



**Terwilliger Center for
Innovation in Shelter**

Wood and Cement Industries for Low-Income Incremental Home Builders in the Visayas Region: A Rapid Market Study



May 2022

About Habitat for Humanity's Terwilliger Center for Innovation in Shelter

The Terwilliger Center for Innovation in Shelter, a unit of Habitat for Humanity, works with housing market systems by supporting local firms and expanding innovative and client-responsive services, products, and financing so that households can improve their shelter more effectively and efficiently. The goal of the Terwilliger Center's market systems program is to make housing markets work more effectively for people from the low-income sector who need decent, affordable shelter, thereby improving their quality of life. To learn more, visit [habitat.org/tcis](https://www.habitat.org/tcis).

Acknowledgments

This report was developed by research firm Development Consulting Group: Rocelyn Zosa, Kookie Gutierrez, and Marge Gravador; Habitat for Humanity's Terwilliger Center for Innovation in Shelter staff: Jessan Catre, Jerick Axalan, Reggie Marie Barrientos, and Al Francis Razon; and Habitat for Humanity Asia Pacific staff: Francis Baraoidan and Julia Ferraz. Layout and graphic design by Rachel Barawid. The team thanks all the respondents for sharing their valuable input. Th report was produced with support from the Hilti Foundation.

TABLE OF CONTENTS

Acknowledgments	2
Acronyms	4
Executive Summary	5
Chapter 1. Introduction	
1.1 Background	7
1.2 Study Objectives	8
Chapter 2. Methodology	
2.1 Data Collection and Analysis	9
2.2 Limitations of the Study	11
Chapter 3. The Wood Industry	
3.1 Classification and Types of Wood	11
3.2 National Situationer	12
3.3 Demand and Supply	13
3.4 Challenges	18
3.5 Opportunities	20
Chapter 4. The Cement Industry	
4.1 Classification and Types of Cement	22
4.2 National Situationer	24
4.3 Demand and Supply	27
4.4 Challenges	34
4.5 Opportunities	36
Chapter 5. Recommendations	38

ACRONYMS

ADB	Asian Development Bank
BBB	Build Build Build
CHBs	Concrete Hollow Blocks
CeMAP	Cement Manufacturers Association of the Philippines
DHSUD	Department of Human Settlements and Urban Development
DTI	Department of Trade and Industry
FMB	Forest Management Bureau
FPRDI	Forest Products Research and Development Institute
GDP	Gross Domestic Product
HCHUD	House Committee on Housing and Urban Development
HFHI	Habitat for Humanity International
IEC	Information, Education and Communication
IFMA	Integrated Forest Management Agreement
ITP	Industrial Tree Plantation
LIH	Low-Income Households
MFI	Microfinance Institutions
PSA	Philippine Statistics Authority
PTC	Provincial Training Center
PWPA	Philippine Wood Producers Association
SFFI	Society of Filipino Foresters, Inc.
SFMA	Sustainable Forest Management Act
TESDA	Technical Education and Skills Development Authority

EXECUTIVE SUMMARY

In 2017, Habitat for Humanity's Terwilliger Center for Innovation in Shelter conducted a research study to assess the housing quality of low-income households engaged in owner-driven construction.

The study revealed that about 40% of the households have poor foundation, walling, and roofing systems, despite them being high priorities for the construction and/or renovation of resilient and safe homes. The research also informed the Terwilliger Center on the materials used in these housing structures, primarily wood and cement.

Five years later, the Terwilliger Center commissioned the Development Consulting Group to conduct a market study which aimed to understand the current state of the wood and cement industries in the Visayas; identify critical factors affecting supply and demand; present market constraints and opportunities; and recommend appropriate and innovative market-based solutions to support the availability and accessibility of quality and affordable building materials for low-income households doing incremental builds.

The market study covered selected areas in the provinces of Cebu (particularly Metro Cebu) and Bohol, and the cities of Tacloban, Ormoc, Dumaguete, Iloilo, and Bacolod. The study gathered data from 137 respondents. They are housing market actors such as low-income incremental home builders, masons, carpenters, financial institutions, media channels, government agencies, associations, manufacturers, and distribution channels such as hardware stores. Data were gathered through surveys, key informant interviews, and secondary data.

On the demand side for the wood industry, the market study revealed that low-income incremental home builders are price-sensitive, budget-conscious, and prefer cheaper wood materials. However, this group of builders, including carpenters, lack sufficient knowledge on other types of wood in the market. They also do not know how to access financing opportunities from financial service providers and have limited access to digital technology.

On the supply side for the wood industry, challenges include lack of available quality wood materials in the market for the low-income incremental home builders, lack of grading system in the market to differentiate quality wood materials from substandard ones, limited interest of small and medium hardware stores in supplying quality wood products, asymmetry of information between market actors, and limited supply of local wood in the market, resulting in overreliance on importation.

Several opportunities in the wood industry could be tapped by the different market actors. These include getting the services of an association to provide information and facilitate networking among wood industry actors; ensuring the availability of financial products and services to increase access of quality wood materials among low-income incremental home builders; capitalizing on wood as green technology; and securing digital assets among supply actors to increase availability of wood materials, and innovation in wood as primary housing materials.

On the demand side for the cement industry, the market study identified the following challenges: (1) low-income incremental home builders and masons are price-sensitive and budget-conscious; (2) low-income incremental home builders and masons have insufficient knowledge on other types of cement in the market; (3) low-income incremental home builders do not know how to access financing from financial service providers; and (4) they have limited access to digital technology.

On the supply side for the cement industry, challenges include: (1) limited availability of quality cement brands in some hardware stores targeting low-income incremental home builders; (2) lack of skilled masons in the low-income segment; (3) asymmetry of information among manufacturers, hardware stores, masons, and low-income incremental home builders; (4) dumping of imported cement; and (5) cement as a contributor to climate change.

There are several opportunities in the Visayas cement industry that could be tapped by different market actors. Cement manufacturers can offer assorted brands and types of cement to distribution channels to increase the home builders' awareness of these brands. Other opportunities include availability of environment-friendly cement products, presence of financial institutions, promotion of the government's campaign to ensure quality cement standards in the market, and presence of digital assets among supply actors.

For wood, the market study has come up with the following recommendations for the market actors in the supply side: (1) create a brand for good lumber as a quality wood and durable material, and intensify this value proposition through marketing and promotion campaigns; (2) customize marketing and promotional materials of wood products according to the needs of decision-makers from the low-income incremental home builders and masons as influencers; (3) engage in digital platforms to increase the availability of quality wood products as well as valuable information on them; (4) explore digital financial products and service providers that offer bundles of products available in the market, including rural areas; and (5) collaborate with associations and networks to disseminate information on wood, new technology, standards, policies and legislation.

For cement, the market study recommends supply market actors to (1) design marketing collaterals that target decision-makers from the low-income incremental home builder groups and mason-influencers; (2) introduce product warranties in distribution channels to increase the households' preference for quality cement brands; (3) engage in digital platforms to increase the availability of cement, and generate valuable information on these products for the low-income incremental home builders; (4) design simple information guides or tools on types of cement and cement-based construction for masons and home builders; (5) establish partnerships with government agencies such as the Technical Education and Skills Development Authority (TESDA), its Provincial Training Centers, and other private skills providers that can facilitate formal partnerships with mason groups and manufacturers; and (6) broaden and intensify information dissemination campaigns on the proliferation of non-compliant or substandard cement materials in the public, particularly among the low-income incremental home builders.

CHAPTER 1. INTRODUCTION

1.1 BACKGROUND

The COVID-19 pandemic and the response of countries to contain the virus resulted in the closure of borders, massive lockdowns, business disruptions and a global economic recession. In the Philippines, the badly hit economy resulted in the rapid decline of many sectors. A study from the Ateneo de Manila University revealed that the worst hit by the pandemic were the manufacturing, investment (construction and durable equipment) and trade industries¹.

In 2020, the impact of the pandemic resulted in a 9.5% year-on-year decline in Gross Domestic Product (GDP). In the construction field, the robust growth rate experienced in 2017-2018 at 8.7% was cut down to -2.9% in 2019-2020. Household consumption spending was reduced drastically as unemployment soared, worsening the economic crisis. The Asian Development Bank (ADB) also projected a 4.1% inflation rate in 2021, much higher than the original projection of 2.4%.² Full recovery is projected to happen in 2022, as 2021 made slow progress towards reversing the pandemic-induced economic decline.

Pre-pandemic, the construction industry experienced a promising forecast of 18% growth for 2020, fueled by the projected Php1 trillion investment on the government's Build, Build, Build (BBB) program. However, the industry felt a 26% decline when the country was subjected to harsh lockdowns to counter the spread of COVID-19. A study commissioned by the Terwilliger Center points out that during the pandemic, "half of the construction projects are canceled or postponed, causing unemployment and displacement of construction workers."³

Housing needs in the Philippines can be broken down into segments: at the top tier are the luxury and high-end segments, followed by mid, low, economic, and socialized housing segments. At the lowest tier is the unserved segment, representing those who can neither afford nor are eligible for socialized housing programs. In 2019, the Department of Human Settlements and Urban Development (DHSUD) reported a 6.7-million housing backlog in the country. The House Committee on Housing and Urban Development (HCHUD) has declared a housing crisis, and has noted that between June 2016 to July 2020, the government and the private sector built only 777,789 housing units, highlighting the severity of the backlog.⁴

The total housing needs in the country are estimated to reach 15 million units by 2022, of which 5.9 million will come from the unserved segment. This segment includes those "who cannot afford" due to limited buying power and access to information to qualify for and obtain available financing services.

¹ ADMU-Econ ACERD. (2020). *The Philippine Economy During the Pandemic* file:///D:/Habitat/References/ADMU%20WP%202020-16.pdf

² Asian Development Bank. (2021). *Philippine Economy Seen Recovering in 2021, with Stronger Growth in 2022*. <https://www.adb.org/news/philippine-economy-seen-recovering-2021-stronger-growth-2022-adb>

³ Habitat for Humanity - Terwilliger Center for Innovation in Shelter. (2020). *Clearing the Housing Backlog*:

An Updated Supply and Demand Study on Unserved Owner-Driven Construction Segment in the Philippines <https://www.habitat.org/sites/default/files/documents/Clearing-the-Housing-Backlog.pdf>

⁴ Manila Standard. *House to work with DHSUD to cut 6.7 M housing backlog*. <https://manilastandard.net/news/national/349227/house-to-work-with-dhsud-to-cut-6-7m-housing-backlog.html>

1.2 STUDY OBJECTIVES

The Terwilliger Center's research study from 2017 showed that around 73% of the households surveyed used reinforced concrete and concrete hollow blocks (CHBs) as their primary foundation material, while 80% used CHBs for external walling systems.

About 70% of the houses surveyed used timber and wood posts and beams to support their roofs, while approximately 95% of respondents' houses used wood as the primary material for roof frames. However, 40% of the households surveyed have poor foundation, walling, and roofing systems. The findings suggested that the foundation, walling, and roofing are high priorities for housing renovations and repairs.

