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ISTANBUL GEDIK UNIVERSITY
INSTITUTE OF GRADUATE STUDIES

STAMPED CONCRETE AS A SOLUTION TO IMPROVE THE AESTHETICS OF BUILDINGS IN BURKINA FASO: AN ANALYSIS OF THE VISUAL IMPACT OF STAMPED CONCRETE ON LOCAL ARCHITECTURE

MASTER THESIS

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İSTANBUL GEDİK ÜNİVERSİTESİ

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LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ MÜDÜRLÜĞÜ

Bu çalışma 25.06.2025 tarihinde aşağıdaki jüri tarafından İnşaat Mühendisliği Anabilim Dalı, İnşaat Mühendisliği (Tezli Yüksek Lisans) Programı Yüksek Lisans Tezi olarak kabul edilmiştir.

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DECLARATION

I Louis Judicael Chadrak DAMA as a result of this declare that this thesis titled “Stamped Concrete As A Solution to Improve the Aesthetics of Buildings in Burkina Faso: An Analysis of the Visual Impact of Stamped Concrete On Local Architecture” is the original work I did for the award of the Master's degree in the faculty of Civil Engineering Program I also declare that this thesis or any part of it has not been submitted and presented for any other degree or research paper in any other university or institution. (25/06/2025)

Louis Judicael Chadrak DAMA

DEDICATION

It is with immense emotion and deep gratitude that I dedicate this work. It is the result of years of effort, discovery, but also moments of doubt and perseverance, and it could not have seen the light of day without the light and support of the people who have marked my path.

To my dear parents, your unconditional love has been the rock on which I have built my life. You have given me much more than existence; You have passed on to me the core values of hard work, perseverance and honesty. Your unwavering faith in my abilities, your constant encouragement, and even your silent sacrifices, have been the source of my deepest motivation. This degree is as much yours as it is mine, and it is a testament to your unwavering love and dedication.

To my dear uncle Jean DAMA, your kindness and wisdom have always been a source of inspiration. You have been able, through your presence and your words, to show me a way, to offer me precious support and to believe in my dreams. Your influence has been a gentle reminder of the importance of humility and perseverance, and I am sincerely grateful for your quiet but powerful guidance.

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To my friend and colleague, Winsomalou Sosthène Levis HIEN, our friendship has been a true pillar throughout this demanding journey. Our exchanges, our common reflections and your precious help, beyond the professional aspect, have transformed challenges into opportunities. Your generosity and camaraderie have made this path less lonely, and I sincerely thank you for your constant presence and invaluable support.

To all of you, who are at the heart of my existence, I dedicate this work. Your love, trust and support have been the driving force behind this realization. This degree is also yours, a reflection of your invaluable importance in my life.

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The culmination of this thesis would not have been possible without the invaluable support and inspiration of many people to whom I would like to express my deepest gratitude. This journey has been marked by challenges, but also by unparalleled personal and professional enrichment, for which I am eternally grateful.

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To my mother TRAORÉ Mariam, I would like to express my gratitude for her unwavering moral support. His reassuring presence, constant encouragement and unwavering faith in my abilities have been a fundamental pillar, especially in moments of doubt or fatigue. She was able to create an environment conducive to concentration and intellectual development, allowing me to devote myself fully to my research. Her love and kindness have been a powerful driving force that has helped me overcome obstacles and stay the course towards this goal.

I am also immensely grateful to my friend and colleague, Winsomalou Sosthène Levis HIEN. His invaluable help in the reflection and drafting of this document was decisive. His constructive feedback, our thought-provoking discussions and his fresh look at my ideas helped to refine my thinking and clarify my arguments. Hien was able to provide me with an essential external perspective, helping me to structure my words and overcome editorial blockages. His availability and professionalism were invaluable in his support.

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Finally, I would like to express my deep gratitude and respect to Dr. Redvan Ghasemlounia, my thesis supervisor. His expert direction, wise advice and infinite patience have been the pillars of this work. He was able to guide me with rigor and kindness, stimulating me to explore new avenues of research, to deepen my thinking and to develop my critical thinking. His meticulous proofreading and relevant suggestions have raised this document to a level of requirement and quality that I could not have achieved alone. His confidence in my abilities has been a constant source of motivation and a real honor.

To all these people, and to those whom I might have forgotten to mention but who have contributed, directly or indirectly, to the realization of this thesis, I say a huge thank you. Your support, whether professional, intellectual, or moral, has been the key to my success.

PREFACE

This thesis marks the fulfillment of a significant academic and personal milestone. Its completion has been made possible thanks to the unwavering support of those who have accompanied me throughout this journey. I extend my heartfelt gratitude to my supervisor, whose guidance and patience have illuminated each step of my research. I am equally indebted to my family, whose encouragement has been a constant source of strength, and to my friends and ancestors, whose presence—seen and unseen has inspired me to persevere.

I also wish to acknowledge the invaluable contributions of my professors, as well as the institutions and libraries that have provided me with the tools and knowledge necessary to carry this work to completion. Every page of this thesis is a reflection of their influence.

This work is humbly dedicated to all who believe in learning as a path to empowerment. May it serve as a small but meaningful contribution to the ongoing pursuit of knowledge, cultural resilience, and constructive change.

June 2025 Dama Louis Judicael CHADRAK

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RAW EARTH, A SUSTAINABLE RESPONSE TO THE HOUSING CRISIS IN BURKINA FASO

ABSTRACT

Burkina Faso is one of several sub-Saharan African nations facing an acute housing shortage. As urbanization increases and traditional knowledge fades, the search for sustainable, affordable, and culturally resonant building solutions becomes more urgent. This thesis focuses on stamped concrete, a modern technique that can imitate traditional aesthetics, and investigates its relevance within the Burkinabè architectural landscape. The study explores how the population perceives stamped concrete in terms of aesthetics, cultural identity, durability, and cost. It also examines the broader technical, social, and economic conditions that influence the material's adoption. A structured 33-question survey was administered to 200 respondents across five regions, including both rural and urban areas. Responses revealed strong support for traditional patterns and colors, such as geometric motifs and earthy tones, which many associate with cultural pride and heritage. Despite these positive perceptions, challenges persist. Stamped concrete is considered relatively expensive. Local expertise in its application remains limited. And some doubt its suitability for Burkina Faso's hot and dry climate. These concerns, coupled with the lack of standardized regulation and training, hinder widespread acceptance. Nonetheless, the findings suggest stamped concrete could serve as a bridge between innovation and tradition. Many respondents expressed willingness to recommend it for public buildings and saw it as a material that blends beauty, strength, and cultural relevance. The thesis concludes with targeted recommendations: training artisans and architects, increasing public awareness, improving access to materials, and piloting culturally sensitive projects. If supported by policy and investment, stamped concrete could offer a durable, context-appropriate alternative to imported materials. Ultimately, this research proposes that stamped concrete, when adapted to local needs and values, holds the potential to transform construction practices in Burkina Faso contributing to both architectural resilience and cultural continuity.

Keywords: *Stamped concrete, Architecture, Burkina Faso, Public perception, Sustainability, Tradition*

HAM TOPRAK, BURKİNA FASO'DAKİ KONUT KRİZİNE SÜRDÜRÜLEBİLİR BİR YANIT

ÖZET

Burkina Faso, ciddi bir konut yetersizliğiyle karşı karşıya olan birçok Sahra Altı Afrika ülkesinden biridir. Kentleşmenin hızlanması ve geleneksel bilgi birikiminin azalması, sürdürülebilir, uygun maliyetli ve kültürel olarak anlamlı yapı çözümlerine duyulan ihtiyacı artırmaktadır. Bu tez, modern tekniklerle geleneksel estetikleri taklit edebilen bir yöntem olan baskı betonun, Burkina Faso mimarisi içindeki yerini incelemektedir. Araştırma, halkın baskı betona yönelik algılarını; estetik, kültürel kimlik, dayanıklılık ve maliyet açısından ele alır. Aynı zamanda, bu malzemenin benimsenmesini etkileyen teknik, sosyal ve ekonomik koşulları da analiz eder. Beş farklı bölgede, kırsal ve kentsel alanlar dahil olmak üzere, 200 katılımcıya 33 soruluk yapılandırılmış bir anket uygulanmıştır. Sonuçlar, halkın geleneksel desenlere ve toprak tonlarına (örneğin geometrik motifler, ocker ve bej renkleri) güçlü bir bağlılık gösterdiğini ortaya koymuştur. Olumlu algılara rağmen bazı zorluklar devam etmektedir. Baskı beton, genellikle pahalı olarak görülmektedir. Uygulama konusunda yerel uzmanlık sınırlıdır. Ayrıca, Burkina Faso'nun sıcak ve kuru iklimine uygunluğu konusunda tereddütler vardır. Standartların ve eğitim programlarının eksikliği de yaygın kullanımın önünde bir engel oluşturmaktadır. Yine de bulgular, baskı betonun gelenek ve yenilik arasında bir köprü olabileceğini göstermektedir. Katılımcıların çoğu, bu malzemeyi hem dayanıklı hem de kültürel açıdan anlamlı bulmakta ve kamu binalarında kullanılmasını önermektedir. Tez, zanaatkârların ve mimarların eğitilmesini, farkındalık kampanyalarının artırılmasını, malzeme erişiminin iyileştirilmesini ve kültüre duyarlı pilot projelerin uygulanmasını önermektedir. Doğru destek ve yatırımla baskı beton, ithal malzemelere karşı dayanıklı ve yerel bağlama uygun bir alternatif olabilir.

