Supply chains and green housing products and services: Kathmandu, Pokhara and Dharan

Switch Asia Project

Final research report

Coordinator: Dr. Ogenis Brilhante

Research Team: Ogenis Brilhante, Somesh Sharma, Swati Pujari, Neha Shrestha, Amit Bajracharya and Anita Adhikari,

UN-Habitat Switch Asia Project Managers: Padma Sunder Joshi and Santos Shrestha

UN-Habitat Nepal, European Union and IHS/Erasmus University, Rotterdam

Acknowledgements

I express my special thanks to the four IHS alumni and researchers, Ms. Swati Pujari, Ms. Neha Shrestha, Mr. Amit Bajracharya and Ms. Anita Adhikari for having taking part in this research and very well conducted the process of data collection in Kathmandu, Pokhara and Dahran.

I express also my thanks to my IHS colleague MSc. Somesh Sharma for his dedicated support, the very good work done on processing the data and the graphics of the research.

Finally I would like to express my thanks to my IHS colleague Shraron Welsh who have helped in editing this report and to all staff of UN-Habitat Nepal that have supported the development of this research.

Synonyms

4Ps	Product, Price, Promotion and Place
ANOVA	ANalysis Of VAriance
EUR	Erasmus University Rotterdam
FNCCI	Nepali Federation of Commerce
GHG	greenhouse gas
GSCM	Greening Supply Chain Management
IHS	Institute for Housing Development Studies
SC	Supply Chain
SCM	Supply Chain Management
SCP	Sustainable Consumption and Production
SMEs	Small and Medium size Enterprises
SPSS	Statistical Package for Social Sciences
WoM	Word of Mouth

Table of Contents

List of Figures

List of Tables

Executive summary

This research is being proposed to fulfil part of the general requirements of the activities SO2 and SO3 of the Nepal SWITCH-Asia project which aims to strengthen the Nepalese supply chain for sustainable housing and to stimulate the demand for green housing products and services.

This research focuses on the supply chains of the building construction sector and on the perception of the actors involved in these supply chains with regard to green housing products and services.

The research has two-fold objectives:

- To understand the organization and the factors affecting the relationships of the supply chains of a selected number of construction companies, and to identify the green products and services used in these supply chains and their respective suppliers
- To understand the perception of the actors of these supply chains on green/sustainability issues, and to explain the factors influencing the attitudes of these actors with regard to the buying and using of green housing products and services

One hundred and nine (109) private companies were contacted in the three cities selected for this study: Kathmandu (60 questionnaires), Pokhara (25 questionnaires), Dahran (25 questionnaires) and six (6) interviews were carried out in Kathmandu with different public and civil society organizations. The questionnaires ere applied to representatives of private companies involved in the building sector during the months of March, July and September 2015.

The research was conducted by Dr. Ogenis Brilhante and the team involved was composed of MSc. Somesh Sharma from IHS/ EUR (Institute for Housing and Urban Development Studies/Erasmus University Rotterdam and the data was collected by four IHS alumni, all with a master's degree, namely Mr. Amit Bajracharya, Ms. Anita Adhikari, Ms. Swati Pujari and Ms. Neha Shrestha, in the cities of Kathmandu, Pokhara and Dahran during the months of March, July and September 2015

Several statistical methods were used to examine and analyse the collected data such as Cronbach's alpha test, frequencies, percentages, means, ANOVA analysis of variance, chi square (comparison of means), multiple regression and Pearson coefficients. The study assumed a level of significance equal to 0.05 with a confidence interval of 95% to all calculations performed. The summary of the main findings have been divided into two parts.

Limitations

The results of the report cannot be generalised to all the country once a non-probabilistic sampling approach which has implied a relatively small sample size cannot guaranty a good representation of the studied population. The results can however be considered as a good representation of the situation of the supply chains and the green products in the studied cities at the moment the data was collected. Another limitation of these results is the fact that the questionnaires used in the data collection were not translated to the Nepali language making necessary their translation by the researchers at the moment of the application. This process may have caused influences in the choices of the respondents

Part one: Supply chains

The construction sector in the three cities is very fragmented with a huge variety of companies and professionals from many business and academic areas such as developers (contractors), sub-contractors, constructors, traders, retailers, manufacturers, architects, engineers, financial specialists, designers and other professionals from diverse areas.

Companies create supply chains because they want to increase customer satisfaction, to build trust among the suppliers and reduce the delivery time. There are mainly three sorts of supply chains, the majority of supply chains are of the type called; “extended supply chains with a middle length” followed by the type called; “direct supply chains with a short length” and the type called; “ultimate supply chains with long length.”