As low-income incremental home builders considered these priority areas to make their homes more disaster-resilient, the Terwilliger Center decided to focus on understanding the materials used in these housing structures, primarily wood and cement.

For this purpose, the Terwilliger Center commissioned a market study on wood and cement in selected areas of the Visayas Region. Specifically, the study aims to:

1. Provide an understanding of the current state of the market in the wood and cement industries;
2. Identify critical factors or the enabling environment affecting supply and demand;
3. Identify market opportunities and constraints; and
4. Recommend appropriate and innovative market-based interventions to support the availability and accessibility of quality and affordable building materials for low-income incremental home builders.

CHAPTER 2. METHODOLOGY

2.1 DATA COLLECTION AND ANALYSIS

Data Collection. The study used a combination of surveys, key informant interviews, and secondary sources in gathering and validating the data. Survey tools were developed for the collection of the necessary data from low-income incremental home builders, masons, carpenters, and hardware stores.

The study employed KoBoToolbox⁵ and Survey CTO⁶ to collect and manage data gathered through mobile phones. A field supervisor addressed data quality concerns arising from the data collection. For key informant interviews, more market actors were interviewed, including financial service providers, government agencies, industry associations, and media agencies.

Data analysis. The data from both the KoboToolbox and Survey CTO databases were collated and analyzed. Frequencies and percentage distribution were computed, and data tables were graphed to aid in the analysis conducted by the team.

Target Areas. The study covered selected rural, peri-urban, and urban areas in the Visayas Region: the provinces of Cebu (Metro Cebu) and Bohol, and the cities of Tacloban (Samar), Ormoc (Leyte), Dumaguete (Negros Oriental), Iloilo (Iloilo), and Bacolod (Negros Occidental).

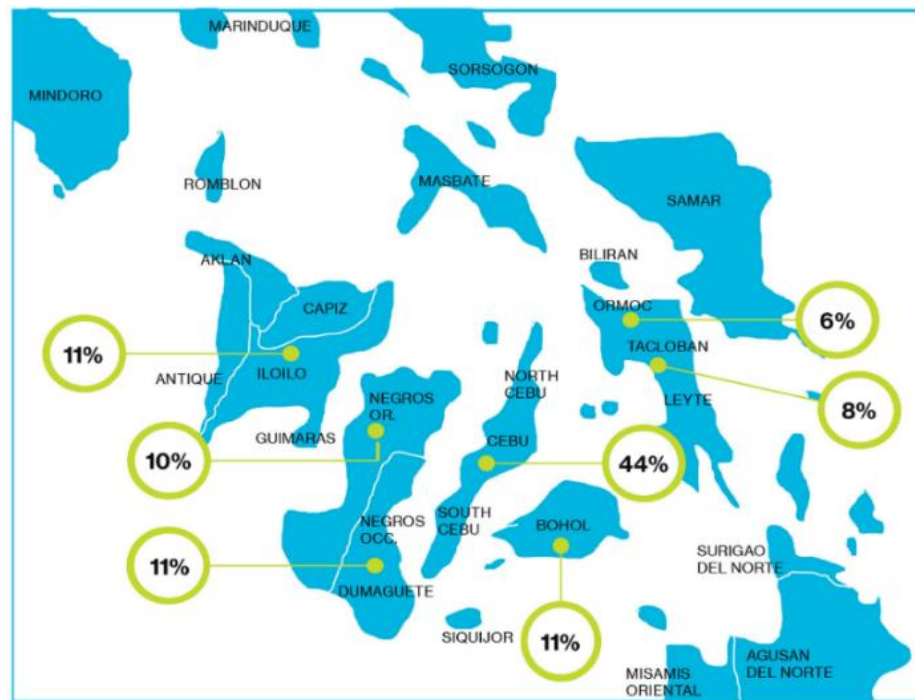


Figure 1. Percentage distribution of respondents per location.

⁵ KOBO is a free open-source tool for mobile data collection.

⁶ Survey CTO is a field-tested platform that collects high-quality data using mobile phones, tablets, or computers.

Respondents. The study had a total of 137 respondents:

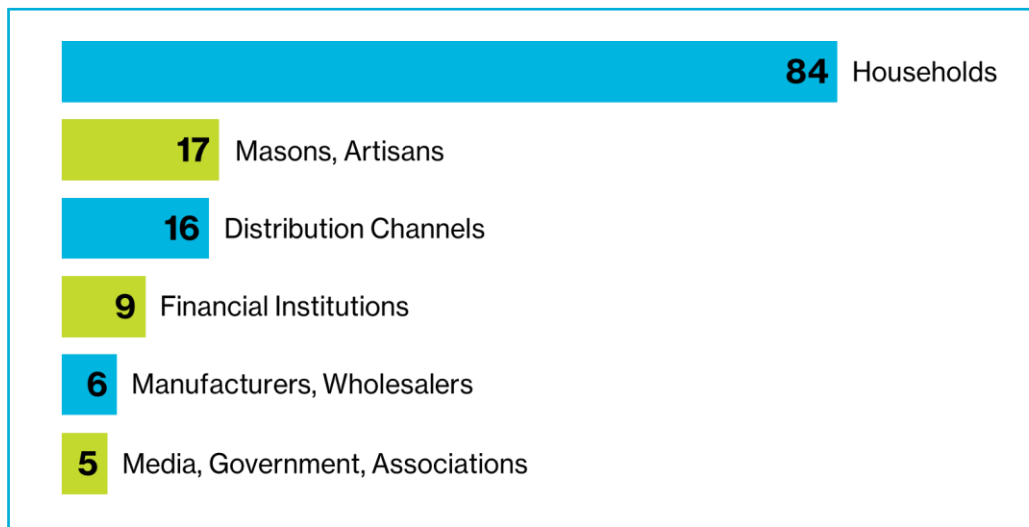


Figure 2. *Distribution of respondents per segment.*

The low-income incremental home builders have the following socio-economic demographic profile:

- 79% are aged 50 years old and below.
- 61% are female.
- 81% of households have six members or less.
- 52% of households have at least two people who earn and support the family.
- 81% have a combined average household income of Php11,000 to Php20,000 (US\$220-400) per month.
- Major sources of income are:
 - Labor employment (40%)
 - Vending or *sari-sari* stores (26%)
 - Other sources (31%)
- 56% of respondents do not own the land where their houses are built, while 44% claimed land ownership.
- 55% have been living in their current homes for more than 10 years.
- 50% of the respondents estimated their housing area to be 50 square meters or less.

2.2. LIMITATIONS OF THE STUDY

The nature of the market assessment was constrained by time spent for fieldwork and scarcity of some secondary data. Data gathering was mostly confined to online interviews and surveys as actual household visits and onsite observations were limited.

While the market study targeted cement and wood manufacturers, most of them declined the interview. The findings and results could not be considered exhaustive, given the complexities of the housing market systems in various locations.

CHAPTER 3. THE WOOD INDUSTRY

3.1 CLASSIFICATION AND TYPES OF WOOD

Wood has been used in construction for thousands of years and remains one of the most widely used building materials. It is a commonly preferred building material because of its wide variety of properties. It is readily available and economically competitive.

There are three major classifications of wood used for house construction:

1. **Hardwood** is typically heavier and denser than softwood and is used to construct walls, ceilings, and floors. Mahogany, yakal, and gmelina are considered hardwood.
2. **Softwood** is used more as inner structures into the frame of hardwood, such as doors and window frames. Douglas Fir, Kauri, Pine, and Spruce are considered softwood.
3. A **wooden board** is a flat, thin, rectangular piece of wood used for walls and ceilings.

For this study, wood is categorized into several types based on its availability in the market for low-income incremental home builders:

1. **Timber.** It is unprocessed wood from harvested trees with the bark still intact. Falling trees create timber. The trees are then cut into smaller lengths to be stored and seasoned, allowing water and moisture to evaporate and leaving only dry wood. It is a type of wood that is beyond five inches wide by five inches thick. Timber is used to frame structures in buildings.
2. **Lumber.** It is wood that has been cut and processed in sawmills and is ready to be used for construction. This type of wood is smaller than five inches wide by five inches thick. These pieces are usually machine-planed and sawn for specific dimensions and are primarily used in residential construction. It undergoes four basic operations: head

sawing, resawing, edging, and trimming. The types of lumber that are commonly available in the market include:

- a. **Coco lumber** from coconut trees which are native to the Philippines. It is the most commonly available wood material.
 - b. **Good lumber** from locally produced wood species (e.g., Gmelina, Lauan, Falcata).
 - c. **Imported lumber** (e.g., Ecofor brand) from wood species such as Southern Yellow Pine, Spruce, Pine, Douglas Fir, Radiata Pine, and Mahogany. They are mostly used in inner structures such as framing.
 - d. **Bamboo** while technically grass, is a hardwood alternative which can be used for most parts of the house, such as framings and claddings.
3. **Plywood.** It is made by bonding together thin sheets of wood with grains of alternate sheets running at right angles. Plywood is manufactured in assorted sizes, thickness, and several plies or layers (3-ply, 5-ply, multi-ply). Plywood is used when a large panel or flat surface is needed, like in partitions, ceilings, and panels. Marine plywood is one of the most used plywoods among households.
4. **Alternative engineered wood products.** These are wood products using recycled shredded scrap, dust, particles, and pieces of wood that are stronger or more durable such as Oriented Strand Boards (OSB), particle boards, and engineered wooden floors, among others.
5. **Wood alternatives.** Gypsum boards and fiber cement boards are considered the most popular alternatives to plywood.

3.2 NATIONAL SITUATIONER

Based on the average consumption of wood from 2006 to 2014 (FMB 2015), the annual demand for wood is roughly of 6 million cubic meters⁷. Only 25% of this demand comes from local sources, while 75% is imported. The wood industry's players comprise of corporations, partnerships, and individuals involved in forest management, logging, forest plantation development, and the manufacture of lumber, veneer and plywood, pulp and paper, and other wood products.

The local source of timber is dependent on tree plantations. But extraction from natural forests has been banned since 2010. Since then, the wood market players resorted to importation to meet the domestic demand for wood products. The Philippine Wood Producers Association (PWPA) revealed that the wood industry needs two million cubic meters annually. However, the country can only meet 1.34 million cubic meters, of which half are from commercial plantations.

⁷ <https://forestry.denr.gov.ph/index.php/wood-summit-the-role-of-philippine-wood-industry-in-nation-building>

The Forest Management Bureau noted that local supply can no longer meet local demand, so the country has been importing 80% of its needs.

In 2020, the Philippines imported one million cubic meters of wood, valued at \$200 million for the construction and furniture industries. The country imports from Malaysia, Papua New Guinea, Eastern Europe, Canada, USA, Russia, and Ukraine. The Philippines used to export wood back in the 1980s, but laws during that time highly regulated the extraction, processing, and sales of these natural forest products.

The local wood industry can grow up to \$20 billion if the government pushes for laws that will boost the sector while ensuring the protection of the environment. This can only be realized if at least one million of the country's nine million hectares of barren forest land will be reforested.