Anahtar Kelimeler*: Baskı beton, Mimarlık, Burkina Faso, Kamu algısı, Sürdürülebilirlik, Gelenek*

1. INTRODUCTION

Burkina Faso, also known as "the Land of Men of Integrity", is a country in the centre of West Africa. There are more than 22 million people living there, and they come from more than 60 different groups, such as the Mossi, the Peulh, the Lobi and the Bobo. This diversity is also seen in the houses and buildings, which are made of simple materials such as earth, wood and straw. Each region has its own style, but they share similarities, such as practical shapes and special designs that make sense.

Traditional houses in Burkina Faso are made with earth, which called banco, wood and straw. These materials are easy to find and cheap. They are also perfect for the country's hot and humid climate. For example, the houses in the south, among the Kassena, have thick walls and thatched roofs that keep the interior cool. The walls are often decorated with geometric designs that women make, and these designs have stories to tell. They are also there to protect people from evil spirits.

But today, the old houses are somewhat forgotten because of the new constructions that use concrete and metal sheets. These materials are faster to use and stronger, but they don't go well with the country's hot climate. For example, houses with tin roofs get very hot in the summer, and that increases electricity bills. This change makes people think about how to keep traditions while being modern.

Figure 1.1: Burkina Faso

Source: https://images.app.goo.gl/1wcVi2rfCiQmihht5 (20/04/2025)

1.1 Defining Problem

How can we use stamped concrete in construction in Burkina Faso while respecting local traditions and beautifying buildings? To answer this question, our study will focus on several points:

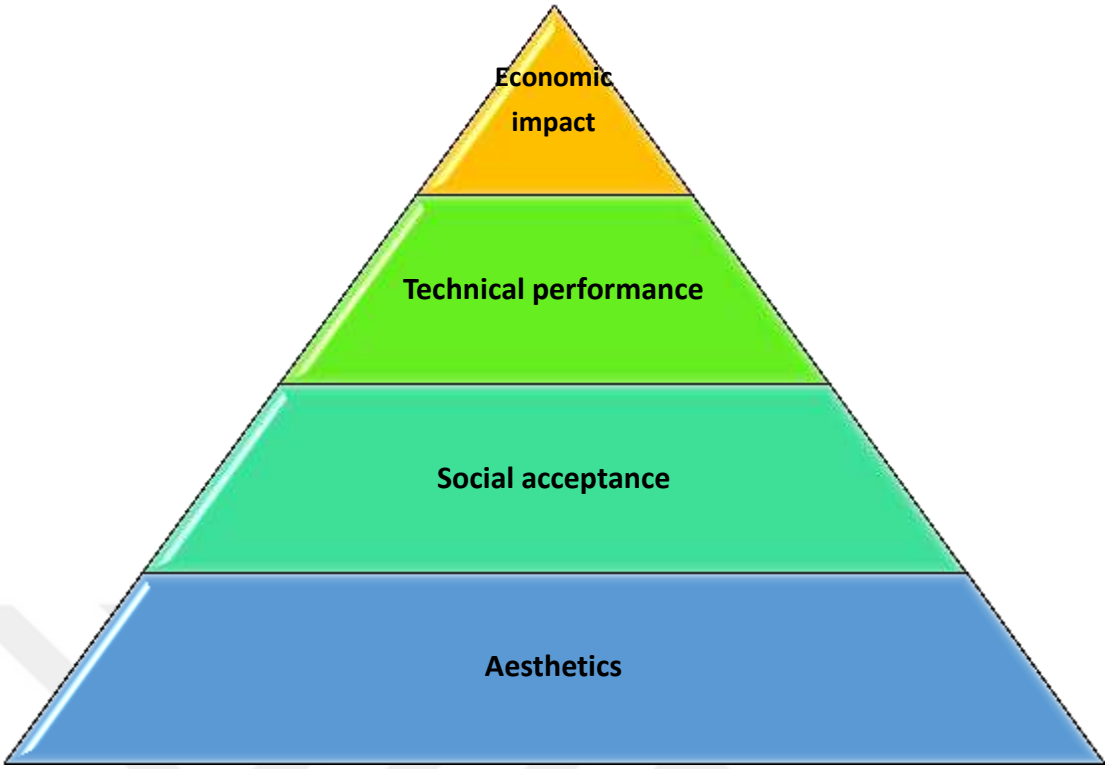


Figure 1.2: Integration of Stamped Concrete in Burkina Faso: Balancing Tradition and Modern Aesthetics

- **Aesthetics**: What designs and colors of stamped concrete would go well with the culture of Burkina Faso? How can these designs be inspired by local traditions while still being modern?
- **Social acceptance**: How do people view this material compared to traditional or modern materials? What would make people accept stamped concrete in their homes?
- **Technical performance**: Is stamped concrete strong and resistant to the hot climate of Burkina Faso? Can it withstand rain and sun, and is it easy to maintain?
- **Economic impact**: Is stamped concrete expensive and can it create jobs for residents? How can we ensure that this material is accessible to everyone?

The mentioned questions and their answers help to understand how stamped concrete could be used in the architecture of Burkina Faso, while taking into account the appearance of the buildings, their solidity, culture and economy.

1.2 Objectives of the study

The aim of this study is to see if stamped concrete can be a good material for constructing buildings that are beautiful, solid and respect the culture of Burkina Faso. To achieve this, consequently, four specific objectives have been established for this study.

- **Investigate the different designs and colors** used in stamped concrete buildings. This will help to understand how traditional designs can be made on this modern material and what people like as a style.
- **See what residents and architects think** of stamped concrete. We will ask questions and do tests to find out what they think.
- **Find out what helps to make good use of stamped concrete** in local architecture. There are several things to take into account: technology, culture and economics.
- **To give advice** on how to properly use stamped concrete in Burkina Faso, thinking about its appearance and strength. These tips will be made to help architects, craftsmen and managers choose this material for their projects.

1.3 Research Hypotheses

This study is based on three main ideas that will help analyze the information:

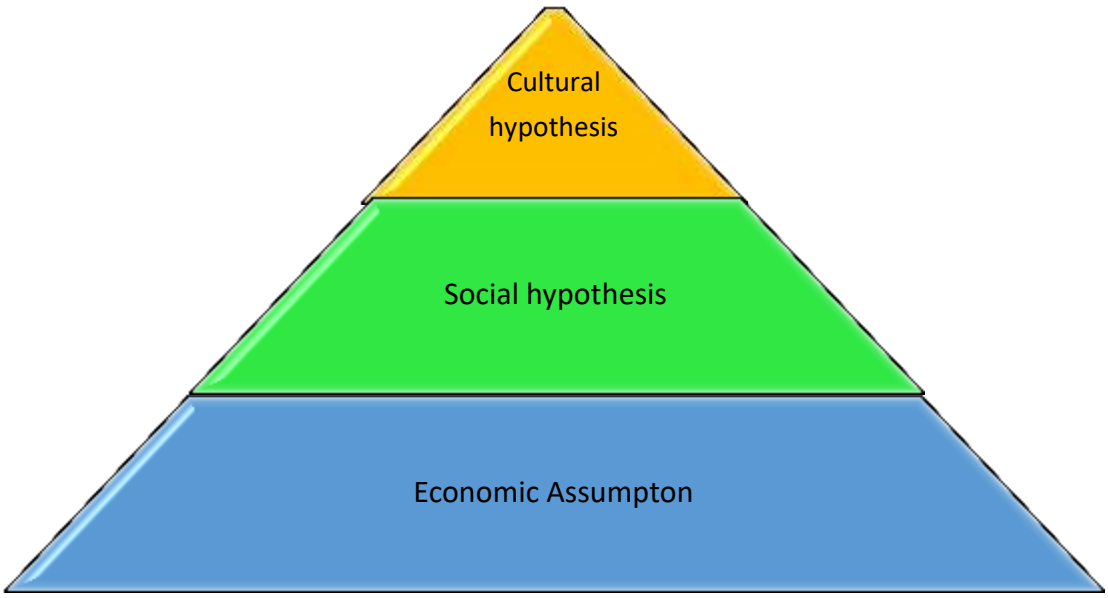


Figure 1.3: Three Guiding Concepts Underpinning the Research

- **Cultural Hypothesis**: If traditional designs are used in stamped concrete, people will love this material and see it as a way to preserve local architecture. This idea assumes that designs inspired by traditions will be more easily accepted and seen as a way of continuing cultural heritage.
- **Social hypothesis**: Stamped concrete will be seen as a beautiful and solid material, which meets the desires of people who want something modern, but which also keeps their cultural identity. This idea believes that locals will love stamped concrete for its aesthetic appearance and strength, while remaining attached to their culture.
- **Economic Assumption**: Training local artisans to use stamped concrete will help create jobs and reduce the cost of imported materials. This idea assumes that stamped concrete can help the local economy by creating opportunities for communities.

1.4 Scope and Relevance of the Study

This study is very important for Burkina Faso, where it is necessary to both preserve cultural identity and modernize buildings. By investigating how to use stamped concrete, this research seeks to find solutions to: preserve traditional architecture by adding local designs and values in modern buildings; improve people's lives by offering a material that is both pretty, strong, and suitable for the country's hot climate, which would make homes more comfortable and durable; and finally, helping the local economy by creating jobs for artisans and reducing the need to import expensive materials. The results of this study could also help other African countries that have the same problems, by showing how modernity and tradition can be combined to build a better future.

1.5 Study Flow-Chart

In order to provide a clear overview of the methodological approach, the Figure below presents the complete flow-chart of this thesis.

