comes second at 32%

- Buildings with a Gross Built Up area of above I lakh sft are leading at 42%
- 95% of the projects have experienced an incremental cost of up to 10% while only 5% of projects fall into the 11 to 20% category
- 32% of projects are expecting payback within a year. 26% of the projects are expecting a payback period of 2-5 years; 26% are expecting returns within two years; 16% are expecting payback in 5-10 years.
- For 74% of respondents, this is the first Green Building Project while 26% of respondents are repeat customers

4.5.4 Conclusive Profile: Benefits Factors, Consumption Motivations, Demographics

Table 27: Conclusive Profile: Benefits Factors, Consumption Motivations, Demographics of Cluster 2

Cluster 2 Profile	Business Implications
• Second largest cluster consisting mainly of medium sized companies from Secondary sector concentrated in Southern India	• The leading building types are Office Buildings and Apartment • The Financial Savings possible over the lifetime of the building, resource efficiency seem key reasons for choosing Green buildings
• Top level managers are maximum at 68%	• More than 75% of top level managers have 20 years of experience on an average and predominantly belong to the above 30 age group • Post graduates are in greater numbers

• Buildings with a Gross Built Up area of below 1 lakh sft leading at 63%	• Project sizes of less than one lakh seem to be favoured in metro cities • Karnataka is leading in this cluster with 26% of the projects followed by Maharashtra at 21% • Only 16% are in tier 2 cities
• IGBC Rating for New Buildings leading at 37%	• 32% projects are office buildings opting for IGBC New Buildings rating • Unlike in cluster 1, the three ratings appear closely distributed • Apartments opting for IGBC Green homes at 26% • IGBC Factory Buildings at 21%
• Platinum certification leading at 47% • Gold comes second at 32%	• Moderate Financial Appeal seems to motivate choice of Gold and Platinum Certification
• 95% of the projects have experienced incremental cost of up to 10% • Only 5% of projects fall into the 11 to 20% category	• Out of the 95% projects with Incremental cost within 10%, 50% are platinum and 33% are gold certified • Projects irrespective of size have experienced incremental cost of less than 10% • Of these 28% are repeat customers and 72% are first time customers • Lower incremental cost could influence repeat users and result in preference for Gold and Platinum Certifications in this cluster
• 84% are expecting payback within five years • Out of which 32% are expecting returns within an year	• Though Payback period is low, it doesn't appear to be a significant reason for choosing a green building • Agreement on low payback period being a motivator is low

• Usage is on par with Cluster 3 and is less than Cluster 1	• 74% of respondents are first time customers • 26% of respondents are repeat customers • Moderate usage could be owing moderate priority given to financial returns as seen in factor analysis
• Prior knowledge is least among clusters	• Does not appear to be as significant a motivator as for other clusters • Respondents are least familiar with the concept, consider themselves least knowledgeable and don't think they can evaluate the pros and cons of the concept • Moderate usage and low prior knowledge are reflective of each other
• Cluster 2 ranks highest in Level of involvement	• Enduring interest in and general concern for Green Buildings is highest • Prior knowledge may not be proportional to environmental actionability
• Demonstrability of 'Trustworthiness' appears significant	• Demonstration of environmental commitment and prestigiousness to key stakeholders is given highest priority • 47% deem appearing trustworthy to Global and local clients important • 68% consider prestige as an important motivator • 74% feel it is a key opportunity to demonstrate environmental stewardship to stakeholders • 68% of the cluster mandates green building
• Gaining marketing mileage is a significant concern for this segment	• Benefiting from incentives has heavy disagreement. • Almost 50% of the cluster favors advertising and marketing benefits • Pressure from competition has least influence on 68% of the cluster

• Financial returns are of moderate priority like in Cluster 1	• Payback period, Securing premium sale/ rent prices, attracting funding, or lesser depreciation are not priorities • Low inclination towards financial returns could have led to choosing Platinum and Gold Certification
• Green Design Efficacy has lesser appeal for this group	• Accredited professionals (32% are favourably disposed), Integrated design process (47% agree with this), which are features integral to Green Building projects carry lower priority
• Environmental Concern has lower agreement	• Conserving natural resources, using eco certified material, Savings on utility bills, Occupant well-being have healthy agreement • Only 42% find waste management a reason

4.6 Cluster 3 – Profiling

4.6.1 Average Factor Scores across Clusters

Table 28: Factor means in Cluster 3

Factors	Mean scores across cluster
Factor 5 (Green Design Efficacy)	1.73
Factor 3 (Trustworthiness)	2.1
Factor 2 (Financial Appeal)	2.45
Factor 1 (Environmental concern)	3
Factor 4 (Marketing Mileage)	3.05

- Green Design efficacy has the highest agreement as the reason for choosing a Green building
- Demonstration of commitment and appearing trustworthy is at next level of agreement
- Financial returns are of moderate agreement
- Environmental Concern and 'doing the right thing' has lower agreement
- Being able to gain marketing mileage has least agreement

4.6.2 Consumption Motivation – Mean Values across Clusters

Table 29: Mean Consumption Motivations across Cluster 3	
Consumption Motivations	**Mean Values of Cluster 2**
Mean Level of Involvement	3.63
Mean Prior Knowledge	1.53
Mean Usage Level	2

- Cluster 3 is almost the same size as cluster 2
- Level of involvement is the lowest among clusters.
- Usage level is lower than Cluster 1 and the same as Cluster 2 which could be explained by moderate Prior knowledge among clusters

4.6.3 Demographic Profile: Project Characteristics:

Table 30: Demographic Profile of Cluster 3		
Project Characteristics		**%**
Economic sector the Project belongs to	Tertiary	61
	Secondary	33
	Government	6
Type of building	Corporate	56
	Apartment	11
	Factory	11
	Institution	6
	Hospital	6
	Hotel	6
	School	6
Company Size in terms of number of employees	Large (>1000)	44
	Small (<250)	39
	Medium (250-1000)	17
Region	South	56
	North	22
	West	22
	East	0

- 61% of projects belong to the Tertiary sector which is leading (comprising of service organizations etc.)
- IT and Corporate Offices leading at 56%
- Large companies are leading at 44% while small companies stand second at 39%
- Building Projects are concentrated in South India

Respondent Characteristics:

Table 31: Respondent Characteristics of Cluster 3		
Respondent Characteristics		**%**
Individual respondent's level within the organization	Top level managers	72
	Mid-level managers	17
	Low level managers	11
Respondents' experience in years	11 - 20 years	50
	Less than 10 years	33
	21 - 30 and above	17
Respondents' Qualification	Graduate	61
	Post Graduate	39
Respondents' age group	30-39	45
	40-49	33
	21-29	17
	50-59	6

- Top level managers are the maximum in this cluster at 72%
- 50% of the respondents possess an experience of 11 to 20 years
- Graduates are in greater numbers at 61%
- Percentage of respondents in 30-39 age group is highest at 45%

Green Building Certification Details:

Table 32: Green Building Certification Details of Cluster 3		
Green Building Certification Details		**%**
IGBC Green Rating Programme applicable	IGBC New Buildings	61
	IGBC Green Factory	11
	IGBC Green Home	11
	IGBC Green Existing Buildings	6
	IGBC Green Interiors	6
	IGBC Green Schools	6
Certification applicable to this project	Platinum	61
	Gold	28
	Silver	11
	Certified	0
Gross Built-up area (in Square feet)	Above 1 lakh sft	56
	<50k sft	33
	50k sft to 1 lakh sft	11
Approximate incremental cost experienced	Up to 10%	94
	11% to 20%	6
	21% to 30%	0
Anticipated payback period on incremental cost	1-2 years	45
	2-5 years	22
	Less than 1 year	22
	5-10 years	11
Size of purchase (Number of Buildings acquired by this project owner)	1 Building	72
	2-5 buildings	17
	6 and above	11

- IGBC Green Rating for New Buildings is leading at 61%
- Platinum is the leading certification at 61% and Gold comes second at 28%
- Buildings with a Gross Built Up area of above 1 lakh sft are leading at 56%
- 94% of the projects have experienced an incremental cost of up to 10% while the remaining 6% of projects fall into the 11 to 20% category
- 45% are expecting returns in 1-2 years; 22% of the projects are expecting a payback period of 2-5 years and another 22% of projects are expecting payback within an year; 11% are expecting payback in 5-10 years.
- For 72% of respondents, this is the first Green Building Project while 28% of respondents are repeat customers

4.6.4 Conclusive Profile: Benefits Factors, Consumption Motivations, Demographics

Table 33: Conclusive Profile: Benefits Factors, Consumption Motivations, Demographics of Cluster 3

Cluster 3 Profile	Business Implications
• Cluster 3 is the smallest but only by one project less than Cluster 2 • Consists mainly of medium and small companies from Tertiary sector concentrated in South India	• IT and Corporate Offices leading at 56% • Medium sized companies leading at 44% while small companies are at 39% • 61% of projects belong to the Tertiary sector • Telangana state is leading in this cluster sample

• Top level managers are maximum at 72% with experience between 10 to 30 years. • 46% of these are between 40 - 49 years of age	• 50% of the respondents possess an experience of 11 to 20 years • Graduates are in greater numbers at 61% • Percentage of respondents in 30-39 age group highest at 45%
• Buildings with a Gross Built Up area of above 1 lakh sft leading at 66%	• 62% of medium companies chose built up area of above 1 lakh • 71% of small companies chose built up area of above 1 lakh • It appears that small and medium companies in Tier 1 cities favor large projects
• IGBC Green Rating for New Buildings leading at 61%	• 55% of the IGBC New Buildings are Office Buildings
• Platinum is the leading certification at 61% • Gold comes second at 28%	• Preference for platinum could be owing to Green Design efficacy interests and moderate inclination towards financial appeal
• 94% of projects have experienced incremental cost of up to 10%	• Projects irrespective of company size or built up area have experienced incremental cost of less than 10% • Of these 28% are repeat customers • 72% are first time customers • Out of the 94% projects with Incremental cost within 10%, 56 % chose Platinum Certification and 28% chose Gold
• Maximum projects are expecting payback in 1-2 years • 89% of projects are expecting payback within five years • Significant percentage of respondents are expecting returns within an year	• 50% have agreed that lower payback is a motivator and 50% remained neutral • It can be assumed that the low payback has moderate influence