3.3 DEMAND AND SUPPLY

3.3.1 Demand

Types of Wood used by Low-Income Incremental Home builders. Coco lumber was the most preferred wood type bought by 60% of the respondents. Most of this coconut wood is untreated, making it vulnerable to fungi and termites. This makes coco lumber an inferior wood material for housing. The second most purchased wood was good lumber (35%), specifically Gmelina. Few of the owner-driven low-income incremental home builders preferred imported lumber (8%) and other types like plywood (5%).

Usage of Wood. Low-income incremental home builders used wood primarily for walling and framings (60%). Around 49% used wood, particularly coco lumber, as a material for roofing trusses. About 17% of the home builders used wood for windows, doors, and other frames, while 11% used wood, particularly good lumber, for foundations (11%).



Figure 3. Use of purchased wood in homebuilding

Brand Preference. Low-income incremental home builders, in general, did not have a specific brand preference for wood (96%). This was attributed to the preference for coco lumber and good lumber which do not have specific brands when sold in hardware stores. A few who mentioned specific brands were influenced by the quality of the material and the price.

Preference of carpenters. About 82% of carpenters recommended wood to low-income incremental home builders. Carpenters recommended these wood materials based on affordability, quality, and ease of installation. The kind of wood materials available in the market that carpenters were mostly aware of are coco lumber, Gmelina, and mahogany. Only a few said they know Ecofor S4S and good lumber, while very few know the rest of the wood materials. Carpenters usually buy wood products from nearby hardware stores.

Repairs and renovations. Low-income incremental home builders mostly bought wood materials for repairs, renovation, and other home improvements. Most household respondents (54%) repaired their houses when there was a need. About 62% purchased wood as a construction material sometime between 2020 and 2021, during the pandemic lockdown.

Decision-makers. Men topped the list as primary decision-makers and actual buyers of the construction materials (51%) in the household. Women also made purchases (18%), while some relied on their local carpenters to buy wood materials for them (18%).

Seasonality. The period from January to June were the best time to buy wood by at least 37% of the low-income incremental home builders, as they were able to save up enough budget before another school year starts.

Modes of payment. Most of the low-income incremental home builders paid for wood materials in cash (90%), while the rest explored other modes of payment (e.g., credit, mobile payments).



Households' key considerations when buying wood materials. Budget was the main consideration in the purchase of wood materials by low-income incremental home builders. They also bought materials from the hardware stores near their houses. The availability of materials influenced their choice of wood.

Figure 4. Households' key considerations when buying wood materials.

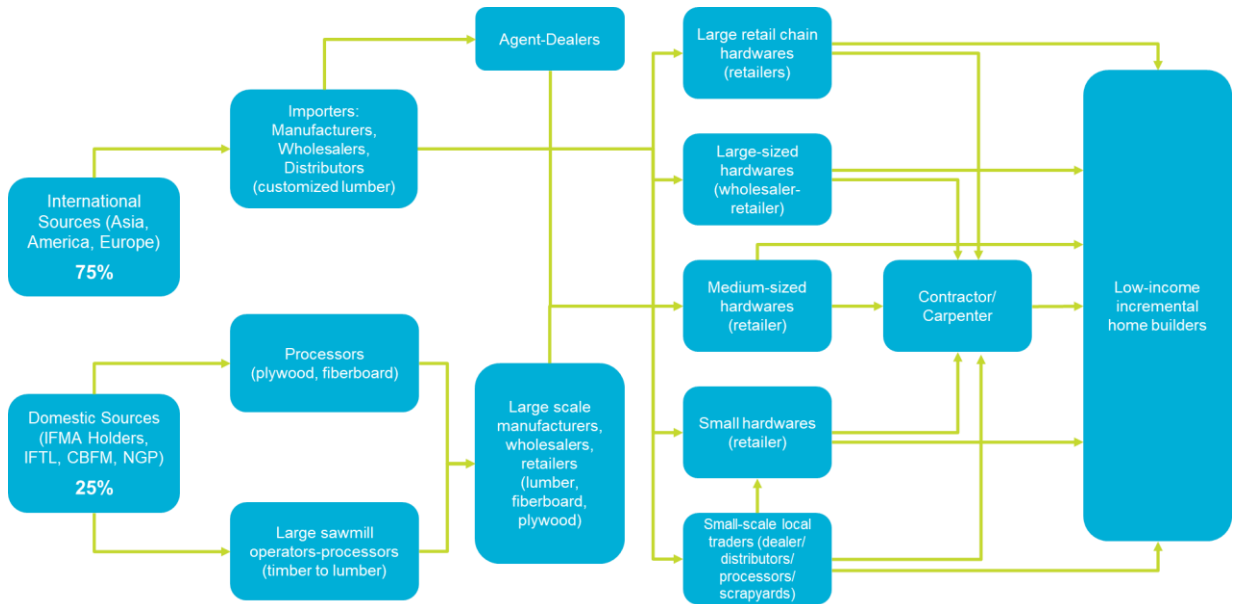


Figure 5. Supply chain map of wood materials in the Visayas for low-income incremental home builders.

3.3.2 Supply

- **Small-sized hardware stores**, the usual retailers of building materials, are small construction shops that serve low-income incremental home builders in the local area. They do not have warehouse facilities and usually store only small inventories of wood materials (e.g., coco lumber, Ecofor S4S, and plywood) due to capital limitations. The source of their materials are large-sized hardware stores and coco lumber processors.
- **Medium-sized hardware stores** supply a variety of wood materials such as coco lumber, good lumber, imported lumber, and plywood. They get their wood materials from the large-sized hardware wholesalers, manufacturer-importers, distributors, and coco lumber manufacturers or processors. Some of these hardware stores have a place or extension area nearby to process coco timber into lumber of varied sizes. They offer delivery services to the customers at an added cost.
- **Captive markets for small- and medium-sized hardware stores** come from the barangay and municipality/city or the local market (88%). Markets outside their barangay/municipality form 25%. The top-ranked market segment for wood products are the walk-ins/households (75%), carpenters/masons (50%), commercial business (38%), and contractors (25%). Small retailers or hardware stores usually sell to low-income incremental home builders and masons within the vicinity of their primary trading area. These retailers have an average of 20-50 customers per day who buy wood materials.
- **Most of the small and medium-sized hardware stores** (81%) stock and sell coco lumber. They also carry good lumber (Gmelina), imported lumber/treated and non-treated (e.g., Ecofor), and marine plywood. They also sell various wood sizes, with coco lumber 2X2 as the top-ranked product (69%).

Table 1. Type of wood products sold per customer segment.

CUSTOMERS	QUANTITY	MOST BOUGHT TYPE
Walk-in/Households	1-10 pieces	Coco Lumber 2x2
Carpenter/Laborers	1-10 pieces	Coco Lumber 2x2
Commercial Business	11-30 pieces	Coco Lumber 2x2
Contractors	11-30 pieces	Coco Lumber 2x2
Local Government Units	>101 pieces	Coco Lumber 2x4, 2x6
Government Agencies	11-30 pieces	Coco Lumber 2x2, 2x3

- **For new wood products on the market**, the small- and medium-sized hardware stores informed their customers during sales talks or actual transactions in the store (69%). Other ways of promoting new wood were through calls or text messages (13%), flyers and tarpaulins (13%), and social media (6%). About 88% of the hardware stores did not receive technical training and orientation on wood products.
- **Local dealers and distributors** in the provinces and municipalities sell only coco lumber directly to the small- and medium-sized hardware stores and to low-income incremental home builders. They source their wood supplies mostly from manufacturers and processors closest to their vicinity.
- **Large-sized hardware stores** found in key cities and highly urbanized areas (e.g., Vic Enterprise and Federal Hardware in Metro Cebu) supply a variety of wooden (good lumber and imported lumber) materials to small and medium-sized hardware stores in provinces and municipalities. They also supply construction companies, non-government organizations, and government agencies. Their delivery services are not only confined to the Visayas but also extend to other areas in Mindanao. Large-sized hardware stores often lend credit to medium and small retailers on repayment terms.

The sources of their wooden materials are local and imported manufacturers. Most of the large hardware stores have storage or warehouse facilities located in various cities and municipalities to lessen transport and delivery costs. They also use trucks to deliver their wood materials to the suppliers.

- **Large retail chain hardware stores** (e.g., Cebu Home Builders) have two or more branches in key cities and urban areas. Usually, they sell imported wood materials such as Ecofor S4S to low-income incremental home builders.
- **Importers/Manufacturers/Distributors.** These are companies that import raw materials. They also serve as distributors and retailers for specific market segments. Some manufacturers of imported products (e.g., Matimco) have set up their main offices in the Visayas but also have branches in other parts of Luzon and Mindanao. Some manufacturers of imported wood products are based in Cebu (e.g., Budget Builders, Central Lumber) but also distribute wood products in other areas in the Visayas and Mindanao. Other manufacturers have main offices in Luzon but also maintain branches and distribution networks in the Visayas (e.g., Rising Sun Wood Products).

These manufacturers of imported products have various distribution channels and target all income segments such as dealer-agents, large-chain retailers, and small-, medium- and large-sized hardware stores. Their imported wood products are customized in many sizes (e.g., S4S) and some are treated with anti-termites to make them last longer. These manufacturers source their imported materials from Asia, Europe, and North America. They also supply to different markets such as institutions, industries, residences, and commercial properties. While their products also cater to the low-income incremental home builders, these are 50 to 100% higher in price than coco lumber.

- **Local manufacturers/distributors/wholesalers.** These include manufacturers of good lumber, coconut lumber (e.g., Suson Lumber), and plywood. They are usually found in urban areas. They supply wood materials in many sizes to different hardware stores in both urban and rural areas. Most of the plywood producers and manufacturers are in Mindanao. In Visayas, there are importers, but fewer manufacturers. The distribution structure starts from shipping wood materials from Mindanao to a Visayas port, such as Cebu which is the main distribution channel. There are also products from Manila that are transported to the Visayas.

3.4. CHALLENGES

3.4.1 Demand

- **Low-income incremental home builders are price-sensitive, budget-conscious, and prefer cheaper material.** International market forces, especially during the pandemic, have caused the prices of imported wood to increase. Affordability is the main factor for low-income incremental home builders when buying due to their limited budget. Since coco lumber is commonly available at a cheaper price, low-income builders continue to buy it despite its inferior and non-durable quality.
- **Insufficient knowledge of other types of wood in the market.** The low-income incremental home builders' preference for coco lumber is attributed to their limited information on other alternative wood products, including its types and functionalities in specific structural aspects of the house. Some unskilled carpenters have limited or insufficient information on alternative wood materials in the market. This results in poor selection, purchase, and installation of wooden products.
- **Lack of awareness on how to access financing from financial service providers.** Many Filipino households lack awareness on how to access financial services, and a major reason for this is their lack of financial literacy. Some do not know how to access financing from traditional sources or refuse to. Nonetheless, even if they get traditional loans, they use them mostly to pay for necessities such as food, house rentals, and utilities. These loans are also less commonly used for house renovations. Another reason Filipinos do not borrow from formal institutions is due to the perceived difficulty in applying for such loans. Half of the respondents found applying for loans challenging, with documentary requirements as the top reason for such assessment.
- **Low-income incremental home builders' limited access to digital technology.** While there is a growing popularity of the digital space as a major source of information, as well as the steady transition towards digital banking, only half of the population own a smartphone. Meanwhile, the majority are already using the internet. But out of these smartphone and internet users, only 1 in 10 home builders from the low-income group use such platforms for financial transactions. This also contributes to their limited knowledge and access to financial services.