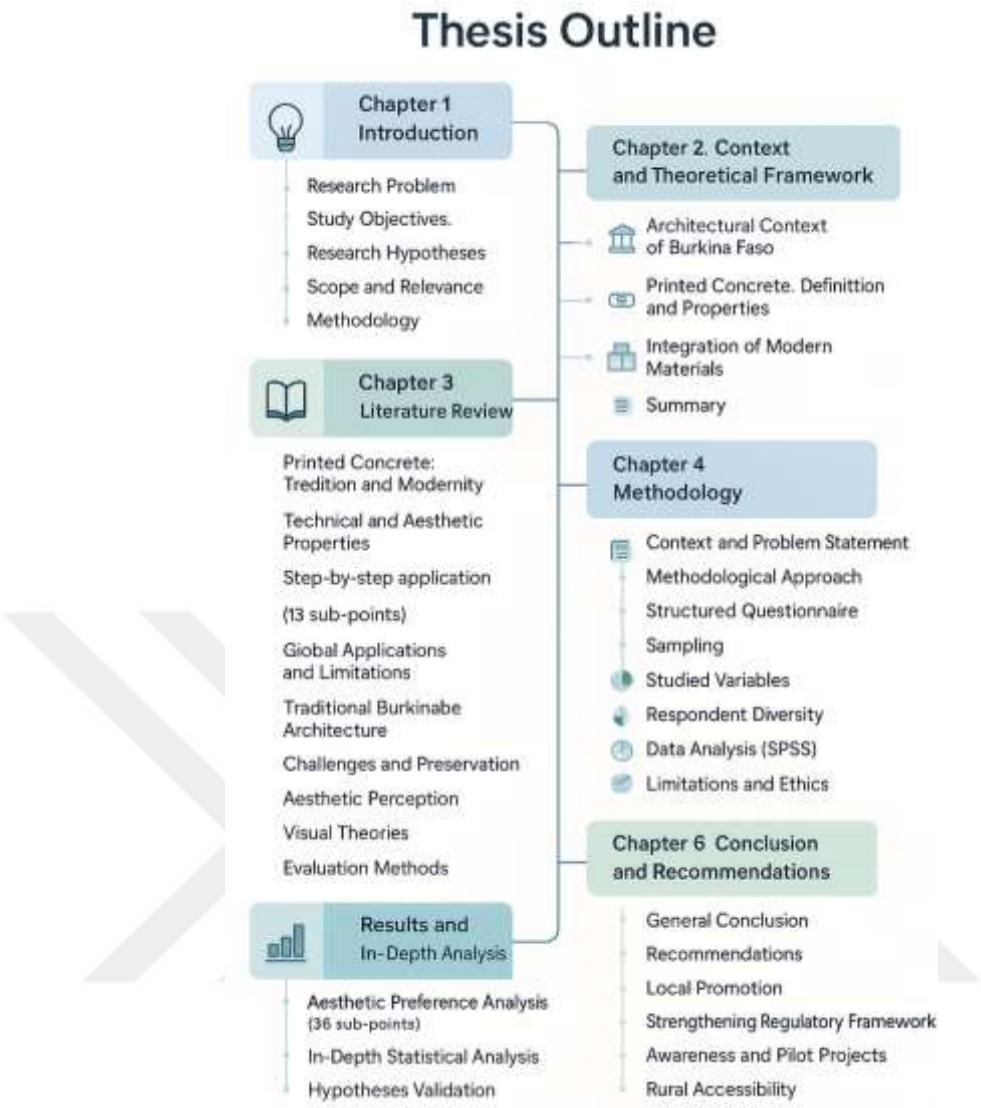


Figure 1.4: Thesis Outline

1.6 Research Design

This thesis is organized into six chapters, each focusing on a key part of the research.

The first chapter sets the stage by presenting the general background, the main research question, and the goals of the study. It also discusses the potential of stamped concrete as a practical construction solution for Burkina Faso.

Chapter two lays out the theoretical and contextual foundations. It looks at the broader framework of the study, helping to better understand the relevance and challenges of integrating stamped concrete in a local context.

The third chapter reviews the literature. It examines previous studies on stamped concrete and traditional architecture in Burkina Faso. This helps situate the research in relation to existing knowledge and identifies the gaps this thesis aims to address.

In chapter four, the methodology is described. The different approaches used—such as surveys, visual evaluations, and case studies—are explained, along with how the data was gathered and analyzed.

Chapter five presents the findings and discusses their implications. It breaks down the results and explores what they reveal about current construction practices and the possible role of stamped concrete in shaping local architecture.

The final chapter wraps things up with a summary of the main results and offers practical suggestions for how stamped concrete could be successfully applied in Burkina Faso. These recommendations are intended for architects, craftspeople, and policymakers involved in construction and urban planning

2. BACKGROUND AND THEORETICAL FRAMEWORK

This chapter provided a better understanding of the traditional architecture of Burkina Faso by explaining how buildings are constructed with natural materials such as raw earth, wood and straw, which provide good insulation against heat. This chapter also showed why stamped concrete can be an interesting solution for modernizing buildings while respecting the country's cultural identity. This material, which can imitate the appearance of stone, wood or brick, has advantages in terms of strength and durability, but its integration must be well thought out so as not to distort the local architecture. Through several examples from other countries, this chapter has also shown that the use of modern materials in traditional buildings can be successful when aesthetic and cultural choices are respected, as in Morocco or Mali, where new techniques have made it possible to reinforce old buildings without changing their appearance. On the other hand, he also stressed the risks of failure if these new constructions do not take into account the expectations and habits of the inhabitants, as in Ethiopia, where the massive use of corrugated iron has been poorly perceived. All this information is essential for the rest of the study, as it will help to choose the right examples to analyze and formulate solid hypotheses on how best to integrate stamped concrete into Burkinabe architecture.

2.1 Architectural context of Burkina Faso

Burkina Faso, a country in West Africa, has a very special architecture that uses natural materials and ancient construction techniques. The country's traditional architecture is influenced by the climate, available resources, and the values of Burkina Faso's different ethnic groups. The most commonly used materials are raw earth (banco), wood, straw and stone, as they keep the house cool and blend well with the environment.

For example, the houses of the Kassena in the south of the country are famous for their thick walls and thatched roofs. These roofs keep the house cool even when it's very hot outside. The walls are often decorated with hand-painted

geometric patterns, which tell stories and convey important values for the locals. These drawings, made mainly by women, are not only pretty, but also symbolic, representing elements of nature, beliefs or important events.

However, this traditional construction method is threatened by rapid urbanization and the increasing use of modern materials such as reinforced concrete and sheet metal. These materials are durable and easy to install, but they are often considered foreign to the local culture and are not adapted to the hot climate of Burkina Faso. For example, tin roofs, which are very common in cities, make homes extremely hot in the summer, forcing more air conditioning to be used and increasing energy costs.

2.2 Stamped Concrete: Definition, Manufacturing Process and Properties

Stamped concrete, also known as stamped concrete, is a special material that combines the strength of traditional concrete with an original aesthetic appearance. This concrete is made by applying textured silicone or metal molds to still-fresh concrete, creating patterns that mimic natural materials like stone, wood, or brick (ConcreteNetwork.com, 2023). To obtain this concrete, a precise mixture is prepared with cement, sand, aggregates and admixtures to obtain an ideal consistency, thus making it possible to make concrete that is easy to handle and resistant (ACI 211.1 – American Concrete Institute). This concrete is then poured onto a flat surface and smoothed to ensure that it is uniform. Once the concrete is well leveled, the textured molds are applied to the still fresh surface to create precise patterns. Then, finishing products like hardeners and dyes are added to strengthen the concrete's strength and accentuate the patterns, making the concrete both stronger and more aesthetically pleasing (Sika Decorative Concrete Systems – Technical Datasheet, 2022). This stamped concrete is particularly appreciated for its technical and aesthetic versatility. It is very durable, with a capacity to withstand compression ranging from 30 to 40 MPa (EN 206 – European Standard for Concrete Performance), making it suitable for places with a lot of traffic. In addition to its wear resistance, it is also able to withstand UV rays and humidity, making it a good choice for tropical climates (PCA – Design and Control of Concrete Mixtures, 17th edition). This material is also very flexible aesthetically, as it can be used to reproduce culturally significant patterns, which has been demonstrated by projects like Heritage Patterns in India, where

traditional patterns have been incorporated into public buildings (Indian Concrete Journal, 2021 – "Heritage-Inspired Decorative Concrete for Public Urban Spaces").

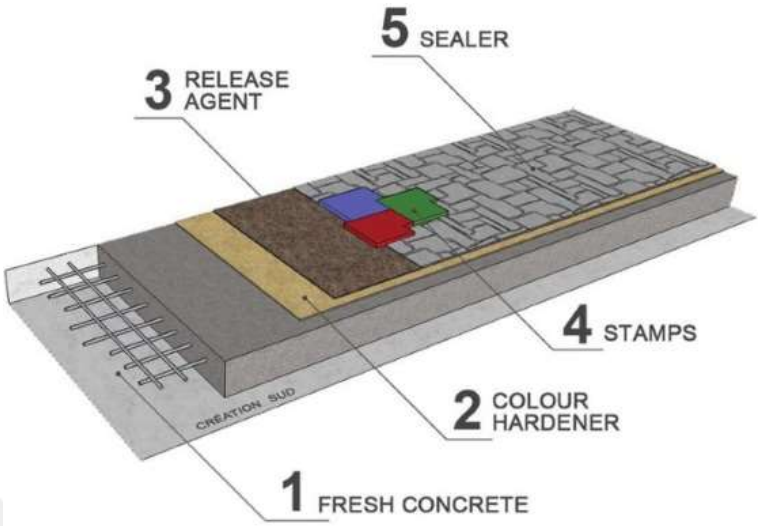


Figure 2.1 Stages Of Manufacturing Imprinted Concrete, From Preparation To Printing

Source: Bustillo Revuelta, M. (2021). Special Concrete. In Construction Materials. Springer Textbooks in Earth Sciences, Geography and Environment. Springer, Cham. https://doi.org/10.1007/978-3-030-65207-4_10

2.3 Integration of Modern Materials into Traditional Architectures

Adding modern materials to traditional construction can be a real challenge, as it requires a balance between reinforcing structures and respecting old architectural styles. If modern materials are poorly integrated, they can distort buildings and be poorly accepted by the population. However, several projects have shown that it is possible to combine the two harmoniously. For example, in Morocco, a project called *Medina Concrete* used ochre-tinted concrete to mimic the color of the adobe walls of the medinas. This technique has kept the traditional appearance of the buildings while making them stronger and better able to withstand earthquakes, which are common in some areas. Similarly, in Mali, the famous Djenne mosque, built of raw earth, has been restored by adding stabilized bricks to the earth. This choice made it possible to strengthen its structure without altering its original appearance, which is essential to preserve its cultural and historical significance. These examples show that with the right methods, it is possible to use modern materials without erasing the local architectural identity. However, not all projects are always successful, especially when an overly standardized approach is taken without taking into account the traditions and needs of the inhabitants. In Ethiopia,

for example, the massive introduction of corrugated iron roofs in rural villages was frowned upon by the population, as these materials were associated with an "architecture of poverty". Unlike traditional mud houses, which offer natural thermal insulation and blend well into the landscape, tin roofs make the houses very hot during the day and very noisy when it rains, which has caused significant rejection. These failures show that successful integration of modern materials is not just about cost-effective and quick solutions; Cultural, aesthetic and practical aspects must also be taken into account to ensure that these new techniques actually improve the quality of life of the inhabitants without erasing their architectural heritage.