• Usage level is lower than Cluster 1 and the same as Cluster 2	• 72% of respondents are first time customers • 28% of respondents are repeat customers • Moderate usage could be ascribed to moderate priority given to financial returns as seen in factor analysis
• Prior knowledge is moderate	• Among clusters, respondents are moderately familiar with the concept, consider themselves moderately knowledgeable or eligible to evaluate the pros and cons of the concept • Moderate usage and moderate prior knowledge are reflective of each other
• Level of involvement is lowest among clusters.	• Enduring interest in and general concern for Green Buildings is lowest compared to the other clusters • This is perhaps why prior knowledge and usage are low
• Green Design Efficacy has highest agreement	• More than half of the Cluster find Integrated design, presence of Accredited Professionals convincing as reasons
• Appearing trustworthy to clients or being able to demonstrate to their peer group is a higher factor for this group	• Entire cluster is convinced of prestigiousness • 100% of the cluster deems appearing more trustworthy to Global and local clients important • Demonstration of environmental commitment is a high priority across the cluster
• Financial returns are of moderate priority as in the other Clusters	• 39% do not find premium pricing a priority and neutrality is also at the same level • Lower depreciation appeals to 56% • While financial appeal as a factor is moderate, it appears that lower depreciation is in the interest of this cluster

• Environmental concern is lower priority	• Savings on utilities is a priority for the entire cluster • Environmental conservation and Occupant well-being are also cited as important
• Marketing Mileage has assumed lowest preference	• 50% have agreed to marketing and advertising being reasons while the rest are either neutral or disagree • More than half the cluster has disagreed to catching up with competitors or peers as a reason • More than half the cluster has disagreed with availing govt. incentives as the reason for choosing Green Buildings

4.7 A Few Demographic Commonalities across Clusters

Table 34: Demographic Commonalities across Clusters

Cluster 1	Cluster 2	Cluster 3
Tertiary sector	Secondary sector	Tertiary sector is leading
IT and Corporate Offices	IT and Corporate Offices	IT and Corporate Offices
Medium sized companies	Medium sized companies	Large companies are leading
South India	South India	South India
Top level managers	Top level managers	Top level managers

IGBC Green Rating for New Buildings	IGBC Green Rating for New Buildings	IGBC Green Rating for New Buildings
Gold Certification followed by Platinum	Platinum followed by Gold	Platinum followed by Gold
Gross Built Up area of below 50,000 sft	Gross Built Up area of above 1 lakh sft	Gross Built Up area of above 1 lakh sft
80% projects expect an incremental cost of upto 10%	95% projects expect an incremental cost of upto 10%	94% projects expect an incremental cost of upto 10%
64% expect payback within five years	84% expect payback within five years	89% expect payback within five years
70% first time customers	74% first time customers	72% first time customers
30% repeat customers	26% repeat customers	28% repeat customers

- Tertiary sector appears to be the leading sector
- IT and Corporate Offices are dominant across clusters
- Medium sized companies seem to be the leading IGBC customers
- South India has the most prevalence of IGBC Certified Green Buildings
- Top level managers are the leading respondents indicating that the Green Building decision is driven by the Top management and justifying the decision to draw respondents from the Decision Making Unit
- IGBC Green Rating for New Buildings is the most sought after
- Gold Certification followed by Platinum are leading across clusters
- Building projects of Gross Built Up area of below 50,000 sft are prevalent

- An incremental cost of less than 10% is expected by around 90% of all clusters indicating that the incremental cost is coming down compared to the numbers of a decade ago.
- 60-80% across clusters are expecting a payback of within 5 years bringing it down by five years from the numbers of a decade ago.
- The ratio of first time customers to repeat customers appears steady across clusters at an approximate 3 repeat customers for every seven new customers.

CHAPTER V

FINDINGS AND CONCLUSIONS

FINDINGS AND CONCLUSIONS

5.1 Cluster 1: Suggestions to the Indian Green Building Council

Key Finding/ Suggestion: The segment is named as 'Advertisers' for their clear preference of marketing and advertising benefits.

It is suggested that marketing communication aimed at this cluster consider the following:

- **Stress on marketing mileage** possible from Certification and PR and Image benefits to be gained from advertising about Certification.
    - Successfully certified Green Building projects may be used as examples to draw attention to the marketability and hence saleability
    - Certification may be portrayed to the market as 'Walking the Talk'

- **Lay emphasis on Green design** integral to the Green Building Certification
    - Highlight presence of Accredited professionals and Integrated design process which ensure best design from an environmental performance standpoint

- **Credit Customers' knowledgeability** of Green Building in marketing to inspire a sense of pride in possessing familiarity/ expertise

- **Underscore repeat purchase** in promotion and credit users for their conviction in Certification. The objective being, to highlight the marketability of both aspects and urge

further action. Since this cluster consists of more number of repeat purchasers, the focus can be on encouraging loyalty by instilling pride in association with Certification

- **Use heavy usage to communicate to customers that their 'usage' level conveys their involvement** to the market which can be used to generate greater mileage

- **Include testimonials from stakeholders** on the trust aspect to encourage interest in appearing trustworthy. Inspiring trust in global and local clients; prestigiousness; and demonstration of environmental commitment to stakeholders

- **Accentuate Resource conservation**; usage of certified material; waste management practices; savings on utilities and occupant well-being as these enjoy greater agreement levels in data

5.2 Cluster 2: Suggestions to the Indian Green Building Council

Key Finding/ Suggestion: This Cluster named as 'Stewards' for its clear preference of Environmental Stewardship

It is suggested that Marketing communication aimed at this cluster consider the following:

- **Highlight Demonstration of environmental stewardship to stakeholders** as the cluster is keen on inspiring trust in stakeholders and customers.

  - Certification needs to be promoted as a label that stands for integrity in Green claims and not a green washing pitch
  - 'Prestige' attached to undertaking a Green Building project may be used to generate positive appeal as well as inspire trust

- **Underscore advertising and marketing benefits**
  - 50% of the cluster favors marketing mileage generated from Certification
  - Emphasise staying in line with peers and competitors
  - Underscore the incentives to be gained from government and other agencies

- **Highlight these customers as 'High involvement' customers** and underscore the prestigiousness of being an exclusive involved lot
  - Give credit to as enduring interest and concern for Green buildings
  - Connect 'involvement' to ability to instil pride and trust in customers

- **Project 'Green Design Efficacy' as a satisfaction point** experienced in this cluster
  - Draw attention to the reduction in payback period owing to Green design
  - Project Integrated Design and Accredited Professionals as ensuring best design, least eco footprint and a convincing portrayal of Green interests

- **Content must motivate and educate**
  - Users' knowledge of the concept needs to be enhanced leading them to greater conviction in the purchase and thus urging them to purchase more

- This is because concern for environment and knowledge of environmental concepts have not been proved in literature as influencing each other
- Engage with consistent communication

- Highlight 'doing the right thing', resource savings and occupant well being
- Discuss low payback period, incremental cost at closing as benefits that follow through

5.3 Cluster 3: Suggestions to the Indian Green Building Council

Key Finding/ Suggestion: This Cluster named as 'Design Advocates' for its clear preference of Green Design Efficacy

- **Highlight Integrated design or green features**
  - Call to Action statements projecting design aspects of Green Buildings
  - Draw attention to Integrated design in Green Buildings which brings down construction cost, time and reduces rework
  - Train focus on payback period as an integral feature of Green design

- **Demonstration of environmental commitment**
  - Point up appearing trustworthy to Global and local clients by choosing Certification choosing an intrinsically green Certification

- Underscore Prestigiousness of adopting Certification
- Draw attention to the ‘Trustworthy’ aspect which Stakeholders can witness commitment to Environment in the form of Green Building

- **Highlight Savings on utilities**
  - Use numbers to highlight resource savings. For example, ‘Energy savings from around 20 - 30%’ or ‘Water savings around 30 - 50%’ are effective as ‘Call to Action’ statements
  - Draw attention to lower depreciation, lower payback and incremental costs as being offshoots of Green Design Efficacy
  - Highlight environmental conservation as a key feature
  - Emphasize Occupant well-being
- Highlight Marketability of a Green Building
- Lower depreciation and of Green buildings

5.4 Common Customer Groups across Clusters

Table 35: Common Customer groups across Clusters

First Time Customers	Only one purchase
Repeat Purchasers	Multiple purchases
Prospective Customers	Prospective Projects
	Pre-certified Projects
	Registered Projects

As is evident in the table, three sets of customers exist in the context of Green Buildings.

First Time Customers: Customers who have purchased a Green Building Certification for the first time only.

Repeat Purchasers: Customers with more than one IGBC certified green building to their credit.

Prospective Customers: Are customers who are likely to invest in Green Building Certification. It is important to note that the Certification process has several stages.

- Registration is the first step in Certification. Number of Registrations at IGBC far outnumber Certifications. This is because not all registered projects convert to certified projects and drop out of the process. Since these projects have evinced a flicker of interest, it could be taken advantage of. Details of Registered projects and the reasons for dropping out need to be explored and these customers need to be brought back into the loop.
- Precertification is the next step to Registration. Only after a building is Pre Certified can the certification process commence. Several projects also withdraw after precertification. Industry Experts suggest that this happens often in cases where the project's precertification qualifies the project for incentives offered by the local government. Once the incentive is utilized, the idea of Certification is dropped. Other reasons too exist for projects withdrawing after precertification.

Each customer set needs to be treated in a manner relevant to their association with Green Building purchase. Suggestions regarding the same are described below.