3.4.2 Supply

- **Lack of quality wood materials in the market for low-income incremental home builders.** There are also limited products or offers that are affordable and of good quality on the market. Most of the distribution channels or hardware stores sell products that are in high demand such as coco lumber which are untreated. In some provinces or rural areas, the availability of materials determines the kind of households that will eventually purchase them. Most of the distribution channels of low-income incremental builders have limited capital so they often get materials from the nearest suppliers to reduce the cost of transportation. This results in limited wood varieties, which are also known as fast-moving wood products.
- **Lack of grading system in the market to differentiate quality wood materials from substandard ones.** Most of the wood products available in the market do not have any quality grade specification. For example, most of the hardware stores sell coco lumber without any knowledge of the age and maturity of the coconut tree where it comes from, and which section of the coco timber is good quality and suited for housing construction. According to the Philippine Coconut Authority, the coco lumber sold in the hardware stores do not have the same quality and those sold at cheaper prices are mostly substandard materials. There are also processors and dealers who did not follow the proper processing of coco lumber, disregarding the age of the coconut tree and the quality of materials.
- **The limited interest of small- and medium-sized hardware stores in quality wood products.** Some of the distribution channels, although offering quality wood products, have limited interest in the other types and brands in the market and the value that they can offer to low-income incremental home builders. This is attributed to the low demand for other wood products, their focus on fast-moving products, and the limited space in their stores.
- **Asymmetry of information between market actors that include manufacturers, distribution channels, carpenters, and low-income incremental home builders.** Unskilled carpenters and sales staff of the distribution channels are often the first sources of information of low-income incremental home builders, but some of them have limited understanding and knowledge of the wood product specifications and their benefits.

While some carpenters are knowledgeable about quality wood materials, they are often restrained by the limited budget of the households. Moreover, some of them do not recommend the use of quality wood materials because they do not get incentives to promote them. For most distribution channels, there are also minimal information, education, and communication (IEC) materials available. Word of mouth is still a widespread practice in the community. There is also a lack of transparency in the market so the type or grade of wood available in the stores is sold as generic even when they are not.

- **Other marketing channels are also not maximizing the use of social media.** While manufacturing products are available in the distribution channels, there is an information gap, particularly in relaying information on the benefits of their quality and the value they can offer to the distribution channels and clients. Most of the content of the marketing collaterals do not appeal to low-income incremental home builders and only focus on the product's physical attributes.
- **Limited supply of local wood resulted in overreliance on importation.** Local sources of timber are dependent on tree plantations. About 75% comes from imports from other countries around Asia. Importation augments the domestic demand for wood products. Executive Order 23, issued in 2011, banned the logging of natural forests and significantly changed the wood industry. Due to this, it became harder to harvest wood domestically, so more wood had to be imported. As a result, low-income incremental builders continued to buy cheaper alternative wood than imported wood which is quite expensive.

3.5 OPPORTUNITIES

- **Association as enabler, providing information and networking among wood industries.** The Philippine Wood Producers Association (PWPA) plays a role in addressing the issues that plague the industry. The organization is in partnership with Forest Products Research and Development Institute (FPRDI) to make the wood industry an integrated industry. PWPA is working with the Society of Filipino Foresters Inc. (SFFI) in pushing for the Sustainable Forest Management Act (SFMA) which will help in identifying and distinguishing several types of forests. They are recommending a study of plant species that can be used as wood material and can determine which species would have the best returns on investment. The future of wood-based industries depends on the success of industrial tree plantations.

The PWPA said there are three significant laws that need to be passed to propel its growth. These are the National Land Use Act, aimed at delineating forest lands from non-forest lands; Forest Limits Bill, to determine protected natural forests from tree farming; and the Sustainable Forest Management Act, which will be for the management of plantation forests.

To help revitalize the local wood industry, the Department of Science and Technology-Forest Products Research and Development Institute (DOST-FPRDI) and the Department of Environment and Natural Resources' Forest Management Bureau (FMB) are doing an assessment of the wood processing plants in the Philippines. The research will evaluate the requirements and procedures in issuing wood processing permits (WPPs), assess the production capacity of selected WPP holders, and create a value-chain analysis of various wood-based products.

- **Access to financial products and services.** Several financial institutions, especially microfinance institutions (MFIs), offer services such as loans at very affordable rates, flexible terms, and mostly with no collateral. Currently, there are 31 MFIs with accreditation from the Microfinance NGO Regulatory Council (MNRC)⁸ spread across the Philippines. It is only fitting that many MFIs offer housing loans as microfinance loans are the leading formal lending sources that adult Filipinos go to, especially in Visayas and Mindanao. Yet, amid the presence of these MFIs, Filipinos' borrowings from microfinance loans⁹ are still significantly lower than their borrowing from informal sources such as friends and family (at 31% and 44% respectively). On a positive note, the numbers suggest that there are greater opportunities for the microfinance industry to expand and capture more market share.

An adjacent but worthy field to investigate is the mobile wallet and digital banking industry. More Filipinos are now using their smartphones for mobile banking (e.g., GCash) and payments, especially when the COVID-19 pandemic started.¹⁰ In order for MFIs to remain relevant in the new normal, they find ways to integrate such fintech innovations into their operations, especially in reaching out to low-income incremental home builders. Based on the survey, these financial institutions are open to potential business opportunities with material construction suppliers if the partnership is aligned with their programs and would also benefit the members.

- **Wood as green technology.** People are starting to recognize the importance of using sustainably harvested products in helping the environment, especially wood products. The fully renewable domestic timber industry is a massive opportunity for green technology in low-income homes. Wood is a natural material. Unlike conventional building materials, wood uses less energy and water, thus producing a smaller carbon footprint. It is also renewable and sustainable, with its production following specific laws to preserve forest and wildlife. Logs can be used to manufacture other products, which highly reduce their waste.¹¹

Besides helping combat global warming, wood also has significant benefits as a construction material. They need less work and human resources, decreasing operational costs. They could also be constructed at a faster rate. Compared to concrete, wood is a perfect, natural insulator, making it energy efficient. Wood requires less heating and cooling maintenance and could withstand earthquakes. In addition, when compared to steel, wood has much higher tensile strength. Wood is also electrical and heat-resistant, and naturally absorbs sound, thus reducing noise levels.¹²

⁸ <https://www.sec.gov.ph/mnrc-list/list-of-microfinance-ngos-with-mnrc-accreditation-as-of-january-2021/>

⁹ Report from the Bangko Sentral ng Pilipinas

¹⁰ <https://www.globe.com.ph/about-us/newsroom/917ventures/gcash-2020-catalyzing-growth-new-digital-economy.html#:~:text=Over%20PHP%201%20trillion%20in,65%25%20growth%20versus%20last%20year.>

¹¹ <https://www.idahoforests.org/content-item/what-makes-wood-products-so-green/>

¹² <https://www.wagnermeters.com/moisture-meters/wood-info/advantages-wood-building/>

- **Presence of digital assets among supply actors.** Some of the supply actors have several social media networks and other digital assets that can create communities that low-income incremental home builders can access and use to share information.¹³ Additionally, these segments are big users of Facebook and YouTube to get information and create social interactions. These social media networks can be used as platforms where supply actors can highlight their products and services virtually, create a space for buyers and sellers to interact, and allow for selling opportunities. The advantage of social media can be maximized in the construction industry where low-income incremental home builders can have real-time access to information on materials, instead of merely relying on their neighborhood hardware stores.
- **Innovation in wood as primary housing material.** Some wood manufacturers introduced new wood technology in the market. One example is cross-laminated lumber as an emerging wood product that low-income incremental home builders can afford. It does not require the burning of fossil fuels during its production. It is light and comparable in strength to concrete and steel. This wood variant can be used as floors, walls, and ceilings.

CHAPTER 4. THE CEMENT INDUSTRY

4.1 CLASSIFICATION AND TYPES OF CEMENT

Cement is one of the most basic construction materials. It is the second most used product in the world after water. Cement is defined as a finely ground mixture of calcium aluminate and silicates of various compositions. It hydrates when blended with water to form a rigid continuous structure with good compressive strength. This product is a binding material that forms a bond between the aggregates and water.

There are several types of cement in construction, and they vary depending on the properties, uses and benefits, composition, and material used during its manufacturing. The most commonly available cement is Ordinary Portland (OPC) and Portland Pozzolan Cement (PPC). There are other types of cement produced by manufacturers in the Philippines for residential construction and are available in the market.

¹³ Highlight: <https://www.investopedia.com/terms/s/social-media.asp>

Table 2. Type of cement, characteristics, and usage¹⁴

Type	Characteristics	Usage
Type 1 (Ordinary Portland Cement)	<ul style="list-style-type: none"> • High performance Portland cement • High early and final day strength and faster setting • Consistent strength and compatibility with most chemical and mineral admixtures/additives 	<ul style="list-style-type: none"> • General construction applications • Foundations • Columns and slabs • Precast and hollow block-making
Type 1P (blended cement of Portland cement and other minerals)	<ul style="list-style-type: none"> • Lower water requirement than Ordinary Portland Cement (OPC) • Denser concrete with reduced permeability • Better concrete cohesion 	<ul style="list-style-type: none"> • General construction purposes • Foundation • Walling • Precast • Slabs
Type P (Pozzolan Cement)	<ul style="list-style-type: none"> • High performance blended cement • Lower heat of hydration • Denser concrete with reduced permeability • Reduces wastage and water addition • Better finishing 	<ul style="list-style-type: none"> • Hollow block-laying and filling • Plastering • Beams • Columns • Foundations
Type N (Masonry Cement)	<ul style="list-style-type: none"> • Advanced masonry cement formulated for masonry applications • Micro-fillers fill in voids and pores • Lighter and stickier plaster • Regulates hydration and drying 	<ul style="list-style-type: none"> • Walling • Floor Toppings • Plastering • Laying of hollow blocks • Filling of hollow blocks
Type M (Masonry Cement)	<ul style="list-style-type: none"> • Generates savings both in labor costs and usage • Higher workability compared to traditional cement products • Less plaster cracking • Environment-friendly cement • Allows better moisture retention and adhesion strength for improved usage through XD 100 nanotechnology 	<ul style="list-style-type: none"> • Plastering (exterior and interior) • CHBs laying/core filling • Ground floor slab concreting
Type S (Masonry Cement)	<ul style="list-style-type: none"> • Superior bond strength makes plastering easier and faster • Extendable mixture ratio of 1:4 (cement: sand) • Allows easy placement and better bonding for hollow block-laying • Improves quality of surface finish compared to ordinary cement 	<ul style="list-style-type: none"> • CHBs laying • Filling • Plastering • Finishing

¹⁴ Source: <https://www.cementequipment.org/home/more-than-27-types-of-cement/>

4.2. NATIONAL SITUATIONER

Prior to the COVID-19 pandemic, the Cement Manufacturers Association of the Philippines (CeMAP) has noted a 6 to 7% annual increase in demand for cement in the past 10 years. But as in many other industries, the cement sector experienced a downturn in 2020, with demand decreasing by 10%. Demand for cement is fueled by private sector investment, with a large part driven by the construction of residential buildings. Non-residential projects were also acknowledged as contributors to the growth in the industry. However, these projects were scaled down in 2020¹⁵.