The management of these supply chains is highly influenced (affected) by information technology and the flow of information, by communication and planning tools and with the fast changing market with regard to green approaches (environmental uncertainty). The top four driving forces influencing the management of supply chains are cost reduction, time of delivery of materials and products on the site and market development, including the influence of green issues.

Supply chains and relationships

Coordination of goods and services with suppliers, distributors and clients is the most common type of supply chain which is based on the relationships that exists in supply chains between the contacted companies. The most important ties (bonds) found in these relationships are legal contracts/ agreements and personal/social ties.

The reasons that companies have to build up relationships with their suppliers is due to the necessity to maintain long-time, retain suppliers and clients and to keep close contact with suppliers and clients. The most important factors to guarantee the successful relationship with their suppliers are costumer’s satisfaction, mutual trust (belief that a party's word or promise is reliable and that the party will fulfil its obligations) and cost reduction. The top barriers to implement these relationships are constraint resources, lack of a sustainable chain vision and understanding, and lack of integration between those who have design and those who construct and deliver.

Greening supply chains

The respondents have a good perception and understanding on the concept of; green homes or sustainable housing, on the advantages of the green products related to the conventional ones and on the concept of greening the supply chain management.

Corporate environmental and social responsibility, attracting and retaining clients and the companies image are the top three most important driving forces for adopting green and sustainable issues within the supply chains.

Clients, engineers, project managers and contractors are the actors who have a preponderant influence selecting which materials will be used within the companies. The majority of companies do not have a special person to deal with the green issues.

The size of the companies influences the presence of a special person to deal with green issues. Small companies on the whole do not have a special person to deal with environmental issues while in medium/large companies such an individual may be found.

Most of the companies give little importance or no importance to the green issues when selecting a supplier. About a third (33.3% percent) of the companies consider green issues when selecting a supplier and only nine percent (9%) have said that green issues are a critical factor in selecting suppliers.

Almost eighty four percent (84%) of the companies are adopting some kind of green practices, 16% are not adopting any kind of green practices and 12% are already using green procurement in their supply chains. Waste (water) reduction, water reduction and the use of environmentally friend energy sources are the top three green practices which have already been adopted by the contacted companies. Respondents have a very good perception on the attributes a product/material must have to be called green.

Twenty four (24) out of one hundred and nine (109) companies contacted for this study are currently producing or selling green products. Solar panels and related appliances are the types of green products most companies are producing and or selling followed by hollow block cements, rain water appliances, solar water heating, and high insulated UPVC windows and doors.

The top barriers to increase the use of green products include; low levels of awareness of green products, no building certification system and lack of political support and incentives. The factors hindering the development of green products within the companies are lack of financial incentives such as tax rebate, grants and loans to support energy efficiency, no clear government policies to promote green homes and green products, and green issues are not incorporated into the National Buildings Code.

The top three external supports needed by companies to market and improve their green products are: options to promote energy, water and waste green products and services, access to potential green customers and technical advice and consultancy services for products and services which are development.

The size of the company affects several aspects of the supply chains and the use of green practices. In small companies the owner or proprietor is more likely to be the person who decides which materials should be bought. Medium/large companies often have a special person (executive) to manage their supply chains. In small companies, market and product development are more important than in medium/large companies. Medium/large companies are more likely to have a dedicated team or person to deal with green and sustainable issues than the small companies. Finally more small companies do not apply any kind of green practices compared to the medium/large companies

The above results on supply chains and on the use of green products clearly indicate that there is a potential market for green products in Nepal. An important number of companies are already producing or selling green products, and companies are aware of the influence of the green issues on their business.

Special attention needs to be made by the companies to improve information technology, the flow of information, communication and planning tools as well as raise awareness on the green issues within their supply chains.

Part two: perception and green purchase intention

The respondents had a very high perception of the positive aspects of green products, for them, the green products have a reasonable price and also according to them, green products are not well promoted, not easily available and not well displayed in the building material shops.

A large majority of the respondents pay attention to advertisements regarding green products. Word of mouth (WoM) is the most convincing way to market green products, there is a strong belief in the eco-friendly advertisement, a very high willingness to pay a premium of 10% to buy a green product and a very good appreciation for the package of the green products.

The respondents (consumers) have a very good motivation to buy green products, they perceive the green products as having a good quality and price but they are not well promoted and they cannot be easily found in the building material shops.

Market mix (4Ps) on the whole positively influence the motivation to buy green products. This is also valid for the individual elements product, promotion and place but not for the element price. Price also does not correlate with motivation, which indicates that this element does not influence the buying of green products.