5.4.1 Suggestions to the Indian Green Building Council across Clusters

Marketing Green Buildings to Repeat Purchasers across clusters

- 28% of all customer are repeat customers who can be urged to buy more
- It is suggested to make recommendations and cross sell to these customers as they are convinced of the benefits of Green buildings and would be readier to explore other Green products
- Focus must be on securing repeat purchase
- Communication must remind customers of previous purchase and draw attention to points of satisfaction highlighted in each cluster as seen in earlier sections.
- Use ‘Trustworthiness’, ‘Marketing Mileage’, ‘Design Efficacy’ as satisfaction points
- Highlight Gold and Platinum as preferred Certifications
- Highlight max usage to set example and encourage others
- Give credit to customers’ Knowledge, Involvement and Usage of Green Building
- Communication must also invite consideration again from customers
- Project customers as leaders through recognition/ reward and invite membership in Steering Committees or Task Forces and other outfits drafted by IGBC
- Focus must be on Post Purchase Remarketing

Marketing Green Buildings to First Time Customers across clusters

- 72% of customers are first timers who can be converted into repeat customers
- Marketing must Recommend repeat purchase but not cross sell
- Focus must be on preventing abandonment or switching over
- Purchase confirmation and follow up communication emphasizing the brand needs to be implemented consistently
- Customers must be involved in 'Task Forces' on priority factor areas
- Focus must be on Post Purchase Remarketing
- 'Trustworthiness', 'Marketing Mileage', 'Design Efficacy' can be used to convince
- Marketing must highlight Gold and Platinum as preferred Certifications
- Marketing must highlight max usage to set example and encourage others
- Marketing must give credit to customers' Knowledge, Involvement and Usage of Green Building Certification

Marketing Green Buildings to Prospective customers across clusters

- Marketing communication which emphasizes 'Doing the right thing' or 'Eco-sensitivity' would be appropriate
- Financial benefits such Incremental cost of up to 10% and payback period of below five years also need to be underscored
- Marketing must Promote Platinum and Gold certifications and the prestige attached

- Communication must emphasize that top decision makers are inclined towards Green Building and procure testimonies
- Suggest to low level managers that Green Buildings are operationally beneficial and many have opted for them
- Draw attention to the incidence of repeat purchases and support the claim of satisfied returning customers
- Underline that Rating and certification need not be unthinkable irrespective of Project Size, Budget, and Location etc.
- Showcase IGBC as the first mover in the market with impact across
- Highlight fastest growth rate of IGBC Green Buildings and a widespread market across sectors

5.5 Suggestions Based On Participative Observations

Database Management

- Centralization, clean up and management of contacts database is needed as a considerable quantum of database is obsolete and populated by wrong/ outdated contact details

- The IGBC must move on from saturated customers and make new contacts. Cold calling is needed to generate new leads

- IGBC may use training programmes, Green Building Events and other avenues to make new contacts and find new customers

- Interactions with GB consultants can yield insights into where project enquiries are originating from which can be pursued later to obtain leads
- IGBC can use demographics to match prospective clients to relevant clusters
- IGBC can proactively identify immediate converts such as Hotels where there is an imminent need to showcase sustainability
- Marketers need to explore and identify Communication media preferred by IGBC customers
- Feedback forms and customer engagement activities are needed

Rework and Standardize Rating and Certification

- Clarification of myths about Rating and Certification is needed
- Rating and Certification communication must guarantee returns instead of vague promises
- IGBC customers need to be defined clearly
- The intent behind ‘voluntary based recertification’ principle of IGBC must be convincingly conveyed to the stakeholders to avoid marketing fiascos
- rating needs to simple and more achievable
- IGBC needs to standardize and clearly establish differences in Rating and Certification and eliminate confusion

- IGBC must involve Consultants in Rating and Certification processes so as to ensure that Rating is reflective of contemporary customer needs

Avoid Dilution of Rating

- Using cluster membership as a filter, IGBC must offer rating according to customer type or cluster membership
- It must be ensured that customers can clearly see a competitive advantage in choosing one rating over another
- Rating and Certification must not seem like child's play owing to mis-targeting
- Focus on Rating and customers where IGBCs presence is spreading
- IGBC Green Building events must be marketed to the relevant people and not dilute the brand
- Cross selling must be done with care

Cost aspects

- Incremental Cost and Payback Period no longer seem to be customer concerns. These must be considered before portraying them as major incentives
- IGBC Certification must attempt to bring down Rating cost as it is often higher than construction cost and cited as bothersome by customers

Engage Government and External Agencies

- IGBC must engage with Government and External Agencies assiduously to build image
- Government must be involved at all levels to ensure incentives such as ‘Fast track clearance’ for Green buildings
- IGBC must establish consistent and persuasive communication channels with government through Chapter Chairmen and other Office bearers
- IGBC needs to participate vigorously and contribute to National Building Code and other Government regulations
- IGBC must pitch for more government projects so as to forge useful relationships in the regulatory bodies

Employ USPs to Advantage

- IGBC must exploit the First mover advantage and not lose space to competing Green Building Certifications entering the Indian market
- IGBC must call attention to its status as the Rating System with largest presence and as the fastest growing Rating System
- ‘Rating for every building type’ must be emphasized to attract a spectrum of customers
- The fact that IGBC is less expensive than competitors but does not compromise on technicality must be emphasized

IGBC's Virtual Footprint

- IGBC's electronic presence needs to be established using an online media agency to feed market with consistent communication needs to be engaged
- Newsletters and other collateral must have an online version and be interactive and engaging and the Website needs to move from static to dynamic and must be updated regularly
- A blog, social media presence, mobile media presence - to reach prospective customers in a more prolific fashion are needed
- IGBC must employ the same to push marketing collateral, event marketing and Green Building marketing
- Search Engine Optimization strategy secure top position in search engines results pages also is an immediate need
- Feedback forms for customer engagement must be issued at every juncture in online marketing

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(Listed in the order of occurrence in the text as per the latest APA Referencing style)

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APPENDICES

APPENDIX - I

QUESTIONNAIRE

EXPLORATORY STUDY ON MARKETING OF GREEN BUILDINGS IN INDIA

KRANTI CHINTAKUNTA

Reg. No: 10MBPH05

Under the Supervision of

DR. CHETAN SRIVASTAVA

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Indian Green Building Council
C/o. Confederation of Indian Industry
CII – Sohrabji Godrej Green Business Centre
Survey No 64, Near Kothaguda Cross Roads
Kothaguda Post, R R District, Hyderabad – 5000
Tel: 91-40-44185111 Fax: 91-40-44185189
Email: igbc@cii.in
Website: www.greenbusinesscentre.com ;
www.igbc.in

Dear IGBC Patron,

Subject: IGBC needs your valuable opinion

Greetings from CII – Indian Green Building Council (IGBC)!

Thank you for your continued patronage of IGBC in facilitating India emerge as a global leader on the world map of green buildings and green infrastructure. As part of our concerted efforts to enhance IGBC's customer service, we have decided to collect feedback from select stakeholders of IGBC, involved in construction, facilitation, consultation, certification and operation of Green Buildings.

To this end, we have engaged a Doctoral student from the University of Hyderabad, to conduct the survey and initiate the feedback exercise.

Your replies will help us understand your motivations/ objectives behind adopting a Green Building Rating and its impact. The proposed study would also help IGBC to provide better customer oriented services in the future.

You have been an active member of the Green Building Movement in India and a strong supporter of IGBC Green Building initiatives; therefore we request your valuable feedback, to help us drive the Green Building movement from the forefront.

The feedback form will take a maximum of 15 minutes to complete. We will share the summary of the results of the survey with you.

Look forward to your support as always.

Kind regards,

Dr Prem C Jain,
Chairman,
Indian Green Building Council (IGBC).

SURVEY OF CUSTOMERS OF IGBC CERTIFIED GREEN BUILDINGS

1	Greetings!! Please choose one or more of the following as you deem fit					
	Architect	Green Building Facilitator or Consultant	. Developer	Tenant	Owner	. Other
2	Your years of experience		3	Your qualification		4 Your age	
5	Name of the Green Building Project you are responding for				6	Project Location	
7	Type of building					
	Airport	College/ institution	Hospital	Laboratories	Township	
	Apartment	Convention Centre	Hostel	Office	Warehouse	
	Bank	Data Centre	Hotel	Resort		
	Bungalow/ home	Factory	IT park	School		
8	IGBC Green Rating Programme adopted or aspired for the project					
	IGBC Green New Buildings	IGBC Green Homes	IGBC Green Landscaping	IGBC Green Interiors		
	IGBC Green Existing Buildings	IGBC Green Schools	IGBC Green Mass Rapid Transit System	Other		
	IGBC Green Factory Buildings	IGBC Green Townships	IGBC Green SEZs			
9	Certification applicable	Platinum	Gold	Silver	Certified	
10	Approximate incremental cost experienced if any (owing to Green Certification adoption) in %					
11	Anticipated payback period on incremental cost incurred on incorporating Green aspects					
	Less than 1 year	1-2 years	2-5 years	5-10 years		
12	Gross built-up area of the project					
13	Is this the first Green Building project for the project owner?			Yes/ No		

To what extent do you agree or disagree with the following statements about Green Buildings in general?