Pre-pandemic, the BBB mindset was a boom to the cement industry. In fact, the demand for cement sometime in 2019 reached 32 million metric tons. Domestic supply was only able to provide 27 million metric tons. Imports made up for the balance and the volume grew from 3 million tons in 2017 to 5 million tons in 2018.

When the pandemic happened in 2020, the lockdown paralyzed production for two months. The CeMAP estimated that around 5 million metric tons of cement were shipped in from Vietnam alone. Vietnam contributed 90% of the country's total cement imports.

Following the period when it was still free to import cement into the Philippines, a US\$4 per ton import duty was implemented in January 2019. This did not significantly affect cement imports during the first quarter of 2019 because imports then even grew by 64%.

In September 2019, the Department of Trade and Industry (DTI) implemented a permanent customs duty on imported cement. Since then, the impact on cement prices has been moderate. From a increase of US\$98.6 per ton in early January 2019, the rates grew to US\$108.25 per ton by September of the same year. Vietnamese producers have been the largest group of importers affected by the price hike.

Rebounding from the pandemic slump, the demand for cement materials has gone up with the resumption of construction works across different sectors. The Philippine Statistics Authority registered a 1.9% year-on-year price increase in May 2021. It was 0.8% in January and has grown steadily over the recent months¹⁶. Cement manufacturers were optimistic about their market recovery in 2021. As noted by Republic Cement, “home builders support sales, amid lower demand from the infrastructure and non-residential sectors.”¹⁷ A demand driver for the bagged cement segment that is expected to contribute to its recovery is the sector of individual house builders considered as “the real backbone of demand”¹⁸.

¹⁵ Philippine News Agency. Cement industry is seen growing 12% this year. <https://www.pna.gov.ph/articles/1138164>

¹⁶ <https://psa.gov.ph/content/construction-materials-wholesale-price-index-national-capital-region-2012100-may-2021>

¹⁷ <https://www.cemnet.com/News/story/170724/republic-cement-expects-domestic-demand-recovery.html>

¹⁸ Philippine News Agency. Cement industry is seen growing 12% this year. <https://www.pna.gov.ph/articles/1138164>

Sixteen active integrated cement plants in the Philippines share a combined capacity of 33 million metric tons per year (Global Cement Directory 2020). The top five players in 2020 were:

1. Holcim with a capacity of 9.1 million metric tons a year
2. Eagle Cement at 7.7 million metric tons a year
3. CRH-Aboitiz with a production of 6.1 million metric tons a year
4. Cemex at 6.2 million metric tons a year
5. Taiheiyo Cement at 2.3 million metric tons a year

These five cement producers produce 92% of the country's capacity.

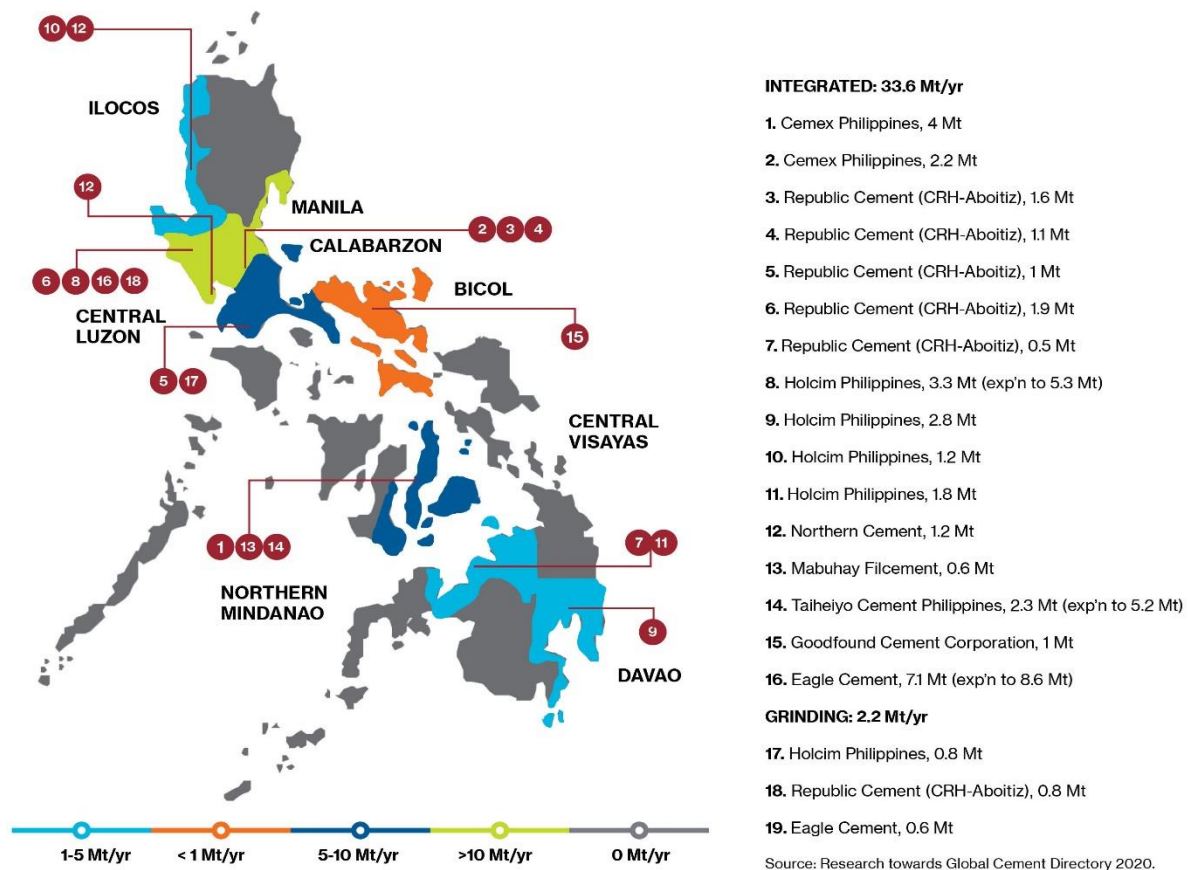


Figure 6 shows that the majority of cement production capacity in the Philippines is in the most populous areas. This is clearest in the region surrounding the capital Manila. The three most populous regions, CALABARZON, the National Capital Region and Central Luzon are home to 38.6 million of the Philippines' 105 million inhabitants, or 37% of the population. However, their combined cement production is 20.4Mt/year, or 57% of capacity.

The remaining 8% of the supply comes from three smaller players namely: 1) Northern Cement Corporation, 2) Goodfound Cement, and 3) Mabuhay Filcement which operates in Cebu.

The major industry players have plants all over the Philippines. These plants are spread in “the five major natural markets of the cement industry in the Philippines: (1) Northern and Central Luzon, (2) National Capital Region (NCR), (3) Southern Luzon, (4) Visayas, and (5) Mindanao.”¹⁹ Eagle Cement is in Bulacan, Cebu, and Davao. Cemex is in Rizal and Cebu. Lafarge is present in La Union, Batangas, Iloilo, Davao, and Misamis Oriental. Republic Cement is in Bulacan, Batangas, Rizal, Lanao del Norte, and Cebu.

Before the pandemic, there were new planned additions to cement capacity in the country, including the expansion of Eagle Cement and fresh players such as Big Boss Cement, Petra Cement, and PHINMA Corporation. Supply for cement was sourced locally, with around 70% to 80% provided by domestic producers. However, due to disruptions in the global supply chain caused by the pandemic, local players saw the influx of imported cement. This affected market prices as foreign supply appeared to be lower in price than domestic supply.

The lockdown in 2020 paralyzed production for two months. CeMAP estimated that around 5 million metric tons of cement were shipped in from Vietnam in 2020. Vietnam contributed 90% of total cement imports of the country. Local suppliers have called on consumers, developers, and the construction sector to support locally manufactured cement.

A local cement manufacturer earlier predicted that the industry would record a growth in 2021, following a 10% decline in 2020. The industry was expected to sell 35 million tons of cement in 2021.

Government policies resulted in a balancing impact on cement prices. As a protective hedge to local manufacturers, a US\$4 per ton import duty was implemented way back in 2019. However, demand was more robust even with duties as imports still rose by 64% around that time, according to the Philippine News Agency.

Likewise, prices of imported cement were not threatened by the import duties and even increased to US\$ 108 per ton in September 2019 from US\$99 per ton in January of that year. Cement prices ranged from \$4.9 - \$5.2 per bag. Imported brands have infiltrated the market and prices are at an average of Php10 (\$0.20) lower than local brands. DTI recommends that buyers check for the Imported Commodity Clearance (ICC) certificate to confirm the quality of imported cement.²⁰

¹⁹ file:///D:/Habitat/References/CONCRETE_GIANTS_ON_THE_FORE_An_Industry.pdf. *Concrete Giants on the Fore: An Industry and Competitive Analysis of Philippine Cement Industry*. James Clifford T. Santos Aidyl Pearl U. Perez

²⁰ <https://www.dti.gov.ph/archives/news-archives/prices-and-supply-of-construction-materials-in-iloilo-remain-stable/>

4.3 DEMAND AND SUPPLY

4.3.1 Demand

Type of cement used by low-income incremental home builders. Most low-income incremental home builders had no specific kind of cement in mind when they made the purchase, or they did not have any idea what type of cement they were buying (41%). A bigger percentage of those who were aware mentioned Type 1 (Ordinary Portland Cement). Few (13%) mentioned Pozzolan cement (Type 5), and Portland Cement mixed with Pozzolan (8%). While there were other available types of cement in the market, they were not aware of it. This was because most of the households relied on their masons in terms of the information of the type of cement. Masons were expected to know the materials better than the household respondents.

Usage of Cement. The primary use for the purchase of cement is for flooring, followed by walling and finishing and for foundation.