Figure 2.2: Innovative Adaptation of Traditional Building Materials for the Modern Era

Source: Arch2O. (2025, April 20). Innovative Adaptation of Traditional Building Materials for the Modern Era. Retrieved June 2025, from https://www.arch2o.com/traditional-building-materials/

3. LITERATURE REVIEW

3.1. Stamped Concrete as a Bridge between Tradition and Modernity

This section will explore how stamped concrete positions itself as a link between the architectural past and future.

3.1.1. Technical properties and aesthetic advantages

Stamped concrete, also known as stamped concrete, is a special type of concrete that is both strong and beautiful. Unlike conventional concrete, which is often grey and smooth, this one can look like wood, stone or even brick. According to Kumar and Alves (2020), this concrete is obtained by pressing metal or silicone molds on concrete that is still soft, which makes it possible to create patterns. To make it, you first have to mix cement, sand, small pebbles and special products to make it hold well. Then it is poured over the ground and smoothed. Then, we put the molds on top to make the drawings. Finally, we add products that harden the surface and give color so that it lasts longer. This concrete is very practical because it is both beautiful and resistant. According to the International Building Materials Institute (2021), it can support very heavy weights, between 30 and 40 MPa, and does not get damaged easily even if there are a lot of passages. It is resistant to both sun and humidity, which is very useful in hot countries. For example, a study conducted in Dakar, Senegal (Diallo et al., 2019) showed that stamped concrete sidewalks reduced repair costs by 35%, as they are damaged less quickly than normal concrete sidewalks. In addition to being strong, this concrete can also be used to create patterns that have cultural significance. For example, in India, the *Heritage Patterns* project used this concrete to reproduce traditional Rajput designs on public buildings (Patel, 2022).

3.1.2. Step-by-step application of stamped concrete

Stamped concrete is often used to cover the floor, both indoors and outdoors. It is often seen in parks, on terraces, squares, car parks, in front of shops and at the entrance to houses. It is appreciated because it is beautiful and solid.

In this part, we are going to explain how to make a stamped concrete floor, step by step, so that it is well done and lasts a long time. You have to follow each step carefully, because a mistake could ruin the entire work.

3.1.2.1. Prepare the soil before pouring concrete

Before pouring stamped concrete, the soil must be well prepared, as this influences its strength and lifespan (Kumar and Alves, 2020). First, you need to remove anything that could get in the way, such as leaves and stones, to have a clean surface (International Building Materials Institute, 2021). Then, the ground must be levelled and the slopes planned so that the water can drain properly (Diallo et al., 2019).

To protect the concrete from water loss, a special plastic film called a 400-gauge policret sheet is laid and a border is installed to delimit the areas to be filled (Sawadogo, 2022). Before pouring the concrete, it is also important to put a layer of stones (15 cm) and sand (2 cm), then to compact everything well so that the ground is stable and ready to receive the concrete (Touré, 2019).

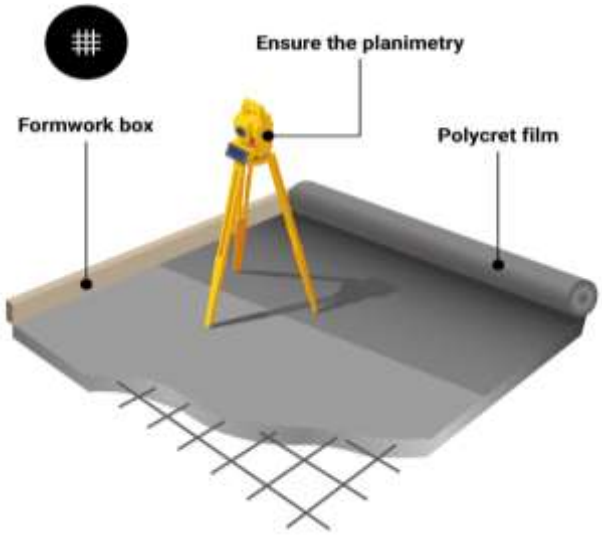


Figure 3.1: Installation of Stamped Concrete on Floors

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.2. Proper pouring of stamped concrete

Once the soil is well prepared, the concrete should be poured evenly to avoid problems later (Kumar and Alves, 2020). The concrete layer must be flat and compact. To make it stronger, plastic fibers called polypropylene fibers are added to it (International Building Materials Institute, 2021). Steel mesh should also be placed around and where the concrete touches other fixed structures, such as walls or posts (Diallo et al., 2019).

On the other hand, there are times when you can't pour concrete. If the temperature is likely to drop below 0°C in the following two days, it must be stopped (Sawadogo, 2022). Similarly, if the concrete is too cold (less than 10°C) or if the air is too hot (more than 30°C), this can cause problems (Touré, 2019). It is also important to avoid working when it is too windy, as this could cause the surface to dry out too quickly and weaken it (UNESCO, 2020).

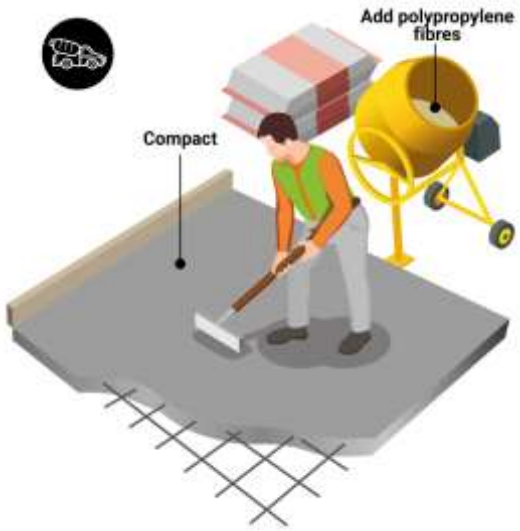


Figure 3.2: Laying the Concrete

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.3. How to properly smooth and level stamped concrete

To optimize the strength of concrete, it is imperative that it is uniformly flattened and compacted using a roller after placement (Kumar and Alves, 2020).Then, to make it smooth and straight, a trowel or a special machine called a grader is used (International Building Materials Institute, 2021). It is very important not to use a vibrating machine during this stage, as this could damage the concrete and prevent a beautiful result from being obtained (Diallo et al., 2019).

Figure 3.3: Smoothing the Concrete

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.4. Smooth concrete well for a solid floor

When the concrete is still fresh, it must be smoothed well with a trowel so that it is flat, solid and resistant (Kumar and Alves, 2020). This step is very important, because if you forget it, small air bubbles and fragile layers can form due to humidity (International Building Materials Institute, 2021). Well-smoothed concrete lasts longer and stays in place without damaging too quickly (Diallo et al., 2019).

Figure 3.4: Leveling of Concrete

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.5. Sprinkle the colored hardener or stamped mortar on the screed

Once the exuding water from the concrete has disappeared, the colored hardener or stamped mortar should be sprinkled on the fresh concrete. In our case, hardener is used with a quantity of 4 kg/m² for dark colors and 6 kg/m² for light colors. It is very important not to forget this step and to sprinkle the right amount of product, otherwise the final result of the stamped concrete will not be what you expected (Kumar and Alves, 2020; Diallo et al., 2019).

Figure 3.5: The Mortar Stamped on the Screed

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.6. Coloring of mass concrete

In addition to sprinkling, which is the traditional method of coloring concrete floors, there is another way to color, with a powdered pigment such . For this method, two bags of this pigment are put for each cubic meter of concrete that is to be covered in the concrete mixer. Then leave the mixture for five minutes so that the color blends well and everything becomes homogeneous and uniform. Once the concrete is well mixed and ready, it is poured onto the ground (Kumar and Alves, 2020; Diallo et al., 2019).

Figure 3.6: Coloring of Concrete

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.7. Apply the colored hardener or stamped mortar applied on the floor

First, you have to take a good amount of hardener, about two-thirds of what is planned, and spread it on the still fresh concrete. Then, with a normal trowel, press well so that the powder colors the surface well and integrates into the concrete. After that, we put the rest of the product to cover the entire surface and we continue to smooth and work until the floor looks the way it wants. It's like when you spread colored sand on soft dough and gently crush it so that it mixes well and it becomes nice and even.

Figure 3.7: Stamped Mortar

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.8. Smoothing the future stamped flooring

To ensure that the floor is smooth and bump-free, care must be taken to flatten it well. A steel trowel is used to make sure there are no small holes or defects on the surface, much like when you roll out a cake batter so that it is even before putting it in the oven. Then, on the edges of the concrete, a special trowel is passed for the contours so that they are well rounded and there are no pieces that crumble over time. This is important because if the edges are fragile, they are likely to break faster.