		SA	A	N	D	SD
12	It is something that interests me	1	2	3	4	5
13	I find it difficult to engage when people talk to me about it	1	2	3	4	5
14	It is only natural that people become interested in it	1	2	3	4	5
15	It is on par with conventional buildings in my opinion	1	2	3	4	5
16	I do not pay attention to information about it in magazines, on TV etc.	1	2	3	4	5
17	When I am with a friend, we seldom talk about it.	1	2	3	4	5

Please indicate your opinion on each of the following statements about your knowledge on Green Buildings:

19	I would describe my familiarity with it as	Highly Unfamiliar	Unfamiliar	Neutral	Familiar	Highly familiar
20	I understand enough about it to evaluate it	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
21	I can rate my knowledge of it as....	Very Low	Low	Medium	High	Very High

Please rate the importance of each of the following selection criteria to you in the context of the project mentioned above in Question 5:

(SA = Strongly Agree A = Agree N = Neutral D = Disagree SD = Strongly Disagree)

No	Statement	SA	A	N	D	SD
1	Savings on energy (electricity), water, maintenance and other utility bills are a priority in this project	1	2	3	4	5
2	Conserving natural resources is one of the principal aims of the project	1	2	3	4	5
3	The opportunity to use material and equipment certified as eco-friendly is important for this project	1	2	3	4	5
4	Waste management practices are a key reason for adopting Green practices in this project	1	2	3	4	5
5	Enhancing occupant well-being and productivity (to reduce employee absenteeism and ensure employee retention) is a significant priority in this project	1	2	3	4	5

6	Integrated design process (reduces rework and save construction cost and time) is a strong reason for choosing Green Building Certification	1	2	3	4	5
7	The project chose Green Building certification as it involves Accredited professionals (who ensure best design and technology inputs)	1	2	3	4	5
8	This project went green because the payback period is attractive	1	2	3	4	5
9	Securing premium prices on sale and higher rents are key reasons for going green	1	2	3	4	5
10	Buyers/ tenants/ other stakeholders of this project demanded a Green Building	1	2	3	4	5
11	The project went Green as depreciation is lesser in Green Buildings than in conventional buildings	1	2	3	4	5
12	The project chose Green Building Certification to attract increased availability of funding	1	2	3	4	5
13	The project wants to benefit from government incentives (such as Extra Floor Area Ratio, Fast track clearance, Preferred status, Tax benefits, Subsidies etc) by securing Green Building Certification	1	2	3	4	5
14	The project chose Green Building certification for the advertising and marketing benefits attached	1	2	3	4	5
15	The project adopted Green Building Certification as competitors and peers have adopted the same	1	2	3	4	5
16	Green Building Certification is a matter of prestige for this project owner	1	2	3	4	5
17	Once Certified, the project would appear more trustworthy to Global and local clients	1	2	3	4	5
18	The project is a key opportunity to demonstrate environmental stewardship to stakeholders	1	2	3	4	5
19	The project owner's company policy makes Green Building Certification compulsory	1	2	3	4	5

Thank you for your response! Your patience and effort is appreciated.

APPENDIX – II

Journal Publications

- Kranti Chintakunta (2016). Factor Analysis of Benefits Sought by Green Building Customers. International Journal of Advance Research in Computer Science and Management Studies. pp: 224-229.
- Kranti Chintakunta (2016). A Compilation of Barriers to Green Building in India. Adarsh Journal of Management Research (AJMR). Accepted.

Publications in Conference Proceedings

- Kranti Chintakunta (2013). Greenwashing: Overview and Insights on Addressing Greenwash. International Conference on Business Management & Information Systems – ICBMIS2013. Organized by Institute Of Management Technology on 19 - 21 November 2013 in Dubai, UAE.
- Kranti Chintakunta (2012). Marketing Implications for Green Businesses. International Conference on Synchronizing Management Theories and Business Practices: Challenges Ahead organised by Annamalai University, Chidambaram, Tamil Nadu on 27, 28 and 29 July 2012.
- Kranti Chintakunta (2012). Delivering the Sustainable Punch in Marketing – Green Marketing Practices in the Indian Green Building Industry: A Case Study. International Conference on Sustainable Management Practices: Developments and Dimensions organized by the Faculty of Management Studies, Mohanlal Sukhadia University, Udaipur, Rajasthan on 30, 31 March, 2012.
- Kranti Chintakunta (2012). Advertising in the Era of Ecological Consciousness: A Perspective on Green Advertising. National Conference on Management Issues and

Challenges for the Decade organised by the School of Management Studies, Vignan University, Guntur on 4, 5 April, 2012.

- Kranti Chintakunta (2010). Banking as a Key Medium for Inclusive Growth - A Marketing-Mix Perspective. National Seminar on Financial Inclusion and Inclusive Growth organized by the School of Management Studies, University of Hyderabad, Hyderabad on 28, 29 October, 2010.

Papers presented

- Kranti Chintakunta (2011). Green Buildings – The Indian Scenario. National Conference on Green Management organized by Hyderabad Business School, Gitam University, Hyderabad on 2 April, 2011.
- Kranti Chintakunta (2011). Green Buildings – Leadership in Sustainable Design. National Conference on Leadership and Corporate Governance in Turbulent Times organized by the School of Management Studies, University of Hyderabad on 17 March, 2011.

Introduction

The building sector worldwide is extremely resource intensive accounting for a third of emissions generated worldwide, half of worldwide energy usage, a quarter of worldwide water consumption and almost half of worldwide resource consumption. (United Nations Environmental Programme (UNEP) – SBCI). With the voluminous increase in world population foreseen at 2.7 billion by 2050 (World Business Council for Sustainable Design [WBCSD], 2009) and the successive growth in concrete edifices, the building industry only promises a larger economic and ecological footprint on the planet.

The data on resource usage for construction, when extrapolated to as short a timeline as five years, suggests a resource scenario that appears to be in precarious imbalance. The only solution appears to be thrifty usage of existing resources and mitigating one's ecological footprint.

Green Buildings appear to be a sustainable answer in an otherwise resource hungry industry. Green buildings are designed to be ecologically sensitive throughout their lifecycle. The WBCSD report (2009) suggests that Green construction enables opportunities to lower energy use at lower costs and higher returns than other sectors.

Problem statement

Considering the economic and ecological benefits, it may be logical to expect widespread presence and adoption of Green Buildings. A glance at Green Building Market Activity across the world suggests that Green is slowly moving from being niche to being mainstream. According to a 2016 report by Dodge Data & Analytics Conducted in nearly 70 countries, green activity above the global average of 24% is seen in South Africa, Singapore, India, Germany and Mexico. The same report suggests a 20% growth

expectation in India in green building industry in the next three years ("Green Buildings to Grow", 2016).

While the growth rate evidences an encouraging trend, the Indian Green Building Council (IGBC), a body that certifies green constructions in India states that Green construction occupies 2-3% of all construction in India, which is on par with the US going by 2010 statistics (Pulla, 2010).

Going by these statistics, increasing the Green Building representation in Construction sector while taking advantage of the increasing Green construction growth rate seems imperative in Indian context. There is a need for research in this context which can assist in enhancing the spread of the Green Building concept.

The Green Building Concept

The Green Building, also known as green construction or sustainable building, refers to a structure and using process that is environmentally responsible and resource-efficient throughout a building's life-cycle.

From Site location to design, construction, operation, maintenance, renovation, and demolition, Green Buildings add to economy, utility, durability, and comfort. In addressing these concerns, Green Buildings accrue several benefits both environmental as well as economic benefits.

Green Building Market Worldwide

This research concerns itself with Certified Green Buildings and does not include natural building or non-certified or alternative construction. The reason being the regulated nature of the Certified Green Building market which makes for convenient estimations. Also, most Green Building Certification and Rating systems across countries are endorsed by

respective governments rendering them indicators of the Green Building trends in those countries.

Green Building Rating comes forth as a tool to enhance marketability of the concept. Rating also brings about market organisation, a sense of formality and confidence in the concept.

In partnership with McGraw-Hill Construction, the World Green Building Council (World GBC) released a Smart Market Report in 2008 on Global Green Building Trends that assessed the market activity, attitudes, motivations and challenges facing the green building movement in different countries and regions. The report suggests that "Within the next four years, 94 per cent of responding firms plan to be building green on at least 16 per cent of their projects, with more than half dedicated to building green on more than 60 per cent of projects." The reports also suggests that, "the fastest growing green building market is in Asia, where the population of firms largely dedicated to green is expected to nearly triple between 2008 and 2013".

The proliferation of Green Building Rating systems can be considered indicative of the growing acceptance of Green Building Codes globally.

Green Buildings in India

The commercially accepted Green Building scenario in India has been rather encouraging when compared to the other developing nations. India boasts of the second highest number of LEED rated Green Buildings after the USA. The Twelfth Five Year Plan states that a national level comprehensive Green Rating Initiative has been made ready and is ready to be launched.

Significant codes/regulations that have been developed by National bodies in India include:

- National Building code (NBC) by The Bureau of Indian Standards (BIS)
- Energy Conservation Building Codes (ECBC) of The Bureau of Energy Efficiency (BEE)
- Environmental Impact Assessment (EIA) of The Ministry of Environment and Forests (MoEF).

Independent Green Building Rating systems also have made their mark in India. The Indian Green Building Council's (IGBC) Rating programme, the Leadership in Energy & Environmental Design (LEED) by the US Green Building Council (USGBC) and GRIHA (Green Rating for Integrated Habitat Assessment) conceived by TERI (The Energy and Research Institute) are the ones with greatest acceptance.

The Indian Green Building Council (IGBC)

The number of IGBC Certified Green Buildings in India today stands at 750 and is growing. The number of building projects who have registered for the Rating has also swelled from 40 in 2006 to 3657 in 2016, displaying a 99% increase over a decade.

The present green built-up area (the area covered by a Green Building in square feet) in India is about 3.82 Billion sq ft. which is a commendable improvement from a modest beginning of 20,000 sq ft. in 2003.

However, the share of Green construction in the overall construction sector in India is only 2-3% and is in need of immediate measures if energy, environmental and sustainability goals set by the United Nations are to be accomplished by 2030.

Need for the Study

Considering the marginal share of Green buildings in the overall construction industry, widespread adoption of the Green Building concept and its eventual internalization into mainstream construction appears to be an immediate need.

It is evident that effective marketing of the Green Building concept is key to widespread adoption.

While various Green Building Certification programs are contributing to furthering the concept, as are Governments and agencies world over, several marketing challenges remain to be handled before the concept can be universalized.