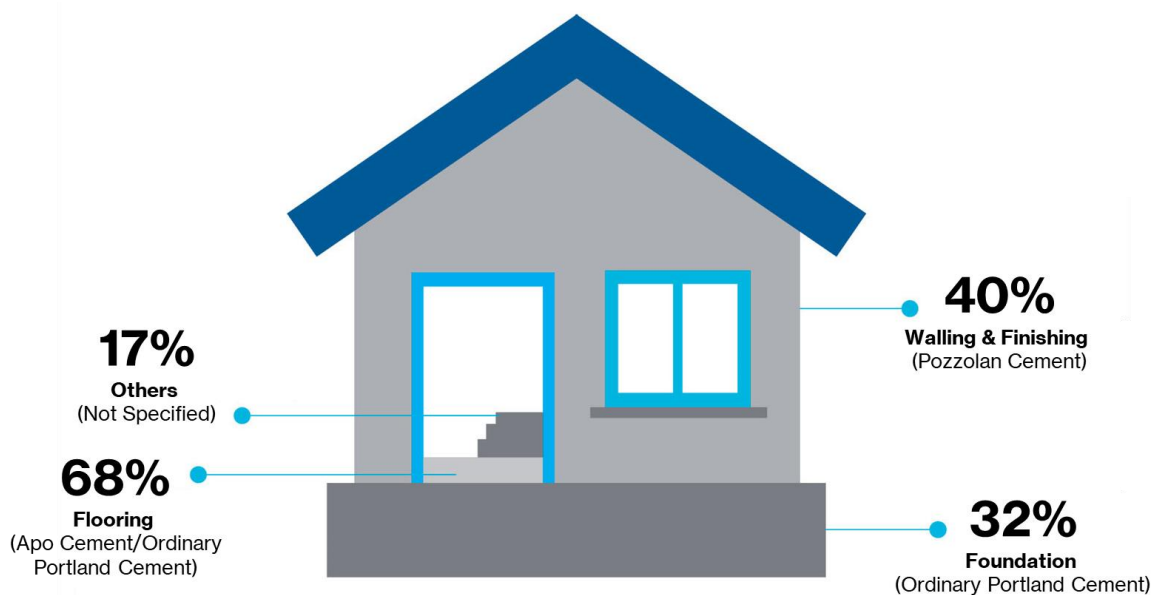


Figure 7. Use of purchased cement in homebuilding.²¹

Repair and Renovation. Cement is one of the most common materials used by low-income incremental home builders for home improvements, including repair and renovation (80%). The pandemic limited mobility and kept people at home for an extended period. During this time, a good percentage of the respondents undertook repair or renovation activities, with 63% sharing that they purchased cement products in 2020 and 2021.

²¹ Respondents provided multiple responses on the use of purchased cement in homebuilding

Decision-makers. Husbands (52%) mostly decided the type of cement materials to use for the renovation work, followed by wives (27%), and masons (26%). Husbands also topped the list as the primary purchaser of the construction materials (46%), followed by wives (20%), and their local masons (18%). In terms of buying cement materials from the suppliers, the survey revealed that low-income incremental home builders bought the materials themselves.

Factors considered by households on the type of cement to buy. Budget is the most critical determining factor in deciding the cement materials to use. The respondents were typically inclined to buy the available items priced within their budget. The availability of cement is also a determining factor when deciding which one to use for repair or renovation. Households' budget limitation suggests that there is also a limit to the number of cement sacks that they can buy. The typical volume that they purchased was from 1 to 25 bags. The standard price of cement mentioned was between Php201 to Php300 (\$4 to \$6). Others quoted a price range of below Php200 (\$4). Availability of extra cash is a primary determining factor when making a cement purchase. Likewise, if there is a clear need to do repair or renovation work, then they will make the purchase. Weather (monsoon season) also influences the homeowners' decision to buy. Other factors include the availability of discounts that would make the materials more affordable.

Modes of payment. Cash is the primary means of payment for buying cement by low-income incremental home builders (92%). Other means include credit and others (8%).

Brand preference by low-income incremental home builders. Most of the households did not have a preferred brand for the cement (76%). Those with brand preference considered the perceived brand quality and affordability. The most quoted brand for those with brand preference was Apo Cement. Households sometimes interchange cement type and brand because they have limited knowledge.

Logistics. Low-income incremental home builders purchased cement from hardware stores within their city or municipality. Most purchases were made by suppliers found within a one-kilometer radius of the construction site (37%). The farthest were within a 5.01 kilometer to 10-kilometer radius (7%). The rest were able to secure their purchases within a 5-kilometer radius (46%). This is a practical thing to do given the limited volume they can afford to buy and the logistical challenge of transporting the materials to the construction and renovation site. The cement bags were delivered by the suppliers (50%) or were transported using local transportation facilities (42%).

Seasonality. The most preferred time to make the purchase was between January to June, while others did not have any preferred period and depended on when they needed to do the repair work.



Factors considered by low-income incremental home builders in purchasing cement materials. The top consideration when purchasing cement was affordability. There were those that also considered durability as a reason to buy (31%). Good quality topped the list of expectations when buying cement materials. Rounding the list of top 5 expectations were durability, discount, or credit line extended, affordability and systematic delivery.

Figure 8. Factors considered by households when buying cement.

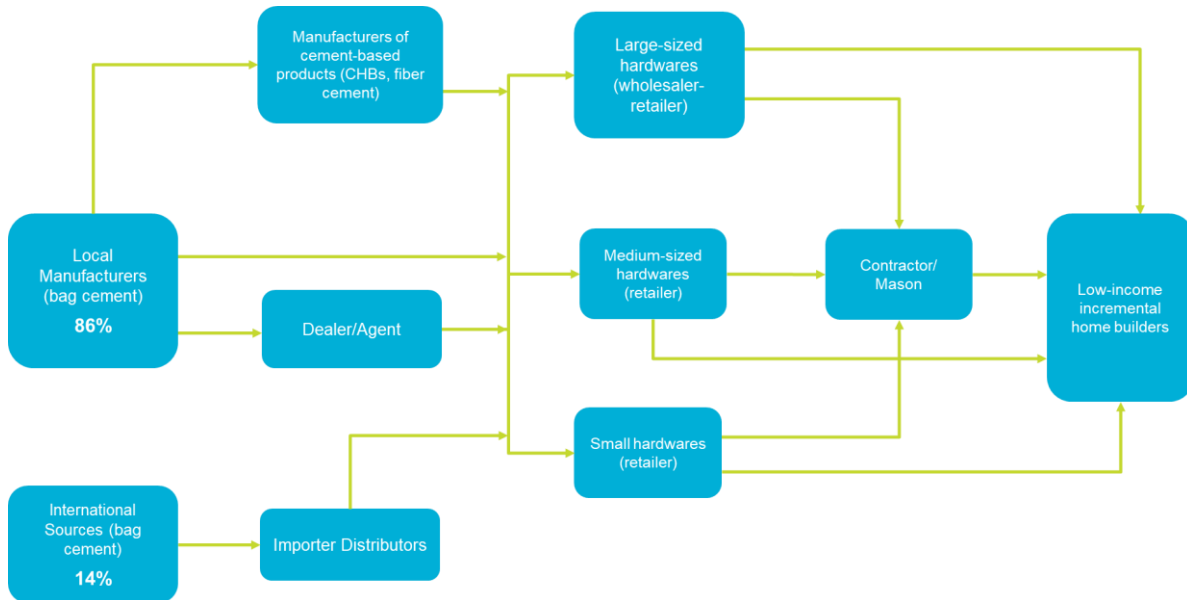
Preference of masons. Pozzolan Cement was the commonly purchased cement material by the low-income incremental home builders. It was used for walling and structures. Portland Cement was the next most purchased cement and was used for the foundation of their houses. Citing specific brands, Apo Cement was primarily used for flooring, and Apo Portland was for general structural use. Cemex, Republic Portland and ordinary Portland were used for flooring, walling, structures, and foundations. The respondents also mentioned their least purchased brands such as ordinary cement (Mabuhay brand) and Republic Cement, which are usually used for the foundation. The majority of the masons (71%) received sales discounts from local suppliers. Only 29% said they did not receive any. About 24% said that the sale discounts they received usually depended on the total amount or volume of purchase. About 82% of them recommended the type and brand of cement material to purchase to the low-income incremental home builders. These cement materials were all bought from a hardware store nearby.

Factors considered by masons in purchasing cement materials. The top reason they preferred to buy from neighborhood suppliers was affordability or cheaper price. Other factors considered were accessibility and the supplier being near their residence/barangay, provision of discounts, and supplier having complete stock of items.

Brand preference of masons. Apo Cement was the most recommended brand by masons, followed by Republic Cement. Brands such as Grand Pozzolan Cement and Mabuhay Cement were only known to a few. The rest of the cement brands were hardly known to them.

Sources of Information. In terms of information on cement technology, more than half of them got the information from their co-masons. Almost half said they got information from their supervisors and a few from the hardware store personnel. Very few got information from the internet or engineers, while no one mentioned getting information from media channels.

Figure 9. Supply chain map of cement materials in the Visayas for low-income incremental home builders



4.3.2 Supply

- Small-sized hardware stores or retailers** of building materials are small construction hardware shops that serve mostly low-income incremental home builders in the local area. Usually, they sell one or two types of cement in limited volume due to capital limitations. They have multiple sources for cement materials, mostly from manufacturers, large-sized hardware stores, retail chains, and distributors of imported cement. Mostly, they buy their cement at hardware stores closest to their location. Few also carry other cement-based products such as concrete hollow blocks and fiber-cement boards.
- Medium-sized hardware stores have** multiple sources for cement materials, mostly from manufacturers of cement, large-sized hardware stores and retail chains hardware stores. They own their storage facilities and have a higher volume of cement. They also sell several types of cement. Most of the medium-sized hardware stores offer delivery services to the customers at an added cost. Most of these hardware stores supply cement-based products such as concrete hollow blocks.
- Large-sized hardware stores** in key cities and highly urbanized areas supply many types and brands of cement materials and other cement-based products (e.g., CHBs, fiber-cement board) to small and medium-sized hardware stores in provinces and municipalities. They also act as distributors of other brands of cement. Large-sized wholesalers often extend credit to medium and small retailers on repayment terms. They source their cement directly from local manufacturers. Most of the large wholesalers have storage-warehouse facilities to lessen transport costs, and to ensure efficient distribution. They also use their trucks to deliver their cement materials to the suppliers. While large wholesalers require payment in cash, they also offer credit to small- and medium-sized hardware stores.

- **Large retail chain hardware stores have** two or more branches in key and highly urban areas. Usually, they sell cement targeted to low-income incremental home builders in the urban areas. Some retail chains have branches in both urban and rural areas.
- **Manufacturers of cement.** There are several manufacturers in the Visayas. Four (4) major cement producers that have production capacities in Cebu are: 1) Apo Cement, 2) Taiheiyo, 3) CRH-Aboitiz and 4) Mabuhay Filcement.
- **Manufacturers of cement-based products** include suppliers of these products such as concrete hollow blocks and other fiber-cement boards.
- **Importers/Distributors** import cement bags from Vietnam, China, and other countries and distribute them to some hardware stores or directly to customers. Most of the imported cement products are branded and have the same type as those locally produced cement in the Philippines.
- **For the small- and medium-sized hardware stores, the top market for cement products** is found within their barangay/municipality/city (53%), followed by the local market (40%) and outside the municipality/barangay (25%). The top market for cement products is the walk-ins/households at 75%, followed by laborers/masons (38%), contractors (25%), local government units (25%), and government agencies (19%). The majority (69%) mentioned Ordinary Portland Cement as their best-selling cement product, followed by Pozzolan and Portland Cement Mixed with Pozzolan.
- **Brand of cement sold by hardware stores.** For ordinary Portland cement, the top brands are Grand Portland Cement (31%), Apo Cement (25%), Republic Cement (25%), and Mabuhay Portland (25%). For Pozzolan cement, customers go with Grand Pozzolan Cement (25%), Apo Cement (13%), and Republic Cement (13%). For Portland cement mixed with Pozzolan, the preferred brands are Apo (31%), Excel (19%), and Grand Portland Cement (13%).
- **Small hardware stores** or retailers of building materials are small construction hardware shops that serve mostly low-income incremental home builders in the local area. Usually, they sell one or two types of cement in limited volume due to capital limitation. They have multiple sources for cement materials, mostly from manufacturers, large-sized hardware stores, retail chains, and distributors of imported cement. They mostly obtain their cement materials from those closest to their location. Few also carry other cement-based products such concrete hollow blocks and fiber cement.
- **Medium-sized hardware stores.** They have multiple sources for cement materials, mostly from manufacturers of cement, large-sized hardware stores, and retail chain hardware stores. They have a higher volume of cement in their own storage facilities. They also sell several types of cement. Most of the medium-sized hardware stores offer delivery services to the customers at an added cost. Most of these hardware stores produce and supply cement-based products such as concrete hollow blocks.