Figure 3.8: stamped flooring

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.9. Apply the release agent for stamped concrete on the pavement

When the mortar begins to harden, but is not yet too hard, it is important to check that the surface is dry and free of water. This is essential, otherwise the product applied later will not work properly. Once it has hardened, we apply the special product that prevents the concrete from sticking to the molds when making the designs. This product is called a mold release agent. There are two types: a powder product and a liquid product. In general, it is recommended to use powder, except for indoor use. The advantage of powder is that it is colored. You can choose the same color as the hardener used previously, or a different color to achieve an aged effect. These products allow you to demold without damaging the pattern printed on the concrete. To do everything properly, you should use approximately 100 grams per square meter if it is powder, and 125 milliliters per square meter if it is liquid.

Figure 3.9: Stamped Concrete on the Pavement

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.10. Priming of the stamped concrete mould on the floor

To make a stamped concrete floor, it is essential to choose a mould with a pattern and press it on the still fresh concrete. Otherwise, it wouldn't be stamped concrete, but just normal concrete with another decoration. At Imacem, there are more than 150 models of moulds to give different shapes and textures to the floor. Once you have chosen the right mold, you place it on the surface and press it well so that it leaves its imprint. It should be placed one after the other, without skipping spaces, so that the patterns fit together well and form a continuous design. To mark the imprint, a special pestle is used to help drive the mold into the concrete. When this is done, you have to carefully remove the mold and move it to the next part that has not yet been processed. Always follow the same alignment so that the pattern is even and the end result is perfect.

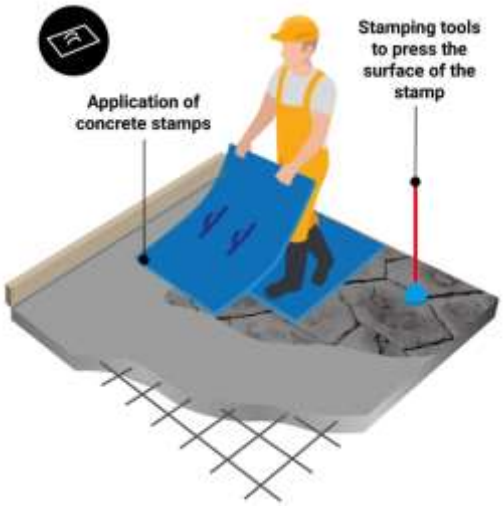


Figure 3.10: Stamped Concrete Mould on the Floor

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.11. Removing the stamped concrete release agent from the floor

If the expansion joints were not planned from the beginning, they must be cut according to the project plan, and this must be done within 24 hours of laying the concrete. Then, wait at least 48 hours before removing the special product that had been put in to prevent the concrete from sticking to the molds. This product, which is called a release agent, must be carefully removed so that the pattern of the stamped concrete appears well and is clean. This is an important step for the floor to look good and be clean.

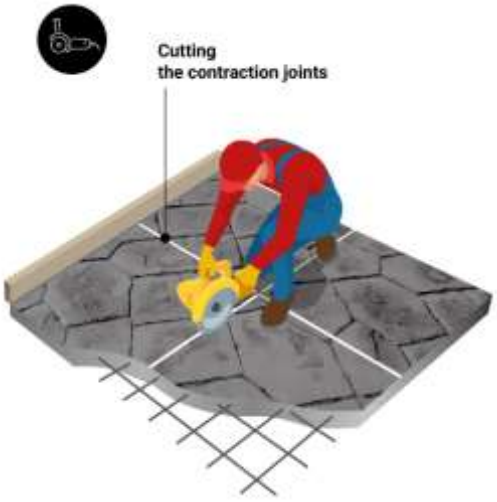


Figure 3.11: Stamped Concrete Release Agent from the Floor

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.12. Clean the stamped floor screed

After 72 hours, rinse the surface thoroughly with water to remove any product residue and let it dry. To keep your stamped concrete floor clean, you can use a pressure washer set to approximately 90 bars. Caution: Never direct the water jet directly onto the floor, as this may damage the pattern. Maintain a distance of 50 cm and place the nozzle in the fan position for good water distribution. If you have used liquid release agent as a release agent, simply sweep the floor instead of washing it thoroughly with water. For even more effective cleaning, it is advisable to use special products such as Ecoclean Pro or Ecoclean Construction. The latter is very useful for avoiding white stains (efflorescence) that can appear after using powder release agents. These cleaners remove limescale, salt, cement residues, and other dirt. Leave for 5 to 15 minutes before rinsing the floor with water and allowing it to dry.

Figure 3.12: The Stamped Floor Screed

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.1.2.13. Apply the varnish to protect the stamped paving

The last step in making a stamped concrete floor is super important, because it is thanks to it that the floor will remain beautiful and solid for a long time. Without good protection, it could be damaged more quickly over time. At Topciment, they have created a special range of varnishes , which is used to protect concrete. There are two types of varnishes: one water-based and another with solvents. The choice depends on the result you want to achieve, whether it should be more or less shiny.

Once the stamped concrete floor is completely dry, two coats of varnish should be applied with a spray gun, brush or roller. Between each coat, let it dry. These varnishes are very weatherproof, so they protect the floor from rain, wind and sun. But even if they hold up well, it is advisable to reapply a coat of varnish from time to time to keep the floor in perfect condition. (Source: Topciment)

Figure 3.13: Stamped Paving

Source: Topciment S.A. (n.d.). Stamped concrete application. Topciment. Retrieved June 2025, from https://www.topciment.com/en/stamped-concrete/stamped-concrete-application

3.2. Global Applications and Limitations

Stamped concrete is very popular in wealthy countries, where it is used to beautify streets, parks, and large public squares. But in sub-Saharan Africa, it is still little used. According to a study by the World Bank (2023), only 12% of construction projects in cities use this material. The main reason is that it costs more, about 25% more than conventional concrete. In addition, many craftsmen do not know how to apply it well, because they have not been trained for it. Fortunately, there are solutions, such as the Concrete for Africa programmed (Nguyen, 2021) in Kenya, which has shown that with financial aid and training, these problems can be overcome.

But even with these efforts, stamped concrete is not always easy to use. It takes very precise workers to get the patterns right, and if they make a mis take, the floor can crack or lose its colors. Despite these difficulties, this type of concrete remains a good idea to mix modernity and traditions in developing

3.3. Traditional architecture in Burkina Faso

Traditional architecture in Burkina Faso is distinguished by a richness and diversity rooted in the use of local materials and ancestral know-how.

3.3.1. Main characteristics and cultural values

In Burkina Faso, traditional houses are built with natural materials that the inhabitants have been using for a very long time. The walls are made with soil mixed with straw and other special plants to make it hold well. For the roof, thatch or wood is used, which keeps the house cool even when it is very hot. According to Nacoulma (2018), these techniques are not only practical, they are also very important for cultivation. For example, when the Kassena build a house, the whole village comes to help and they sing and dance together to show that they are united. In addition, on the walls, you can see geometric drawings that come from the beliefs of the Mossi. These designs are not only used for decoration; they also protect the house from evil spirits. (Source: Nacoulma, 2018)

3.3.2. Current challenges and preservation initiatives

Today, the traditional houses of Burkina Faso are in danger because of the rapidly growing cities and new building materials. According to a study by the University of Ouagadougou (Sawadogo, 2022), 60% of young people prefer concrete houses because they are more modern, even if they are not as good at keeping them cool. In addition, many craftsmen have forgotten the old construction techniques: according to UNESCO (2020), only 15% still know how to make the beautiful banco frescoes on the walls. Another problem comes from modern materials such as sheet metal, which makes houses very hot. For example, in the dry season, the temperature indoors can rise to 45°C (Kaboré, 2021), which is difficult to bear.

But some people try to protect these homes while making them stronger. For example, in the village of Tiébélé, which is classified by UNESCO, reinforced concrete was added to the earthen walls to make them more resistant to rain, while keeping the traditional frescoes (Touré, 2019). Also, an organization called *Architecture without Borders* (Architectes Sans Frontières – France. (n.d.). ASF-France. In ASF International member directory. Retrieved June 2025, from https://asfint.org/members/architectes-sans-frontieres-france/) helped 200 artisans

learn how to use natural pigments to paint house patterns, without using chemicals (ASF Annual Report, 2023). Thanks to these efforts, it is hoped that these unique homes will not disappear.

3.4. Perception of aesthetics in architecture

3.4.1. Theories of visual perception

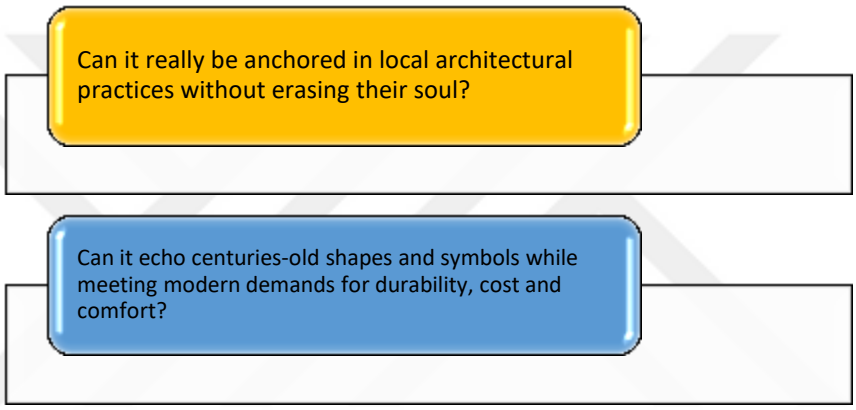
When we look at a building, our brain doesn't just see walls and a roof, it puts everything together to make sense, as explained by the Gestalt theory (Wertheimer, 1923), which says that our mind likes well-organized shapes. That's why geometric patterns, such as the diamonds that the Kassenas draw on their houses, look pretty and harmonious. But the beauty of a building does not depend only on its shape. According to Appadurai (1996), it is also influenced by culture and money. For example, in many African cities, having a concrete house, even if it is not very beautiful, shows that you have a certain social level, because this material is often seen as a sign of success. (Sources: Wertheimer, 1923; Appadurai, 1996)

3.4.2. Methods of aesthetic evaluation

To find out if people like stamped concrete, we use several techniques such as asking questions in surveys, showing images in immersion and analyzing signs and symbols. In Burkina Faso, a recent study (Ouédraogo, 2023) showed that 70% of respondents find that traditional patterns printed on concrete give an impression of "ingrained modernity", i.e. that they mix the old and the new well. On the other hand, abstract patterns, which do not resemble those we usually see, are perceived as foreign. These results confirm what M'Baye (2020) had already said: for modern materials to be well accepted, they must tell a story that speaks to people and respects their culture.