Research reveals Market Segmentation as a viable tool to reach homogenous groups of customers or segments which are both available and profitable and thus reach out to a larger customer base.

Under the head of Market Segmentation, Benefit segmentation comes across as the effective segmentation means for Green Buildings given the status of Green Buildings as an innovative product.

Benefit segmentation is widely acknowledged as one of the best ways to segment markets. (Haley, 1968). It was, therefore, decided to use the 'benefit' approach to segment Green building customers in this research.

Borrowing from Beane and Ennis (1987), a benefit segmentation study should attempt to do three things:

1. Determine the benefits people look for in a product
2. The kinds of people looking for each benefit
3. The proximity of existing brands to these benefit needs.

"Once people have been classified into segments in accordance with the benefits they are seeking, each segment is contrasted with all the other segments in terms of demographics, volume of consumption, brand perceptions, media habits, personality and lifestyle and so forth which are customer values and consumption motivations driving benefit seeking behavior". (Beane and Ennis, 1987).

By understanding segments, and profiling them based on consumption motivations, an understanding of market realities may be arrived at. Understanding these consumption motivations can support marketer with insights on consumer decision making process in customers of Green Buildings.

"Customer-oriented approaches, based on multi attribute theories of consumer behaviour, have been used widely in studies on market segmentation" (Wind, 1978). These approaches provide a consumer's perspective of the market as they are based on the paradigm that consumers want products because of the benefits they provide.

Proceeding on the same lines, a multi-attribute approach for consumer profiling which encompasses attributes characteristic of consumers such as behavioral, psychographic, social, and demographic factors appears significant.

For this investigation three consumption motivations are chosen for their relevance to benefit segmentation of Green Building customers. These include Prior Knowledge Level, Level of Involvement, and Product Usage Level. These will be examined and used alongside benefits sought by consumer segments in developing segment profiles. The rationale for the examination of these three in particular is that, these motivations are linked to benefits of products/services and widely explored in existing marketing studies.

Through a benefit segmentation and a study of profiles based on consumer attributes, the research extends original insights for marketers and researchers.

From a larger perspective, the research attempts to arrive at an understanding of Green Building customer segments which can assist Green building marketers in understanding consumption motivations which drive benefit seeking behavior and applying this knowledge to convince existing and future customers

Research Gap

Literature on who exactly is the Indian Green Consumer is still emerging and subsequently, research on who exactly is the Green Building customer is also incomplete. Further questions arise on if the Green Building Rating customers are indeed a group which is identical with shared motivations, needs or behavior equally, or do they differ? What do these customers seek in a Green Building? How can benefits and value in Green Building choice and adoption be highlighted and consumer concerns alleviated?

These research questions are to be realised to provide marketers the necessary inputs for designing target segment specific marketing programmes.

The present research intends to plumb this gap by applying the concept of benefit segmentation to segment the customers of Green Building Rating and also profile them according to consumption motivations thus contributing to finding some answers to these questions.

Aims of the Project

The purpose of this dissertation is to provide insights to Green Building marketers into the nature of Green Building customer segments. The overarching purpose is to contribute to bolstering the adoption and proliferation of Green Buildings in India.

Towards this goal, the first key objective is the identification of the benefits sought by Green building customers. The subsequent aim is to segment customers seeking similar benefits into heterogenous groups.

The research also aims to delve into the consumption motivations driving consumer benefit seeking behavior to arrive at a deeper understanding of segments and their nature.

By studying consumer requirements from a Green building and organizing the motivations driving behavior, utilising a benefit-segmentation approach and formulating singular and targetable consumer profiles, the research will support marketers in targeting the right customers and positioning Green Buildings in a compelling fashion.

Research Questions Addressed

The following research questions were investigated in the context of IGBC certified Green Buildings.

- What are the benefits sought by customers of Green Buildings?
- What are the customer segments according to the benefits they seek?
- How are the segments different in their motivations?
- How are they different in demographics?

Review of Literature

In the context of increasing product usage, it is imperative to understand consumer needs, behavior, consumer market dynamics and the marketing stimulus they respond to. Given the dynamic nature of consumer markets, it is important that marketers track customer behavior extensively. (David A. Aaker, 1992)

Yoram and Wind say that a marketing or business strategy is rendered effective when the market is segregated into homogenous segments, each segment's needs understood,

products and services crafted as per these needs and delivered though marketing programs relevant to the segments.

For the specific purpose of segmenting the market for Green Buildings Geographic and demographic segmentation bases are considered less effective when compared to psychographic and behavioral segmentation bases.

Among the behavioural segmentation bases, benefit segmentation is considered more effective than, other bases such as demographic, geographic, and psychological segmentation. (Haley 1968).

Benefits are the cumulative satisfactions derived of customer's needs or wants. They are not limited to product features but serve to appease physical, emotional, or psychological needs. Benefit segmentation segregates customers by similarities in buying motives. (Weinstein, 2004).

"Benefit segmentation divides a heterogenous population into homogenous groups on the basis of product benefits consumers perceive as important". (Chang and Chen, 1995).

"Benefit segmentation is widely acknowledged as one of the best ways to segment markets. (Haley, 1968).

Given that the Green Building is a Green Product, reviewing literature on Green Marketing is important.

"Green marketing is the marketing of products that are presumed to be environmentally preferable to others. Thus green marketing incorporates a broad range of activities, including product modification, changes to the production process, sustainable packaging, as well as modifying advertising." This definition is commonly found across literature.

Ottman (1992) defines green consumers as “individuals looking to protect themselves and their world through the power of their purchasing decisions. In their efforts to protect themselves and their world, they are scrutinizing products for environmental safety”.

Mintel (1995) discovered a significant gap between consumers concern and actual green purchasing.

Consumer’s lack of trust in green product performance or claims also contributes to adoption issues. (Oliver, 2007).

A report by the World Wildlife Federation (WWF) says that socially responsible endeavors, including producing environmentally friendly products, is a key way to earn and keep customers (Marketing News 2006).

Given that consumers for green products exist but barriers too are prevalent, it is imperative that strategies be researched which can overcome barriers and increase green product consumption, adoption and proliferation.

Towards this the market must gain an appreciation of customers, their needs and wants which reflect the economic, social, and ecological value expected from the product. The firm with a sustainable orientation possesses greater ability to emphasis on the returns sought. The customers purchasing capacity and willingness also assume importance in his context as an inability to acknowledge these would only lead to the failure of the green marketing proposition. (Dahlstrom.R, 2011)

Once this assessment takes place, the firm needs to investigate unique value statements in the market and the segments corresponding to these. The firm then transitions from market analysis to marketing mix positioning.

This development from market identification addressing individual segments is termed as STP - Segmentation, Targeting, and Positioning. (Dahlstrom.R, 2011).

Efforts abound to discover the relevant segmentation bases for defining and targeting green consumers. (Diamantopoulos et al., 2003).

“Consumers want value-added attributes, such as green benefits, with their products; however, just because a product has this value it does not translate into consumer purchase behavior”. (Mintz, 2011).

Having established that benefit segmentation is appropriate to Green Building marketing, it is important to understand the motivation which can assist in translating consumer interest, value into actual purchase

Smith states that market segmentation which ignores consumption motivations “is simply an approximation based on the assumption that descriptors (i.e. characteristics) and motivations (i.e. needs/behaviour) are closely aligned” while in reality they are not so.

“Linking consumption motivations to benefits sought provides a better understanding of customers' needs and wants and thus allows more effective targeting with appropriate service.” (Zanoli and Naspetti, 2002).

“Prior product knowledge is proposed in consumer research as one of the cognitive traits existing at the background of consumer perceptions, influencing valuation of a product’s perceived benefits, costs, and value” (Lai, 1995).

Mittal posits that Level of Involvement, which is the “enduring interest in and general concern with a product category, may stimulate information search and thus affect choice behaviour in consumption decisions”. (Mittal, 1989).

Product usage level is a behavioral variable. “Research shows that frequent users have more idealistic cognitive structures than occasional consumers, which may be considered as a symptom of a higher level of interest” (Zanoli & Naspetti, 2002). It may be assumed that heavy users assume they have acquired product knowledge and even skills which they may want to capitalize on by growing product usage. (Hoch & Deighton, 1989).

Research Methodology

The present study falls into the ambit of Exploratory Research and research is partially deductive and partially inductive.

Objectives

Based on the gaps found in literature, the following objectives have been established:

- To Segment the customers of (IGBC) Indian Green Building Council based on benefits sought
    - To Identify the benefits sought by customers when adopting IGBC Rating for Green Buildings
    - To Cluster customers into segments based on benefits sought
- To Develop segment profiles
    - To understand the preference patterns towards benefits within clusters
    - To understand Level of Involvement, Prior Knowledge and Usage within segments
- To Suggest marketing communication to the IGBC in accordance with segment profiles

Sampling Method

Simple Random sampling was performed on the list of IGBC Certified Green Building Projects. Certified projects were taken into account as the purpose was to investigate actual organizational buying behavior rather than perceived or potential organizational buying behavior. It being an Industrial study, a 20% sample of 150 projects was targeted out of a population of 750 certified projects as on the date of research.

Target Respondents

Respondents were drawn from each selected project's Decision Making Unit as they are key to decision making regarding Green Construction.

Sample Distribution and Sample Size

Out of the 150 responses targeted for the survey, 113 were received. Out of these 82 responses were useful for analysis and the remaining were discarded either for being incomplete or for being flawed in their response quality.

The survey was administered for the most part personally (65%) as well as via email (35%) using a structured questionnaire.

The whole valid sample is used to conduct an exploratory factor analysis to identify the underlying factors of benefit seeking behavior in Green Building customers.

Survey Instrument (Questionnaire)

Based on the variables identified in the preliminary research, a structured questionnaire was finalized upon. The final data is collected by finalized survey instrument from Certified Green Building projects selected via sampling. The questionnaire consisted of 41 questions.