Table 3. Cement brands purchased from small and medium hardware stores

CUSTOMERS	QUANTITY	MOST BOUGHT BRAND
Walk-in/Households	1-10 bags	Apo Cement (Cemex) Mabuhay Portland (Mabuhay)
Masons/Laborers	31-50 bags 1-10 bags	Rapid-Set/Kapit-balay (Republic) Apo Cement (Cemex)
Commercial Business	11-30 bags	Apo Cement (Cemex) Mabuhay Portland (Mabuhay)
Contractors	31-50 bags	Apo Cement (Cemex) Grand Masonry (Taiheiyo)
Local Government Units	1-10 bags	Mabuhay Portland (Mabuhay)
Government Agencies	1-10 bags	Apo Cement (Cemex) Mabuhay Portland (Mabuhay)

- **For the small- and medium-sized hardware stores**, the top market for cement products are in their barangay/municipality/city (53%), followed by the local market (40%) and outside the municipality/barangay (25%). The top market for cement products is walk-ins/households at 75%, followed by laborers/masons (37.50%), contractors (25%), LGUs (25%) and government (19%). The majority mentioned (69%) Ordinary Portland Cement as their best-selling product, followed by Pozzolan and Portland Cement Mixed with Pozzolan.
- **Small- and medium-sized hardware stores** cater to different markets but carry common brands, quantities, and price ranges. Walk-ins/households often buy 1-10 bags of Apo Cement or Mabuhay Portland at the same price range of Php100.-Php250 (US\$2-5). Meanwhile, masons/laborers tend to buy a similar quantity of 1-10 bags of Apo Cement, but a larger quantity of 31-50 bags of Republic Cement at the same price range of Php100-Php250. Contractors buy 31-50 bags of either Apo Cement or Grand Masonry Cement, also at Php100-Php250. LGUs buy 1-10 bags of Mabuhay Portland at Php100-Php250, while government offices buy 1-10 bags of either Apo Cement or Mabuhay Portland, also at Php100-Php250.
- **Delivery Services.** About 62% (10 out of 16) of the small- and medium-sized hardware stores (63%) offer delivery services for cement products that are bought from their stores, while the rest (38%) do not. However, these hardware stores have certain requirements for their customers to be able to avail the delivery services. The top requirement is for customers to make a certain or smallest amount of purchase (38%). For some, customers pay for delivery charges themselves (38%). Delivery charges depend on the location, ranging from Php30-Php100). Some establishments also offer delivery services to repeat customers (38%).

- **Mode of payments.** All 16 of the small- and medium-sized hardware stores accept different modes of payment. The top payment method is cash at 100%, followed by check at 32%, mobile payment at 13%, credit at 6%, and online payment, also at 6%.
- **Customer Discounts.** The majority of the small- and medium-sized hardware stores (13 out of 16 or 81%) offered discounts to customers who used cement materials, while the rest (19%) did not. Five (31%) of the respondents provided 2% discount on volume purchase to customers; three (18%) gave 5% discount, while another three did not offer discounts; two respondents or 13% of respondents gave 3% discount and another two gave between Php2-Php5 (\$0.04- \$0.01) off per piece/bag of cement. One (6%) provided up to Php-20-Php30 (\$0.40-\$0.60) discount per product for volume purchases.
- **Product Warranty.** About 75% of small- and medium-sized hardware store respondents did not give product warranty while 25% assured that they gave for cement.
- **Information Flow.** If any cement product was introduced to them, 13 (81%) small-and medium-sized hardware stores informed their customers about them. Three (3) or 19% did not. Sales talk at 50% was the main channel of information dissemination for the respondents. The second means of information was during transactions inside the store (19%). About 19% of hardware store respondents admitted that they did not inform their customers about new cement products. Other ways of promoting cement products included calls or text messages (13%); flyers and tarpaulins (13%); and social media (6%).
- **Large-sized hardware stores** located in key cities and highly urbanized areas supply many types and brands of cement materials and other cement-based products (e.g., fiber cement board) to small- and medium-sized hardware stores in provinces and municipalities. They also act as distributors of other brands of cement. They often extend credit to medium and small retailers on repayment terms. They source their cement directly from local manufacturers. Most of the large wholesalers have storage or warehouse facilities to lessen transport costs, delivery, and efficient distribution. They also own trucks that they use to deliver their cement materials to the suppliers. While large wholesalers require payment in cash, they also offer credit to small- and medium-sized hardware stores.
- **Large retail chain hardware stores** have two or more branches in key and highly urban areas. Usually, they sell cement to low-income incremental home builders in the urban areas. Some retail chains have branches in urban areas and rural areas.
- **Manufacturers of Cement.** There are several manufacturers in the Visayas. Four major cement producers that have production capacities in Cebu are: 1) Apo Cement, 2) Taiheiyo which plans to expand its capacity to 5.2 million metric tons a year, 3) CRH-Aboitiz and 4) Mabuhay Filcement.
- **Manufacturers of cement-based products.** These include suppliers of cement-based products such hollow blocks and other fiber cement boards.

- **Importers/Distributors.** They supply imported cement from Vietnam, China, and other countries to some hardware stores and directly to customers. Most of the imported cement are branded and have the same type as the locally produced cement in the Philippines. Despite the dominance of the five major players in the industry, importers of cement abound in the country. There are forty-four members in the Cement Importers Association, with eight players in the Visayas Region. These include Bohol JSL Enterprises Inc (Bohol), BTA Topline Inc (Negros Oriental), Cebu Grand Dragon Marketing Corporation (Cebu), Cebu Lite Trading Inc. (Cebu), E&A Development Construction Supply (Samar), Hari Works Corp (Negros Occidental), Iloilo Grand Emperor Trading Corp (Iloilo), and Marlusa Construction Supply (Iloilo).²²

4.4 CHALLENGES

4.4.1 Demand

- **Low-income incremental home builders are price-sensitive and budget-conscious.** Affordability is the main factor that low-income incremental home builders consider when buying cement due to their limited budget. Masons, in general, make cement purchasing decisions based on the available budget of the household and, from observations, they tend to select the cheaper cement materials available in the market. But preference for low-priced materials affects the quantity and quality of materials purchased, and, the quality of workmanship.
- **Insufficient knowledge of other types of cement in the market by homeowners and masons.** Most low-income incremental home builders have inadequate understanding of the specific functions of cement varieties in the market and often buy cement brands that are cheaper and available in the nearest hardware stores. The majority of the households are still using ordinary Portland Cement. These households also rely on their mason on the type of cement to be used in home construction. Some masons, on the other hand, are knowledgeable about the type of quality cement needed, however, they are not aware of the varieties of cement and its corresponding functionalities.
- **Lack of awareness on how to access financing opportunities from financial service providers.** Many Filipino households do not know how to access financial services due to their lack of financial literacy. Filipinos either do not know how to access financing from traditional sources or refuse to. Nonetheless, even if they get traditional loans, they use them mostly for necessities such as food, house rentals, and utilities. Usually, these loans are also not used for businesses, education, medical expenses, and even house renovations. One reason Filipinos do not borrow from formal institutions is the perceived difficulty in applying for such loans. Half of the Filipino respondents found applying for loans challenging, with documentary requirements as the top reason for such assessment.

²² Santos, J.C and Perez, A.P. CONCRETE GIANTS ON THE FORE. AN INDUSTRY AND COMPETITIVE ANALYSIS OF THE PHILIPPINE CEMENT INDUSTRY research paper submitted in partial fulfillment of the requirements for the course Law and Economics of Antitrust LRY. Ateneo de Manila School of Law.)

- **Limited access to digital technology.** While there is a growing popularity of the digital space as a major source of information, as well the steady transition towards digital banking, barely half of the population own a smartphone and are using the internet. Out of these smartphone and internet users, only one in 10 use online platforms for financial transactions. Other reasons for this are their limited knowledge and access to financial services.

4.4.2 Supply

- **Limited availability of other quality cement brands in some hardware stores catering to low-income incremental home builders.** There are 17 brands of cement available in Visayas (excluding import) used for residential housing. While all these brands are available, not all distribution channels sell them. The most common brands available in most of the distribution channels interviewed were Grand Portland (Taiheiyo), Mabuhay Portland (Mabuhay Filcement) Apo Portland (Cemex), and Republic Tibay (Republic Cement). Low-income incremental home builders were not particularly aware of these brands and usually purchased Ordinary Portland from hardware stores.
- **Lack of skilled masons in the low-income segment.** In 2018, the Terwilliger Center Consumer Research conducted a study on the condition of workmanship for house partitions of 128 low-income incremental home builders. The findings revealed that of the houses assessed, 55% of foundations, 51% of walls, and 47% of floorings exhibit poor workmanship. This means the construction of a substantial number of houses were poorly done or were already deteriorating, posing a danger to the household members' safety and needing to be replaced or rehabilitated. These can be supported by field market assessments from 2021, demonstrating that masons often bought only what was available in nearest hardware stores. They also found ways to optimize supplies to fit a certain budget. This could be a result of masons not being incentivized to carefully select the right cement-based products, semi-skilled and unskilled masons' minimal knowledge of proper cement use and techniques, and lack of proper quality control measures in post-construction to ensure that the project is structurally-sound.
- **Asymmetry of information among manufacturers, hardware stores, masons, and low-income incremental home builders.** Masons and hardware stores were the first source of information of the low-income incremental home builders. They have limited knowledge in terms of product information and benefits. For most of the distribution channels of cement, there were only a few marketing collaterals created for the low-income incremental home builders' market, and mostly relayed information through word of mouth (point of sales) to their customers. Other marketing channels were not maximizing the use of social media to highlight their products. While manufacturing products were available in the distribution channels, there was an information gap in terms of informing benefits on quality and the value they can offer to the distribution channels and clients. Most of the marketing content only focus on products' physical attributes and fail to capture the attention of the low-income incremental home builders.