4. METHODOLOGY

In a world where architecture is much more than a simple assembly of materials, but a faithful mirror of the culture, aspirations and identity of peoples, it becomes crucial to question the materials we choose to build our living spaces. Stamped concrete, at the crossroads between artistic tradition and technological innovation, raises many questions in the context of Burkina Faso:



This chapter explores the tools, methods and scientific choices that have guided our approach to understanding what Burkinabè think about this material. It is not simply a question of collecting figures, but of capturing sensitivities, listening to voices, translating emotions and unveiling collective perceptions. The methodology described here therefore aims to build a rigorous bridge between the aspirations of the populations and the possibilities offered by a material that is still little explored in the country. It is through the precision of the survey and the reliability of the analysis that this research aims to identify the conditions for a harmonious and meaningful integration of stamped concrete into the Burkinabe built environment.

4.1. Background and Problem Statement

Before setting out the central research question, it is essential to establish the general context in which this study is situated and to identify the gaps or issues that justify our investigation.

4.1.1. Architectural context of Burkina Faso: between tradition and modernity

The architectural landscape of Burkina Faso is part of a permanent dialogue between tradition and modernity. For centuries, Burkinabe communities have developed a unique know-how based on the use of local materials such as raw earth, wood, banco and straw, all of which are available in abundance and perfectly adapted to the Sahelian climate. These materials, beyond their functionality, carry a strong cultural identity. For example, in traditional Kassena and Gurunsi settlements, hand-painted geometric patterns can be found on the walls, which tell stories, convey clan symbols, and reinforce a sense of community. This architectural style is functional, artistic and symbolic at the same time. However, from the 1990s onwards, a transition took place under the combined effect of urbanization, globalization and modernization policies. So-called "modern" materials such as concrete, cinder blocks, rebar and steel have gradually replaced traditional materials, especially in cities such as Ouagadougou and Bobo-Dioulasso. These materials are associated with durability, safety, and high social status. This has led to an architecture that is often uniform, sometimes disconnected from local cultural references. Faced with this paradox, stamped concrete appears as an intermediate alternative: it is a concrete whose surface is moulded using stencils or stamps in order to imitate textures or decorative patterns (stone, wood, fabrics, cultural symbols), while maintaining the technical properties of classic concrete. In this context, the question of the integration of stamped concrete into contemporary Burkinabe architecture deserves a rigorous study. The challenge is to combine technical innovation, respect for traditions, aesthetic performance and social acceptability. These include whether the material can be perceived as authentic, whether it can be adapted to the local climate, and whether it is financially accessible to the population.

Figure 4.1: A eucalyptus barrier provides shade for students at the Lycée Schorge Secondary School in Koudougou Burkina Faso. Photographer Francis Kéré

Source: Africinnno. (2025, April 15). Burkina Faso: A Model of Authentic African Architecture? Africinnno – African Cities Insights. Retrieved June 2025, from https://www.africinno.com/africancitiesinsights/le-burkina-faso%2C-une-r%C3%A9f%C3%A9rence-en-mati%C3%A8re-darchitecture-africaine-authentique?lang=fr

4.1.2. Specific problem

It is necessary to analyze several dimensions simultaneously. From a technical point of view, the performance of the material in terms of durability, resistance to hot and dry climate, care and maintenance should be evaluated. From an aesthetic point of view, the study questions the ability of stamped concrete to reproduce or reinterpret traditional patterns appreciated by the population. The cultural component explores the perceptions of identity related to the material:

Is it seen as a Western or a local product? Does it strengthen or weaken the sense of cultural belonging?

Finally, the study focuses on the economic dimension, assessing the financial feasibility, the impact on local employment, and the interest that the material arouses for craftsmen and future owners.

4.2. Methodological Approach

4.2.1. Collection tool: multidimensional structured questionnaire

The main data collection tool is a questionnaire structured in 7 sections with 33 questions, designed from a rigorous literature review (Patel, 2022; Sawadogo, 2022; Diallo et al., 2019; Appadurai, 1996) and adapted to the Burkinabe socio-cultural context. The questionnaire collects quantitative and qualitative data on aesthetic preferences (types of patterns, colors, shapes), cultural perceptions (identity, tradition, pride), technical expectations (durability, climate, maintenance), economic considerations (cost, accessibility, job creation) as well as the overall perception of the material (recommendation, future use).

Each question is associated with a clearly defined and codifiable variable for statistical analysis SPSS. The questionnaire included a variety of answer formats, such as 5-point Likert scales, multiple choice questions, yes/no (dichotomous) items, and open-ended questions to gather suggestions or free comments. Before its final distribution, the questionnaire was piloted with a sample of 30 individuals from diverse social backgrounds to ensure that the wording was clear, relevant, and unbiased.

4.2.2. Sampling and administration of the questionnaire

The questionnaire was administered to a sample of 200 people, evenly divided between urban areas (Ouagadougou, Bobo-Dioulasso) and rural areas (Koudougou, Tiébélé, Gorom-Gorom), in order to capture geographical and socio-cultural disparities. The recruitment of participants was voluntary, targeting various profiles (age, gender, sector of activity, level of education) to ensure representativeness. The interviewers involved were trained to administer the questionnaire and were bilingual (French/Mooré), in order to facilitate the understanding of the questions. The handover took place face-to-face, allowing immediate and reliable recording of data. The mean response time was between 7 and 10 minutes. An evaluation module at the end of the questionnaire was used to collect participants' feelings on the quality of the questionnaire, its duration, its clarity and its relevance.

4.3. Variables and Dimensions Studied

The data collected through the questionnaire was methodically organized around six main categories of variables, reflecting the complexity and richness of perceptions of stamped concrete in the Burkinabe context. These categories are not simple analytical compartments; they represent gateways to a deep understanding of the links that populations have with their built environment. First, the aesthetic dimension captures the snapshot of what the eye holds and what the heart desires: preferences in terms of patterns ,whether geometric, abstract or inspired by nature , reveal a desire for visual recognition and symbolic resonance. The choice of colors, ranging from ancestral ochre to modern grey, via the red of laterite or the beige of Sahelian sand, says a lot about the collective imagination and the emotions that facades can arouse. Then, the cultural and identity dimension comes to probe more intimate depths: in a country where decorative art on walls is an ancestral language, it was essential to question the way people look at a new material. Do they recognize themselves in its forms? Do they consider it worthy of representing their heritage? Do they accept it as a legitimate expression of their culture or do they reject it as a foreign intrusion? These questions are crucial, because they determine the anchoring or rejection of the material in social practices. The third dimension, technical and sustainable, explores the concrete requirements of everyday life. A material, as beautiful as it is, must be able to withstand the harshness of the Sahelian climate, the driving rains of wintering, the dust of the harmattan winds, and the sometimes-extreme temperature differences. Perceptions of the strength of stamped concrete, its resistance to time and its need for maintenance are therefore key indicators of its viability in the local context. Then there is the economic and training dimension, which is essential in a country where the majority of citizens live with limited resources. Is stamped concrete considered affordable? Can it become a vector for the creation of local jobs and opportunities for young craftsmen? Do the populations show the desire to be trained in its techniques, to appropriate its know-how? These answers make it possible to estimate the potential of the material as a lever for development. The fifth category, devoted to global perception and future projections, questions the place that respondents wish to give to stamped concrete: is it recommended? Can it find its place in public buildings such as schools or hospitals, symbols of the general interest? What are the perceived limits, but also the promises

glimpsed? Finally, the sixth category that of the socio-demographic profile, constitutes the analytical basis on which the statistical cross-referencing is based. Age, sex, level of education, occupation, place of residence and average monthly income are all variables that make it possible to interpret the responses in their diversity, to reveal generational divides, territorial disparities, inequalities of access and differentiated preferences. Structured in this way, these data make it possible not only to quantify opinions, but also to draw a fine map of the hopes, reluctance and conditions of acceptability of a material which, much more than a simple architectural cladding, could become a symbol of reconciliation between heritage and modernity.

4.4. Professional Diversity and Territorial Anchoring of Respondents

At the heart of this study on the integration of stamped concrete in Burkinabe architecture, it was essential to understand who are the voices that expressed themselves through the questionnaire. These voices are not abstract: they belong to men and women who are rooted in very distinct professional, social and territorial realities. Because behind each answer is an experience, a unique perspective on the city, the village, the construction site, the school or the field. It is in this diversity that the richness of the data collected emerges.

The distribution of respondents according to their sector of activity and their place of residence reveals a vivid picture of contemporary Burkina Faso: a country that is both rural and urban, traditional and forward-looking, supported by a variety of actors. Whether they are farmers in Gorom-Gorom, teachers in Bobo-Dioulasso, workers in Ouagadougou, craftsmen in Tiébélé or shopkeepers in Koudougou, all were called upon to express their opinion on the place of a still young material in their built environment. To be accepted, stamped concrete cannot be the prerogative of a technical elite or an economic capital. It must make sense in the hands and eyes of all, across all social strata and all territories.