Data Collection

The study used both the primary and secondary data and it is mainly based on the primary data collected from the DMU members of select IGBC Certified Green Buildings.

The present study used two methods of primary data collection, i.e. In-depth interviews and the structured questionnaire. Primary data was collected using a structured

questionnaire on the benefit seeking behavior of customers. Insights were also drawn from participatory observation on benefit seeking behavior as well as other aspects pertinent to the objectives of the study.

Data Analysis

Exploratory Factor Analysis (EFA) was done on the 'benefits sought' in the 82 statistically useful responses to identify the underlying benefit factors.

The Kaiser-Meyer-Olkin measure of sampling adequacy is 0.721 indicating that the factors extracted account for a fair amount of variance. Therefore factor analysis is appropriate for data.

the Bartlett's test is highly significant ($p<0.001$), and has an approximate χ^2 value of 658.085 which is significant at 5% level of significance.\

Five factors are derived using Unweighted Least Squares as an extraction method considering Varimax rotation.

Table 11: Communalities

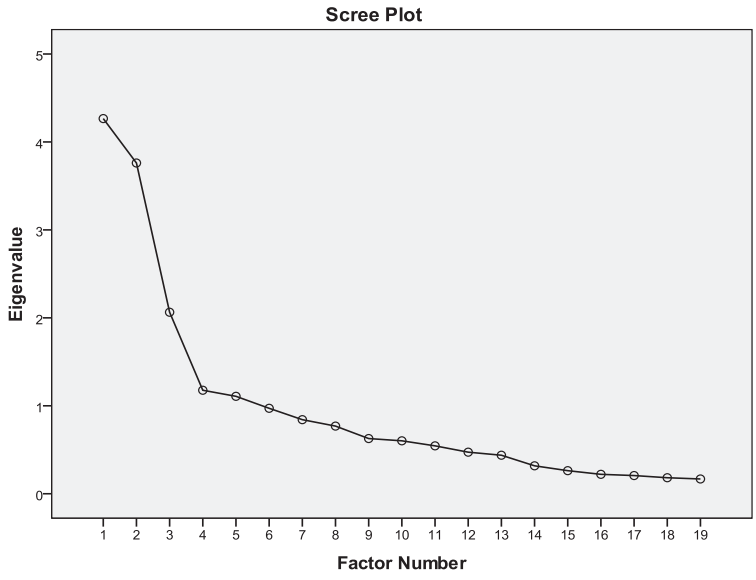
Variable	Initial	Extraction
Savings on energy (electricity), water, maintenance and other utility bills are a priority in this project	.370	.343
Conserving natural resources is one of the principal aims of the project	.698	.777
The opportunity to use material and equipment certified as eco-friendly is important for this project	.648	.624
Waste management practices are a key reason for adopting Green practices in this project	.639	.630
Enhancing occupant well-being and productivity (to reduce employee absenteeism and ensure employee retention) is a significant priority in this project	.435	.355

Integrated design process (reduces rework and save construction cost and time) is a strong reason for choosing Green Building Certification	.453	.271
The project chose Green Building certification as it involves Accredited professionals (who ensure best design and technology inputs)	.623	.999
This project went green because the payback period is attractive	.441	.296
Securing premium prices on sale and higher rents are key reasons for going green	.538	.589
Buyers/ tenants of this project demanded a Green Building	.528	.438
The project went Green as depreciation is lesser in Green Buildings than in conventional buildings	.469	.433
The project chose Green Building Certification to attract increased availability of funding	.523	.567
The project wants to benefit from government incentives (such as Extra Floor Area Ratio, Fast track clearance, Preferred status, Tax benefits, Subsidies etc) by securing Green Building Certification	.546	.563
The project chose Green Building certification for the advertising and marketing benefits attached	.653	.719
The project adopted Green Building Certification as competitors and peers have adopted the same	.647	.652
Green Building Certification is a matter of prestige for this project owner	.547	.532
Once Certified, the project would appear more trustworthy to Global and local clients	.689	.781
The project is a key opportunity to demonstrate environmental stewardship to stakeholders	.427	.419
The project owner's company policy makes Green Building Certification compulsory	.379	.306
Extraction Method: Unweighted Least Squares.		

On the basis of Eigen values that are greater than one, there are five factors which explain 54.274% of the variance.

Table 12: Total Variance Explained									
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	**4.266**	22.451	22.451	3.881	20.426	20.426	2.956	15.559	15.559
2	**3.761**	19.792	42.243	3.330	17.525	37.950	2.265	11.923	27.482
3	**2.064**	10.862	53.105	1.625	8.553	46.504	2.180	11.474	38.955
4	**1.177**	6.194	59.299	.815	4.288	50.792	1.550	8.157	47.112
5	**1.108**	5.830	65.129	.662	3.482	54.274	1.361	7.162	54.274
6	.972	5.114	70.243						
7	.842	4.433	74.676						
8	.769	4.049	78.724						
9	.628	3.303	82.028						
10	.602	3.168	85.195						
11	.545	2.866	88.062						
12	.473	2.488	90.549						
13	.438	2.306	92.855						
14	.318	1.672	94.527						
15	.262	1.381	95.907						
16	.221	1.162	97.070						
17	.207	1.089	98.158						
18	.182	.958	99.116						
19	.168	.884	100.000						

The corresponding scree plot is displayed here.



Scree Plot depicting Eigen Values

It can be observed that in the Eigen values depicted in scree plot above, a steeper descent is observed after Factor 5 and the curve gradually goes parallel to the x-axis. This means that five factors are significant in explaining the variance.

The Rotated Factor Matrix is depicted here.

Table 13: Rotated Factor Matrix

	Factor				
	1	2	3	4	5
Savings on energy (electricity), water, maintenance and other utility bills are a priority in this project	**.574**				
Conserving natural resources is one of the principal aims of the project	**.826**				
The opportunity to use material and equipment certified as eco-friendly is important for this project	**.736**				
Waste management practices are a key reason for adopting Green practices in this project	**.723**				
Enhancing occupant well-being and productivity (to reduce employee absenteeism and ensure employee retention) is a significant priority in this project	**.540**				
Integrated design process (reduces rework and save construction cost and time) is a strong reason for choosing Green Building Certification					**.482**
The project chose Green Building certification as it involves Accredited professionals (who ensure best design and technology inputs)					**.923**
This project went green because the payback period is attractive					**.481**
Securing premium prices on sale and higher rents are key reasons for going green		**.720**			
Buyers/ tenants of this project demanded a Green Building		**.635**			
The project went Green as depreciation is lesser in Green Buildings than in conventional buildings		**.545**			
The project chose Green Building Certification to attract increased availability of funding		**.705**			
The project wants to benefit from government incentives (such as Extra Floor Area Ratio, Fast track clearance, Preferred status, Tax benefits, Subsidies etc) by securing Green Building Certification				**.557**	

The project chose Green Building certification for the advertising and marketing benefits attached				**.705**	
The project adopted Green Building Certification as competitors and peers have adopted the same				**.655**	
Green Building Certification is a matter of prestige for this project owner			**.709**		
Once Certified, the project would appear more trustworthy to Global and local clients			**.843**		
The project is a key opportunity to demonstrate environmental stewardship to stakeholders			**.618**		
The project owner's company policy makes Green Building Certification compulsory			**.409**		
Extraction Method: Unweighted Least Squares. Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 8 iterations.					

Factor Naming

By looking at the contents of questions that load onto the same factors, common themes are identified. In short, a set of variables is segregated into subgroups based on shared characteristics. New factors names are given to the newly divided groups of variables thus.

Factor 1: The variables which load highly on Factor 1 relate to resource conservation, opportunity to use responsible sourced and certified building material, waste management and indoor environment. Therefore this factor is labeled as 'Environmental Concern'.

Factor 2: The variables which load highly on Factor 2 relate to securing premium prices on sales, attracting funding, lowering depreciation and buyer demand. Therefore this factor is labeled as 'Financial Appeal'.

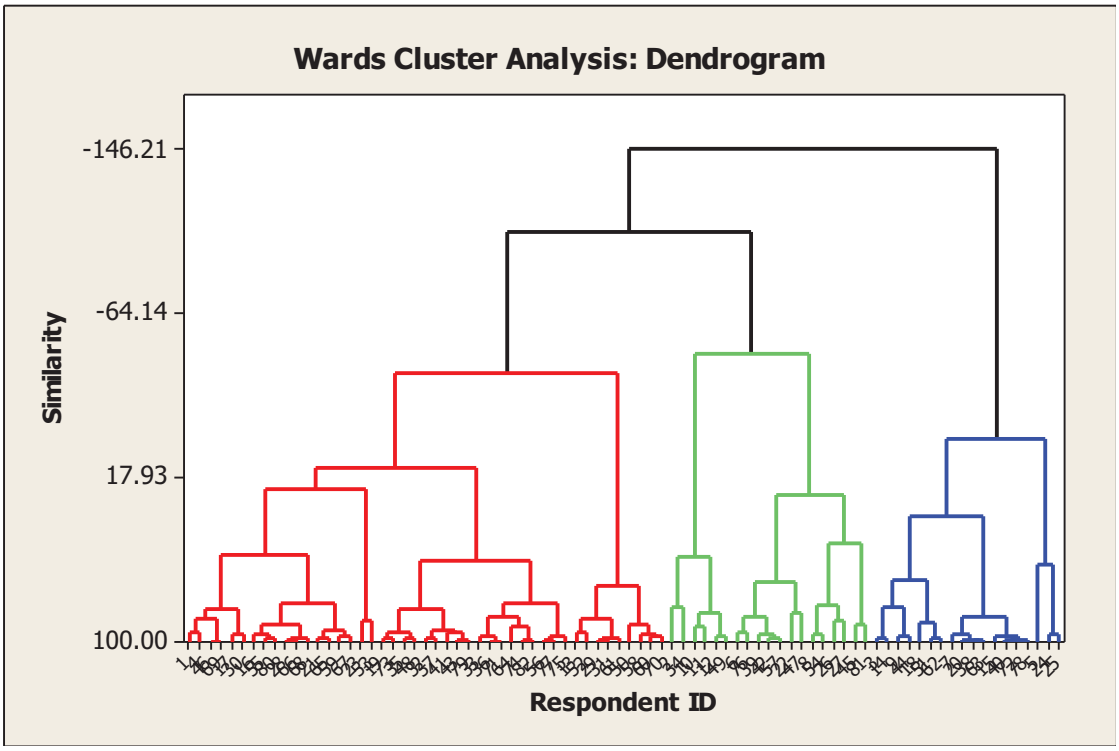
Factor 3: The variables which load highly on Factor 3 relate to demonstration of pride in Certification, trustworthiness corresponding to environmental responsibility to customers and stakeholders. Since the focus is on conveying the 'trust' aspect, the factor is labeled 'Trustworthiness'.