- **Dumping of imported cement.** Dumping happens when an exporter's products are sold at prices lower than the normal value in his home country. DTI is conducting a probe on the possible imposition of anti-dumping duty on cement imports from Vietnam. But Vietnamese cement continues to enter the Philippine market at allegedly dumped prices despite the DTI's safeguard measures on the product. The total volume of alleged dumped cement imports from Vietnam was computed at 619,980 metric tons or 31% of the total Philippine imports for July to December 2019. The volume increased to 1.56 million or 62% of the total Philippine imports from January to June 2020. A comparison of the export price and normal value of cement from Vietnam, from July to December 2019, showed a dumping margin ranging from Php87.5 per MT to Php268 per MT or 3.49 % to 10.66 % . The DTI said price undercutting was at 23% in 2019 and 24% in the first semester of January to June 2020. According to DTI, the local cement industry suffered loss of market share, declining domestic sales, production, use rate, reduction in employment, increased cost of production and inventory²³.
- **Cement as contributor to climate change.** Around 3.5 billion tons of Ordinary Portland Cement (OPC), a critical building material worldwide, are produced annually, but every ton emits up to 622 kgs of carbon dioxide (CO₂). The cement industry contributes seven percent of global anthropogenic CO₂ emissions, with the amount of CO₂ released depending on differences in the materials used in production, the types of cement kiln used, and the fuels being burned.²⁴ The Philippines cement industry emissions intensity was 683 kgCO₂/ton product in 2016, higher than the world average of 614 kgCO₂/tons product.²⁵ The OPC is still the most widely used type of cement in Visayas, according to the market study.

4.5 OPPORTUNITIES

- **Manufacturers offer different types and brands of cement.** Several manufacturers are offering different types of cement, depending on the usage. Most of these manufacturers are already offering blended cement. There is a huge opportunity for them to vary their distribution channels and increase the households' brand awareness, particularly the usage of each type or brand. This is important as the study pointed out that low-income incremental home builders used cement for flooring the most at 68%, followed by walling, and finishing at 40% each, and foundation at 32%.
- **The presence of financial institutions.** There are financial institutions offering loans and other financial products and services such as savings, insurance, remittances, and money transfer to households in most areas in the Visayas. These include microfinance companies, rural banks, and cooperatives. Others also provide loans to start-up businesses and added capital for business and housing. Most of these financial institutions serve the business industry as well as low- and middle-income households. As most household respondents did not avail themselves of loans for their house repairs or to purchase wood and cement materials, there is an opportunity to link them with these financial institutions. Product offerings of financing institutions are the best fit for low-

²³ <https://www.philstar.com/business/2021/04/26/2093702/dti-probes-cement-imports-vietnam>

²⁴ <https://www.imperial.ac.uk/news/221654/best-ways-carbon-emissions-from-cement/>

²⁵ <https://www.climate-transparency.org/wp-content/uploads/2021/01/Philippines-CT-2020.pdf>

income and the poor market segment. Financial institutions can extend financial education and help low-income incremental home builders work out their budgets. There is also an opportunity to partner with material suppliers (e.g., Republic Cement) to market or become distributors of cement products. Financing institutions can extend marketing and advertising support by promoting the cement products of their members. They can also provide financing options to households, including products and services.

- **Department of Trade and Industry's drive to ensure quality cement standards in the market.** The DTI monitors and regulates the prices of cement in the market, including imported products. It keeps track of the current situation across industries and regulates cement products of manufacturing industries. DTI can also be a channel for product knowledge to different suppliers.
- **Presence of digital assets among supply actors.** Low-income households consumed information and created interactions on social media networks, particularly Facebook, Messenger, and YouTube. Concurrently, these are digital assets that most supply actors already have. These platforms can then be further maximized for marketing purposes. They can produce targeted content around housing and construction materials. There are also marketing opportunities for distribution channels and manufacturers to do brand and product education. This is a good potential to increase client base by reaching out to the low-income segment through more visibility on multi-media channels.
- **Availability of green cements products.** Manufacturers such as Holcim Philippines, Cemex, Republic Cement have already been working toward the reduction of carbon emissions and offering cement apart from OPC. They are offering green cement which is produced with the help of a "carbon-negative manufacturing process. Holcim Excel and Wallright were produced with lower greenhouse gas emissions and overall carbon footprint compared with Ordinary Portland Cement. Holcim added mineral additives to their products that reduce their content of clinker, the carbon-intensive part of cement, and produces with low carbon-alternative fuels.²⁶ Holcim will be launching their new product, EcoPlanet cement, that offers at least 30% lower carbon footprint and it's the first cement with 20% recycled construction and demolition waste.²⁷ Cemex also sells two brands of cement: Apo Masonry Cement and the Rizal Masonry Cement, better known as Apo Green and Rizal Green.²⁸ Republic Cement products have been blended with ash-fly, a more environmentally friendly material. Their cement brand Kapit-Balay Masonry Cement, which is a hydraulic cement, was designed to be used for plastering, brick or block-laying, and block-filling with minimal wastage. They utilize less clinker due to light micro-materials, and there is reduced carbon footprint in its production.²⁹

²⁶ <https://www.holcim.ph/holcim-products-listed-procurement-website-green-builders>

²⁷ <https://www.holcim.com/ecoplanet-green-cement-launch>

²⁸ <https://www.philstar.com/business/agriculture/2009/05/17/467980/cemex-introduces-green-cement>

²⁹ <https://aboitizeyesarchive.aboitiz.com/republic-cements-kapit-balay-masonry-cement-envi-friendly-choice/>

CHAPTER 5. RECOMMENDATIONS

The foregoing analysis and findings presented an array of challenges and opportunities which suggest a non-linear approach to intervention. Hence, the recommendations are made to be taken in an integrated and holistic approach.

5.1 Wood

- **Create a brand for good lumber as quality wood and durable material and intensify this value-proposition through marketing and promotion campaigns.** There is limited awareness of the benefits of good lumber among low-income incremental home builders and only 35% use it. However, manufacturers and distributors are not branding it as such and there are no marketing or promotional materials to show the benefits of using good lumber. There is an opportunity to increase preference for this product and to enhance the wood materials by providing an anti-pest feature which is already being offered by imported wood products.
- **Explore other alternative wood material such as treated bamboo or engineered bamboo.** Bamboo is a popular non-timber forest product and a viable substitute for wood and coco-lumber for wall and floor panels. There are 62 species of bamboo thriving in the Philippines, 21 of which can only be found in the country. Bamboo is easy to plant and grow and has high survival rate.
- **Customize marketing and promotional materials of imported wood products, and target decision-makers from the low-income incremental home builders' segment and carpenters as influencers.** Only a few low-income incremental home builders preferred imported lumber (8%). While imported wood products are branded as Ecofor S4S, there are huge marketing opportunities, as low-income incremental home builders, in general, do not have a specific brand preference for wood (96%).
- **Engage in digital platforms to increase the availability of quality products of wood.** To make the product more available among distribution channels, existing digital platforms such as Shopee and Lazada which offer direct delivery should be explored by the manufacturers and distribution channels. Other digital marketing opportunities via Facebook, YouTube, and Messenger can be further maximized to reach these low-income incremental home builders. They should create engaging content about product offerings and their benefits and establish a channel for customer interaction. The manufacturers can also create a new digital platform targeting these markets through a partnership with distributors (wholesalers, retailers) closer to the vicinity of these target markets, particularly in rural areas or provinces. To do this, a feasibility study should be done to see the cost and benefits of this platform.

- **Explore digital financial products and service providers, with focus on rural areas.** Online micro-savings, online loans, and mobile money transfer/payment can be explored for home improvement planning. This includes a partnership between financial service providers such as Cebuana, M Lhuillier, GCash, Paymaya, and Home Credit. The manufacturers or distribution channels can create a platform or mechanism to ensure that low-income incremental home builders can access this platform or digital technology. Financial literacy programs should also be included in the services.
- **Collaborate with associations and networks to disseminate information on wood, latest technologies, standards, supporting policies and legislation.** Market actors such as material suppliers, media channels, and the government should collaborate with various associations in disseminating information on the availability of quality standards for wood, new product types or variants, and new construction or housing technologies related to wood and cement. There are many partnership opportunities with associations because they have connections with suppliers, contractors, testing laboratories, engineering firms, and developers. Policies and legislation related to boosting production, material standards, and good practices in wood material industries are also necessary.

5.2 Cement

- **Design marketing collaterals that target household decision-makers and masons as influencers.** Cement manufacturers should develop marketing materials with husband and masons in mind as they are the primary decision-makers and influencers in selecting and buying materials such as cement. The marketing collaterals should emphasize the type of brand and its usage. The content and design of the marketing materials should be engaging and relatable to the experiences of the decision-makers and influencers.
- **Introduce product warranty among distribution channels to increase household's preference of quality cement brand.** About 75% of the hardware store respondents did not offer a product warranty for cement to their customers. As a result, the low-income incremental home builders were not aware of the quality of cement that they were buying. They also relied on their masons for the type of cement to buy. Masons, meanwhile, preferred Apo Cement because of their perceived quality compared to other brands. Other cement brands in the market offer the same quality and even other benefits, but this kind of information did not reach the low-income incremental home builders. To promote other brands of cement, there should be some type of customer service offered in the form of a product warranty. Manufacturers of cement can support these distribution channels by ensuring the implementation of a product warranty service.
- **Engage in digital platforms to increase the availability of cement among low-income incremental home builders.** Several manufacturers are already offering quality cement brands and even green cement but some of the distribution channels are not selling these products due to limited awareness and information of its benefits. Most of these distribution channels only sell cement based on the market demand. But there is a huge opportunity for these manufacturers to distribute their cement to these distribution

channels and increase brand awareness among the low-income incremental home builders. To make the product more available in distribution channels, existing digital platforms such as Shopee and Lazada which offer direct delivery should be explored by the manufacturers and distribution channels. The manufacturers can create new digital platforms for this market and the masons through partnership with distribution channels (distributors, wholesalers, retailers) that are closer to the vicinity of this market segment, particularly in rural areas or provinces. To do this, a feasibility study should be conducted to determine the cost and benefits of this platform. Manufacturers and distribution channels should also explore the combination of traditional media (radio, brochures, flyers) and social media marketing channels such as Facebook and YouTube to reach a broader population of the low-income incremental home builders.

- **Design a simple information guide or tool for masons and low-income incremental home builders on the type of cement and its usage** to increase their knowledge on cement-based construction. A manufacturer can customize these guides according to the local language and experiences of the masons and this market.
- **Strengthen partnerships between government agencies (i.e., TESDA), TVETs and other private sector companies (i.e., manufacturing companies) to improve the way skills training is accessed by construction workers like masons.** These partnerships and improved skills training should be able to upgrade the skills in masonry and improve the way construction workers understand, buy, and use the right cement for better quality workmanship. Digital channels and alternative learning platforms can also improve the way information and skills transfer are being extended to masons.
- **Intensify information dissemination campaigns on the proliferation of substandard cement products to inform consumers, particularly the low-income incremental home builders.** This aims to inform consumers on the negative effects of using these products. The campaign should also target local government units at the barangay and municipal levels, hardware associations, and media channels. Social media such as YouTube and Facebook can be explored to reach a broader population. CeMap should collaborate with local government units and other manufacturers on this.