The table 4.1 below summarises this professional and geographical plurality. It attests to the methodological care taken in the composition of the sample, and to the desire to reflect the Burkinabe reality in all its complexity and depth.

Table 4.1: Summary of Sample Diversity

Location	Agriculture	Construction	Education	Other	Services	Total
Bobo-Dioulasso	9	9	12	13	12	**55**
Gorom-Gorom	3	3	1	4	7	**18**
Koudougou	7	10	6	4	7	**34**
Ouagadougou	21	11	8	17	7	**64**
Tiébélé	9	3	4	5	8	**29**
Total general	**49**	**36**	**31**	**43**	**41**	**200**

4.5. Data analysis using SPSS

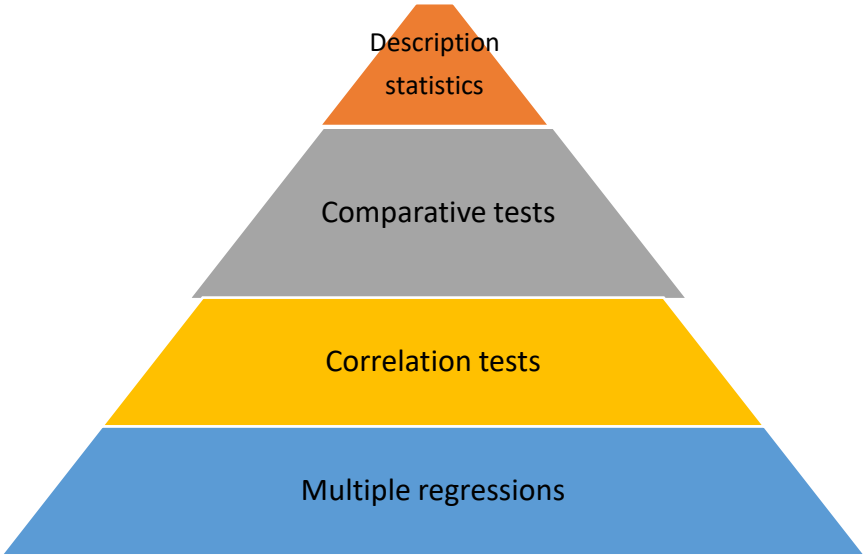
Data analysis using SPSS consists of using SPSS software to organize, process and interpret information such as responses to your surveys.

4.5.1. Data preparation and coding

All data from the questionnaire were captured and coded into SPSS software. Closed-ended questions were coded into numeric variables. For example, the Likert scales were coded from 1 (strongly disagree) to 5 (strongly agree). Multiple responses were treated as dichotomous variables (presence/absence of response). Open-ended responses were manually proofread and categorized for descriptive analysis. Rigorous cleaning was performed: checking for duplicates, outliers, and incomplete responses. The final database thus allowed optimal exploitation in SPSS.

4.5.2. Statistical techniques used

Statistical analysis in SPSS was structured in several complementary steps, shown as Figure:



4.5.2.1. The statistical analysis conducted with SPSS was organized into several complementary stages, as illustrated in the figure below

- **Descriptive statistics**: Calculation of frequencies, percentages, averages, and standard deviations for each variable, providing a general picture of respondents' opinions and preferences.
- **Comparative tests**: Application **of Student's t-tests** to compare responses between subgroups (urban/rural, youth/elderly, male/female) to verify the existence of significant differences.
- **Correlation analysis**: Using the **chi-square test** to examine the relationships between two qualitative variables (e.g., the relationship between education level and perception of sustainability).
- **Multiple regressions**: Development of predictive models to identify the factors influencing the acceptability of stamped concrete. Independent variables include age, income, education level, exposure to the material, etc.
- **Exploratory Factor Analysis (AFE):** To group perception-related variables into latent factors (aesthetic, technical, cultural, etc.) and reduce data complexity.

4.6. Limitations of the Study

Any scientific approach, no matter how rigorous, inevitably comes up against limits that must be recognized with lucidity and humility. This study, although rooted

in a solid methodology, is no exception to this rule. The first limit identified is geographical. Indeed, due to the worrying security situation prevailing in certain regions of northern Burkina Faso, particularly in the Sahelian areas, the investigation could not be conducted there. This territorial deficit introduces an asymmetry in the national representativeness of the sample. The architectural, cultural and climatic realities of these specific regions could not be captured, although they could have enriched the understanding of perceptions of stamped concrete in even more extreme contexts in terms of heat, drought and attachment to traditions. This absence therefore requires caution in the generalization of the results to the entire Burkinabe territory. A second, more insidious limitation is what researchers call the social desirability bias. It was observed that some participants, especially during face-to-face interviews or in community contexts, may have expressed an exaggerated adherence to stamped concrete, motivated not by an intimate conviction, but by the desire to respond in a "socially correct" way. In a society where speech is often influenced by hierarchy, the presence of authority figures or the desire not to appear retrograde can lead to embellished responses. This phenomenon, well known in the social sciences, tends to mask certain genuine criticisms or reservations. To limit this distortion, the total anonymity of the questionnaires was strictly respected, and the interviewers were trained to encourage free, non-judgmental expression. However, it is likely that some responses were influenced by the context of the award. Finally, the last limitation lies in the very nature of the data collected, which is essentially based on subjective perceptions. If the questionnaire allows for an in-depth Exploring the social representations of stamped concrete , in terms of aesthetics, durability, cultural anchoring or economic impact ,it alone cannot attest to the material's actual technical performance. No experimental measurements have been carried out, for example, on the long-term mechanical resistance, the resistance of the pigments to UV rays, or the ability of the material to withstand seasonal humidity over several decades. In the absence of such tests, respondents' judgments about the durability of stamped concrete must be interpreted for what they are: feelings, based on one-time observations, overheard stories, or empirical comparisons with other materials. This does not detract from their analytical value, but reminds us that they must be complemented, in future research, by rigorous technical evaluations carried out in the laboratory or on built sites. These limitations, far from weakening the scope of the study, on the contrary underline its necessity and richness. They invite

us to continue the exploration begun here with complementary, multi-site and interdisciplinary approaches, in order to further refine the understanding of the conditions of acceptability of stamped concrete in the Burkina Faso of today and tomorrow.

4.7. Ethical Considerations

The study was conducted in strict compliance with ethical principles in social research. All participants were informed about the objectives of the survey and the non-commercial use of the data. Verbal informed consent was obtained prior to each interview. Participation was entirely voluntary, without any compensation. Personal data has not been collected (neither names nor addresses), guaranteeing anonymity. Finally, a collective restitution of the results is planned in the form of participatory workshops, in order to share the conclusions with the communities concerned and integrate their feedback.

5. RESULTS AND IN-DEPTH ANALYSIS

This chapter presents and interprets the results of the survey conducted among 200 participants in several localities in Burkina Faso. The objective is to bring out the perceptions, preferences and attitudes of the respondents regarding the use of stamped concrete in local architecture. The analysis is structured around the main themes defined in the methodological chapter, in particular the aesthetic, cultural, technical and socio-economic dimensions. The data are analysed using the SPSS software and are presented in the form of statistical tables with detailed comments.

5.1. Analysis of Respondents' Aesthetic Preferences

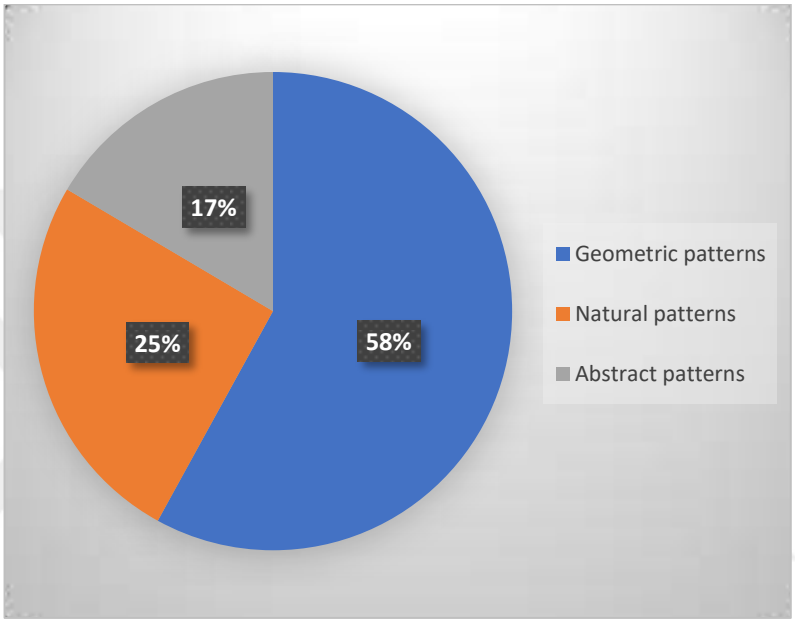
The aim here is to explore the results of the survey aimed at determining the predominant aesthetic criteria and the orientations of the respondents' preferences regarding printed concrete.

5.1.1. Types of preferred patterns on vessels

Respondents were asked to express their preferences for decorative patterns on building facades. The table below shows that the majority of respondents (58%) expressed a clear preference for traditional geometric patterns, which shows a strong attachment to symbolic forms rooted in Burkinabe culture. Nature-inspired motifs (stone, wood) come in second place (25.5%), while abstract motifs receive lower support (16.5%). These results suggest that local aesthetic values remain a central criterion in the appreciation of building materials.