Factor 4: The variables which load highly on Factor 4 relate to benefits from the market including government incentives, positive image in the market via ability to advertise 'greenness' and staying abreast of peers. Therefore this factor is labeled as 'Marketing Mileage'.

Factor 5: The variables which load highly on Factor 4 relate to the benefits derived from the Green Design, construction and attached advantages inherent to a Green Building such as saving time and cost via Integrated Design and ensuring best design via Certification process. Therefore this factor is labeled as 'Green Design Efficacy'.

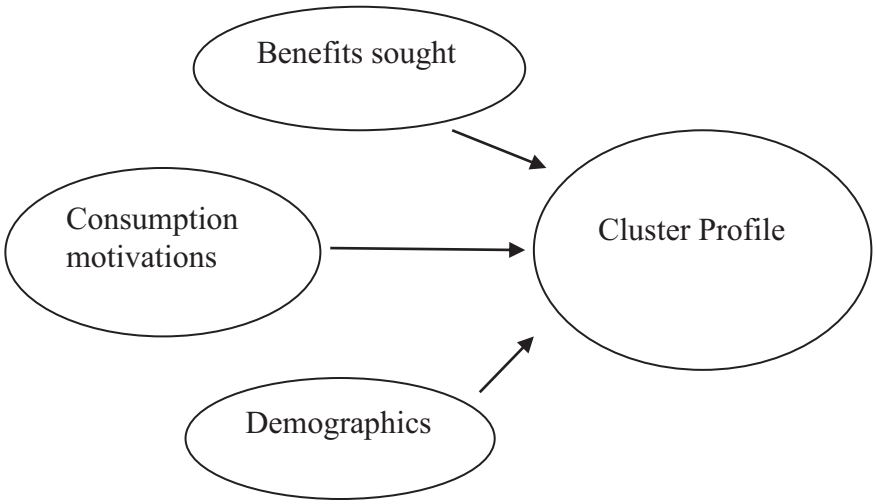
Cluster Analysis

Using these benefit factors, Cluster Analysis was performed on the sample to arrive at benefit segments which are homogenous within and heterogeneous without. Ward's Clustering Algorithm with Squared Euclidean Distance has been implemented on the factor scores obtained from the results of Factor Analysis.



Cluster Profiling

Cluster profiling is the task of developing a summary of each cluster for marketers to study, analyse and decide if the cluster satisfies Targeting criteria. The selected clusters are the Target Clusters and Positioning efforts would entail marketing strategies devised to best appeal to the clusters. Such highly targeted marketing would elicit the desired responses from these customers satisfying the ultimate objective of increasing adoption of Green buildings.



Benefits sought as inputs to Cluster Profiling: The benefit factors serve the dual purpose of serving as the bases for segmentation and also explain the benefits that cluster members are in closest agreement to. The summary of mean Benefit Factor scores across clusters in given in Table.

Table 14: Average Factor Scores across Clusters

Factors	Cluster 1	Cluster 2	Cluster 3
	Mean	Mean	Mean
Factor 1 (Environmental concern)	2.33	2.97	3.00
Factor 2 (Financial Appeal)	2.13	2.18	2.45
Factor 3 (Trustworthiness)	2.22	1.68	2.10
Factor 4 (Marketing Mileage)	1.86	1.70	3.05
Factor 5 (Green Design Efficacy)	1.87	2.23	1.73

The Factor mean scores indicate agreement to the factors in each cluster but are not representative of the order of preference as it wasn't asked in the Questionnaire

Consumption Motivations as inputs to Cluster Profiling: Mean value of Consumption Motivations are used to arrive at an understanding of select motivations of each cluster. The Consumption Motivations used in this study include Level of Involvement, Prior Knowledge and Usage level which have been elaborated upon in the chapters on Review of Literature and Methodology. The Mean Values arrived at for each cluster in the three Consumption Motivations are listed here.

Table 15: Mean Consumption Motivations across Clusters

Consumption Motivations	Cluster 1	Cluster 2	Cluster 3
	Mean	Mean	Mean
Mean Level of Involvement	3.72	4.13	3.63
Mean Prior Knowledge	1.91	1.43	1.53
Mean Usage Level	4	2	2

The Mean Values of each Consumption Motivation are compared among clusters. The highest mean value belonging to a cluster for a given Consumption Motivation indicates that the associated cluster is dominant in that particular motivation.

Cluster 1: Segment Profile:

- Cluster 1 is the largest cluster consisting of mainly medium sized IT and Corporate projects concentrated in Southern India
- IGBC Rating for New Buildings is leading at 56% in Cluster 1
- Cluster respondents belong to the Tertiary economic sector, IT in particular
- Top level managers comprise almost half of the cluster. More than 50% of the top level managers have >20 years of experience, and predominantly belong to > 40 age group

- Buildings with a Gross Built Up area of less than 50,000 sft are leading at 64% and most of these projects are concentrated in cities
- Gold and Platinum are the leading certifications in this cluster
- 80% of projects experienced incremental cost of up to 10%. Among the 80%, repeat users account for 33%, 42% of these are platinum and 33% are gold
- Out of the 80% of projects experiencing incremental cost of up to 10%, 33% are Platinum and 50% are Gold Certified. Lower incremental cost could influence repeat users in choosing Gold and Platinum Certifications
- 64% expected a payback period of less than 5 years indicating Payback period is a lesser priority compared to the other factors
- Usage level in this cluster is highest among clusters with 30% of respondents being repeat customers responsible for the high 'Usage' characteristic while the remaining 70% of respondents are first time customers
- Prior knowledge in this cluster is the highest among clusters. Respondents are most familiar with the concept, consider themselves highly knowledgeable and can best evaluate the pros and cons of the concept. Usage and prior Knowledge apparently influence each other in this cluster
- Cluster 1 ranks second in Level of involvement indicating that the enduring interest in and general concern for Green Buildings is moderate compared to the other clusters. Since Environmental concern is low, this cluster is moderately likely to go the extra mile in its Green concerns compared to the remaining segments
- Amongst the benefits sought from green buildings, 'Marketing Mileage' gets highest agreement in this cluster. 73% of the cluster respondents expressed strong agreement to marketing and advertising benefits
- Green design Efficacy is of next higher preference as a benefit with Accredited professionals and Integrated design process being strongly favoured
- Financial appeal receives moderate priority in this cluster with securing premium prices on sale; attracting increased availability of funding; buyer side demand; lower depreciation receiving moderate agreement as reasons for choosing Green Buildings
- Trustworthiness has received lower agreement with appearing trustworthy to global and local clients; prestigiousness; demonstration of environmental commitment to stakeholders receiving slightly lesser than moderate agreement

- Environmental concern has lower agreement in comparison with Resource conservation; usage of certified material; waste management practices; savings on utilities and occupant well-being receiving general agreement across cluster

Cluster 2 Profile: Segment Profile:

- Cluster 2 is the Second largest cluster consisting mainly of medium sized companies from Secondary sector concentrated in Southern India
- The leading building types in this cluster are Office Buildings and Apartments
- The Financial Savings possible over the lifetime of the building, resource efficiency seem key reasons for choosing Green buildings
- Of the DMU members, Top level managers are maximum at 68% of the cluster. More than 75% of these top level managers have 20 years of experience on an average and predominantly belong to the above 30 age group
- Buildings with a Gross Built Up area of below 1 lakh sft are leading at 63% indicating that project sizes of less than one lakh seem to be favoured in metro cities
- Karnataka is leading in this cluster with 26% of the projects followed by Maharashtra at 21%
- Most of the projects are concentrated in Tier 1 cities and only 16% are in tier 2 cities
- IGBC Rating for New Buildings is leading at 37% in Cluster 2 just as in Cluster 1
- 32% projects are office buildings opting for IGBC New Buildings rating
- Unlike in cluster 1, the three ratings appear closely distributed
- Platinum certification leading at 47% and Gold comes second at 32%
- Moderate Financial Appeal seems to motivate choice of Gold and Platinum Certification
- 95% of the projects have experienced incremental cost of up to 10%. Out of the 95% projects with Incremental cost within 10%, 50% are platinum and 33% are gold certified
- Projects irrespective of size have experienced incremental cost of less than 10%. Of these 28% are repeat customers and 72% are first time customers