Market mix elements (product, price, promotion and place) together with world of mouth (WoM) have an effect on attitudes, on using and buying green products and attitude has an effect on the purchase intention of using and or buying green products. Purchase intention is most sensitive to WoM compared with the other independent variables that have been used in this section.

The above results on the perception and the purchase intention of the respondents (consumers) are important for the companies once they clearly indicate the key issues companies need to focus on to increase their sales and to increase the demand for green products: promotion (advertisement), awareness to increase the use of WoM and improvement of the packaging of the green products

Top key findings of the research and directions for actions

Part 1: Supply chains:

Factors affecting the management of supply chains:

- 92% information technology and the flow of information
- 88% communication and planning tools.

Existence and size of a green market demand in Nepal

- (22%) of the total contacted companies are producing or selling green products and materials
- 33% said the size of the market in Nepal for green products is not small
- 39% said there is a market demand for green products in Nepal
- 29% said green products are not expensive

Barriers to increase the use of green products

- 96% low level of awareness
- 89% lack of green labels for construction materials/ products
- 88% no existence of building certification system in operation
- 84% lack of political support and incentives with and poor enforcement of specifications

Factors hindered the development of green products by SMEs

- 95% no clear government policies to promote green home and green products
- 90% inexistence of government green building requirements
- 86% very few financial incentives such as tax rebate, grants and loans to support energy efficiency
- 83% green issues are not incorporated into the national building code

- 82% simplification of the administrative procedures for buying and installing solar panels and other renewable energy appliances

Part 2: Consumers, demand for green housing products and green purchase intention

- 94% of the respondents pay attention to the eco-friendly advertisements
- 92% of the respondents recommend green products to a friend or family using the word of mouth (WoM)
- 87% pay attention to friends or family opinion concerning eco-friendly products (WoM)
- 78% are willing to pay a premium of 10% to buy a green product
- 83% and satisfaction with the green products they have bought in the last six months
- 66% of the respondents declared to have the intention to buy a greenhouse product in the coming six months
- 44% of the respondents said that green products have a reasonable price
- 55% think that the green products are not well promoted
- 58% think green products are not accessible (available) or easy found in the shops of housing materials.
- Market mix (4Ps) and WoM do influence attitude and that attitude influences the purchase intention.

Direction for actions to strengthen companies supply chains and to increase demand for green housing products:

- Improve companies skills and capacity on information technology, communication and planning tools
- Improve company skills on marketing, promotion, package and distribution of green products
- Increase awareness among producers, government officials and consumers on green home issues and products specially using simply advertising by word of mouth (WoM). The results have clearly showed that WoM is the most important element influencing the green purchase intention of products and services

<u>Recommendation to Strengthen the Nepalese supply chain for sustainable housing and demand for green products</u>

Actions to be implemented by the companies

- Invest in improving information technology, communication and planning tools
- Creation of a small section within the companies dedicated to raise awareness on the green products and issues among the suppliers.
- Improving the quality and the promotion of their green products
- Improve the package and the information of their green products
- Increase availability and visibility of the green products in the shops of building materials

Actions to support companies: government and civil organizations

- Provision of regular trainings and advises on improving the quality and promotion of key green products (FNCCI for example)
- Provisions of regular training and development of brochures on information technology, communication and planning tools for companies (FNCCI for example)

Actions to strengthen the green market and increase demand: government and civil organizations

- Simplify the existing administrative procedures for buying and installing solar panels and other renewable energy appliances
- Stimulate the civil organizations to create a national building certification
- Stimulate the creation of green labels for different classes of housing products
- Improve the financial support and incentives to the companies but also to the consumers such extending the existed financial incentives such as tax rebate, grants and loans to support energy efficiency
- Raise awareness and better enforce the existing policy on climate change as a way to promote green technologies with low carbon footprints in the companies
- Incorporate green issues specially energy performance into the National Buildings and creating: mechanisms to enforce it, allocating resources to implement it and training officials in charge of checking compliance with the code in municipalities and other national organizations.
- Use the opportunity to rebuild the houses destroyed by the recent earthquake to expand the application of the safety regulation of the building code and to promote the use of green materials, appliances and services.
- Include green provisions in the construction bids for construction of public buildings
- Include into the loans contracts of the financial companies in charge to provide loans for re-building and for new house provisions to use green materials and other green features within the construction
- Improve market promotion on green issues among the consumers and companies specially the medium and small ones.
- Increase awareness on green products among the consumers and the constructors/producers using advertisement, training, fairs, etc. This will positively affect the WOM that will influence the green purchase intention