- Lower incremental cost could influence repeat users and result in preference for Gold and Platinum Certifications in this cluster
- 84% of the projects in this cluster are expecting payback within five years out of which 32% are expecting returns within an year
- Though Payback period is low, it doesn't appear to be a significant reason for choosing a green building as agreement on low payback period being a motivator is low
- Usage is on par with Cluster 3 and is less than Cluster 1 with 74% of respondents being first time customers and 26% of respondents being repeat customers
- Moderate usage could be owing moderate priority given to financial returns as seen in factor analysis
- Cluster 2's Prior knowledge is least among clusters and does not appear to be as significant a motivator as for other clusters. Respondents are least familiar with the concept, consider themselves least knowledgeable and don't think they can evaluate the pros and cons of the concept. Moderate usage and low prior knowledge are reflective of each other
- Cluster 2 ranks highest in Level of involvement. Enduring interest in and general concern for Green Buildings is highest among clusters. But Prior knowledge may not be proportional to environmental actionability as per literature.
- Demonstration of environmental commitment and prestigiousness to key stakeholders is given highest priority with 68% of the cluster mandating green buildings and 47% deeming appearing trustworthy to Global and local clients important. 68% of Cluster 2 participants consider prestige as an important motivator and 74% feel it is a key opportunity to demonstrate environmental stewardship to stakeholders.
- Gaining marketing mileage is a significant concern for this segment but the aspect benefiting from incentives has heavy disagreement. Almost 50% of the cluster favors advertising and marketing benefits while pressure from competition has least influence on 68% of the cluster.
- Financial returns are of moderate priority like in Cluster 1. Payback period, Securing premium sale/ rent prices, attracting funding, or lesser depreciation are not priorities in Cluster 2. Low inclination towards financial returns could have led to choosing Platinum and Gold Certification

- Green Design Efficacy has lesser appeal for this group. Accredited professionals (32% are favourably disposed), Integrated design process (47% agree with this), which are features integral to Green Building projects carry lower priority.
- Environmental Concern has lower agreement. Conserving natural resources, using eco certified material, Savings on utility bills, Occupant well-being have healthy agreement and only 42% find waste management a reason

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Cluster 3: Segment Profile:

- Cluster 3 is the smallest but only by one project less than Cluster 2 and consists mainly of medium and small companies from Tertiary sector concentrated in South India. IT and Corporate Offices are leading at 56% in Cluster 3. Medium sized companies are leading at 44% while small companies are at 39%. 61% of projects belong to the Tertiary sector and Telangana state is leading in this cluster sample.
- Top level managers are maximum at 72% with experience between 10 to 30 years. 46% of these are between 40 - 49 years of age. 50% of the respondents possess an experience of 11 to 20 years. Graduates are in greater numbers at 61%. Percentage of respondents in 30-39 age group highest at 45%
- Buildings with a Gross Built Up area of above 1 lakh sft leading at 66%. 62% of medium sized companies chose built up area of above 1 lakh and 71% of small companies chose built up area of above 1 lakh. It appears that small and medium companies in Tier 1 cities favor large projects
- IGBC Green Rating for New Buildings leading at 61% and 55% of the IGBC New Buildings are Office Buildings
- Platinum is the leading certification at 61% and Gold comes second at 28%. Preference for platinum could be owing to Green Design efficacy interests and moderate inclination towards financial appeal
- 94% of projects have experienced incremental cost of up to 10%. Infact projects irrespective of company size or built up area have experienced incremental cost of less than 10%. Of these 28% are repeat customers and 72% are first time customers
- Out of the 94% projects with Incremental cost within 10%, 56% chose Platinum Certification and 28% chose Gold

- In cluster 3, Maximum projects are expecting payback in 1-2 years while 89% of projects are expecting payback within five years. A significant percentage of respondents are expecting returns within an year.
- 50% of repondents in this cluster have agreed that lower payback is a motivator and 50% remained neutral. It can be assumed that the low payback has moderate influence
- Usage level is lower than Cluster 1 and the same as Cluster 2. 72% of respondents are first time customers and 28% of respondents are repeat customers. Moderate usage could be ascribed to moderate priority given to financial returns as seen in factor analysis
- Prior knowledge is moderate and respondents are moderately familiar with the concept, considering themselves moderately knowledgeable or eligible to evaluate the pros and cons of the concept. Moderate usage and moderate prior knowledge are reflective of each other
- Level of involvement is lowest among clusters indicating that enduring interest in and general concern for Green Buildings is lowest compared to the other clusters. This is perhaps why prior knowledge and usage are low
- Green Design Efficacy has highest agreement and more than half of the Cluster find Integrated design, presence of Accredited Professionals convincing as reasons
- Appearing trustworthy to clients or being able to demonstrate to their peer group is a higher factor for this group and 100% of the cluster deems appearing more trustworthy to Global and local clients important. The entire cluster is convinced of prestigiousness
- For Cluster 3, Financial returns are of moderate priority as in the other Clusters. 39% of respondents do not find premium pricing a priority and neutrality is also at the same level. Lower depreciation appeals to 56% of the cluster. While financial appeal as a factor is moderate, it appears that lower depreciation is in the interest of this cluster
- Environmental concern is lower priority. Speaking of Environmental concern, savings on utilities is a priority for the entire cluster. Environmental conservation and Occupant well-being is also cited as important
- Marketing Mileage has assumed lowest preference and only 50% of cluster respondents have agreed to marketing and advertising being reasons while the rest

are either neutral or disagree. More than half the cluster has disagreed to catching up with competitors or peers as a reason and more than half the cluster has disagreed with availing govt. incentives as the reason for choosing Green Buildings

Findings and Conclusions

Cluster 1: Suggestions to the Indian Green Building Council

It is suggested that marketing communication aimed at this cluster consider the following:

Key Finding/ Suggestion: The segment is named as 'Advertisers' for the respondents' clear preference of marketing and advertising benefits.

- Stress on marketing mileage possible from Certification and PR and Image benefits to be gained from advertising about Certification.
- Lay emphasis on Green design integral to the Green Building Certification and highlight presence of Accredited professionals and Integrated design process
- Credit Customers' knowledgeability of Green Building in marketing to inspire a sense of pride in possessing familiarity/ expertise
- Underscore repeat purchase in promotion and credit users for their conviction in Certification.
- Use heavy usage to communicate to customers that their 'usage' level conveys their involvement to the market which can be used to generate greater mileage
- Include testimonials from stakeholders on the trust aspect to encourage interest in appearing trustworthy. Inspiring trust in global and local clients; prestigiousness; and demonstration of environmental commitment to stakeholders
- Accentuate Resource conservation; usage of certified material; waste management practices; savings on utilities and occupant well-being as these enjoy greater agreement levels in data

Cluster 2: Suggestions to the Indian Green Building Council

Key Finding/ Suggestion: This Cluster named as 'Stewards' for the respondents' clear preference of Environmental Stewardship

It is suggested that Marketing communication aimed at this cluster consider the following:

- Highlight Demonstration of environmental stewardship to stakeholders as the cluster is keen on inspiring trust in stakeholders and customers. Certification and 'Prestige' attached to undertaking a Green Building project may be used to generate positive appeal as well as inspire trust
- Underscore advertising and marketing benefits, the incentives to be gained from government and other agencies and emphasise staying in line with peers and competitors
- Highlight these customers as 'High involvement' customers and underscore the prestigiousness of being an exclusive involved lot. Give credit to their enduring interest and concern for Green buildings and connect 'involvement' to ability to instil pride and trust in customers
- Project 'Green Design Efficacy' as a satisfaction point experienced in this cluster
- Content must motivate and educate as Users' knowledge of the concept needs to be enhanced and eEngage with consistent communication
- Highlight 'doing the right thing', resource savings and occupant well being
- Discuss low payback period, incremental cost at closing as benefits that follow through

Cluster 3: Suggestions to the Indian Green Building Council

Key Finding/ Suggestion: This Cluster named as 'Design Advocates' for the respondents' clear preference of Green Design Efficacy

- Highlight Integrated design or green features using 'Call to Action' statements projecting design aspects of Green Buildings
- Train focus on payback period as an integral feature of Green design

- Point up appearing trustworthy to Global and local clients and Underscore the prestigiousness of adopting Certification
- Use numbers to highlight resource savings via ‘Call to Action’ statements
- Draw attention to lower depreciation, lower payback and incremental costs as being offshoots of Green Design Efficacy
- Highlight environmental conservation as a key feature and emphasize Occupant well-being as a key outcome of Greed Design
- Highlight Marketability and Lower depreciation of Green Buildings

Key Findings and Suggestions:

- IGBC Green Rating for New Buildings is the most sought after
- Gold Certification followed by Platinum are leading across clusters
- Building projects of Gross Built Up area of below 50,000 sft are prevalent
- Top level managers are the leading respondents indicating that the Green Building decision is driven by the Top management and justifying the decision to draw respondents from the Decision Making Unit
- An incremental cost of less than 10% is expected by around 90% of all clusters indicating that the incremental cost is coming down compared to the numbers of a decade ago.
- 60-80% across clusters are expecting a payback of within 5 years bringing it down by five years from the numbers of a decade ago.
- The ratio of first time customers to repeat customers appears steady across clusters at an approximate 3 repeat customers for every seven new customers.

Limitations of the Study

- Many respondents found it difficult to spare time and effort owing to busy schedules as Heads of organisations
- Direct interaction with respondents was cumbersome and time consuming
- Respondents sometimes displayed a lackadaisical attitude towards the questionnaire rendering some responses unfit for analysis

Direction for Future Study

- The next steps to the segmentation process, ie the targeting and positioning steps need to be explored
- The impact of the suggestions on the segments arrived at needs to be observed
- Further research on clusters is needed
- The relationship between variables could be explored further
- Further research into customer satisfaction, post purchase behavior is needed
- Research on non-conversion in customers is needed

Conclusion

The segment profiles including demographics, benefit seeking behaviour, consumption motivations reveal the triggers to which these segments readily respond to. These customer typologies serve as a starting point for Targeting and Positioning activities which follow as per Segmentation theory.

By understanding IGBC Customer Segment Profiles via consumption motivations, demographics and benefit sought, marketers can choose one or more Target segments based on the identifiability, accessibility, affordability and other criteria suggested in Segmentation theory. Once the Target segments are selected, marketers can assess the promotional strategies which best suit the target segments and position accordingly.

To summarise, the study offer IGBC Green Building marketers an avenue to serve existing customers insightfully, and attract pre-qualified customers meaningfully using relevant marketing strategies.

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