Table 5.1: Table of Preferred Pattern Types on Vessels

Favorite Pattern	Frequency	Percentage	Valid Percentage	Cumulative percentage
Geometric patterns	116	58,0 %	58,0 %	58,0 %
Natural patterns (stone...)	51	25,5 %	25,5 %	83,5 %
Abstract Patterns	33	16,5 %	16,5 %	100,0 %
Total	200	100%	100%	100%

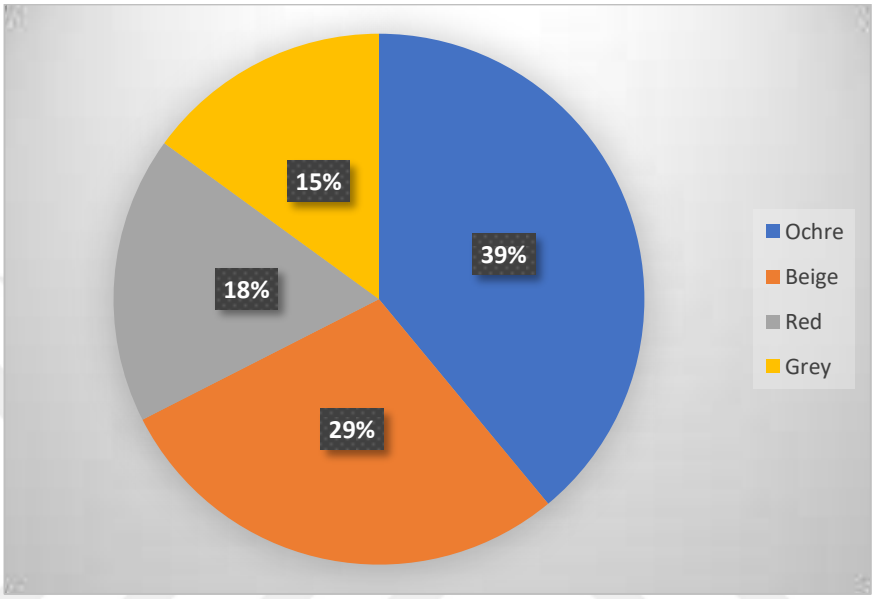


5.1.2. Most attractive colors for facades

When asked about the preferred colors for building facades, ochre is the most popular color with 39% of responses, followed closely by beige (28.5%). These two colors are perfectly consistent with the traditional palette used in Burkinabe vernacular architecture. Red (17.5%) and grey (15%) are less popular. The low adhesion rate to grey could be explained by its association with the raw and industrial aspect of conventional concrete, which is often considered unwarm or impersonal.

Table 5.2: Table of Most Attractive Colors for Facades

Favorite color	Frequency	Percentage	Valid Percentage	Cumulative percentage
Ochre	78	39,0 %	39,0 %	39,0 %
Beige	57	28,5 %	28,5 %	67,5 %
Red	35	17,5 %	17,5 %	85,0 %
Grey	30	15,0 %	15,0 %	100,0 %
TOTAL	200	100%	100%	100%

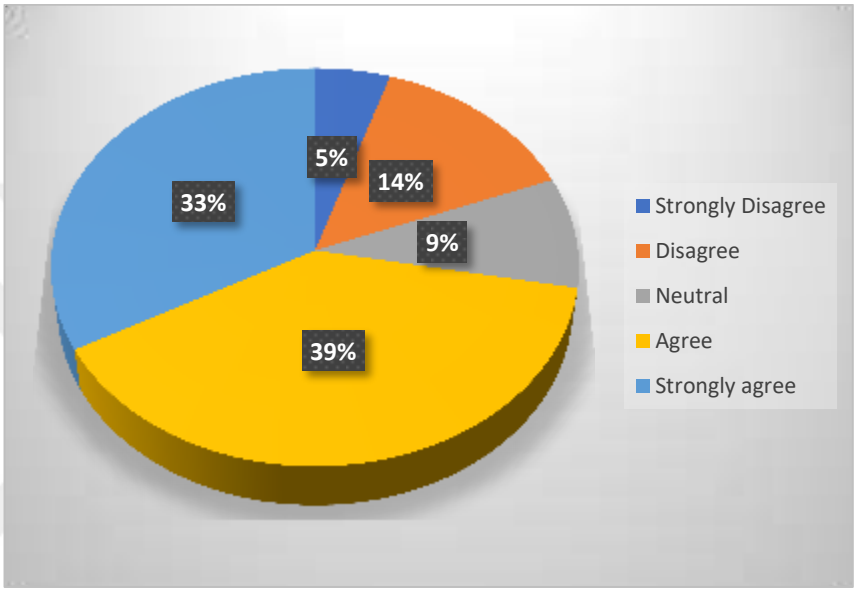


5.1.3. Can traditional motifs strengthen cultural identity?

When asked about the ability of traditional patterns to reinforce cultural identity when applied to stamped concrete, an overwhelming majority were in favour. Indeed, 39% of respondents answered "agree", and 33% "strongly agree", i.e. 72% of positive opinions in total. This reflects a clear perception that stamped concrete, if it integrates local cultural elements, can become a powerful tool for enhancing identity.

Table 5.3: Table of Perceptions on the Role of Traditional Motifs in Strengthening Cultural Identity

Level of agreement (Likert)	Frequency	Percentage	Valid Percentage	Cumulative percentage
Strongly disagree	10	5,0 %	5,0 %	5,0 %
Disagree	28	14,0 %	14,0 %	19,0 %
Neutral	18	9,0 %	9,0 %	28,0 %
Agree	78	39,0 %	39,0 %	67,0 %
Strongly agree	66	33,0 %	33,0 %	100,0 %
TOTAL	200	100%	100%	100%

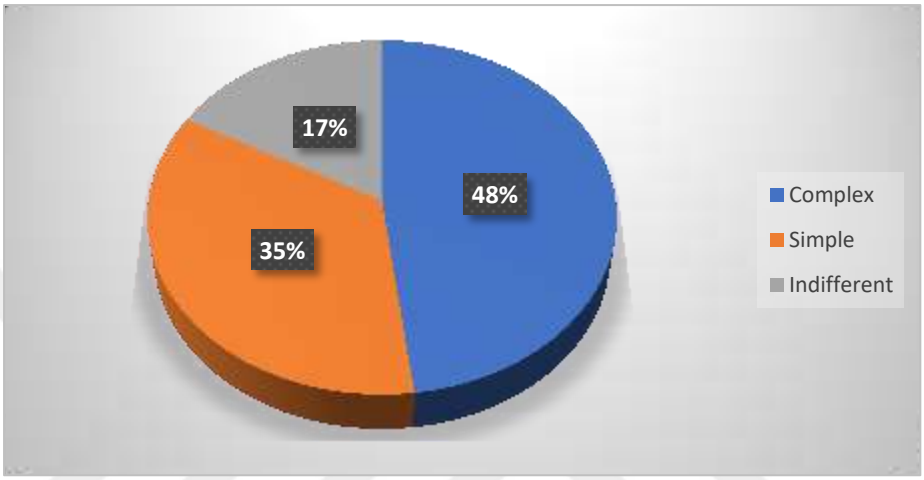


5.1.4. Preference for simple or complex designs

The next question explored respondents' preference for simple or complex reasons. The results reveal a clear preference for complex shapes (48%), reflecting a taste for ornamental richness and graphic density. Simple reasons are chosen by 35% of respondents, while 17% say they are not interested. This result could reflect the influence of traditional wall frescoes, often loaded with symbols and details.

Table 5.4: Table of Respondents' Preferences for Simple or Complex Designs

Preferred pattern type	Frequency	Percentage	Valid Percentage	Cumulative percentage
Complex	96	48,0 %	48,0 %	48,0 %
Simple	70	35,0 %	35,0 %	83,0 %
Indifferent	34	17,0 %	17,0 %	100,0 %
TOTAL	200	100%	100%	100%

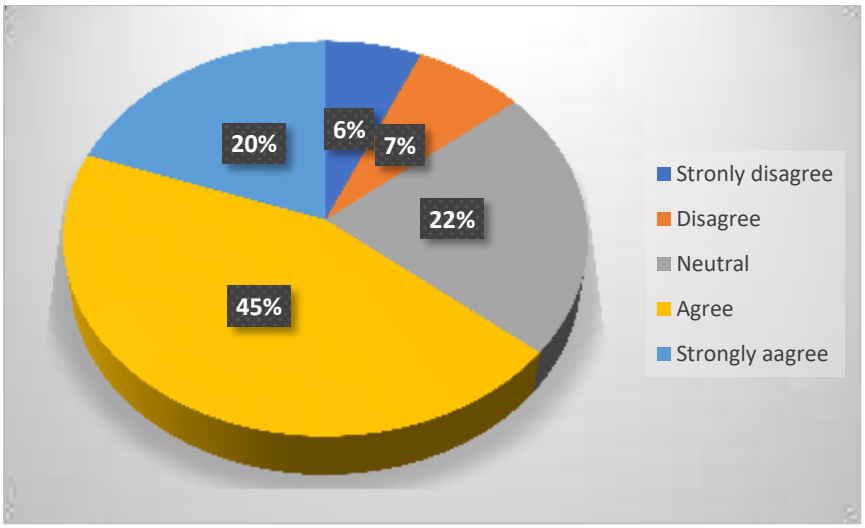


5.1.5. Aesthetic attractiveness of stamped concrete compared to conventional concrete

Finally, the participants were asked about the attractiveness of stamped concrete compared to traditional concrete. The results indicate that 64% of respondents find stamped concrete more aesthetically pleasing (44.5% agree and 19.5% strongly agree). This observation supports the previous observations: texture, color and pattern play a central role in the positive perception of the material.

Table 5.5: Table Comparing the Aesthetic Attractiveness of Stamped and Conventional Concrete

Level of agreement (Likert)	Frequency	Percentage	Valid Percentage	Cumulative percentage
Strongly disagree	13	6,5 %	6,5 %	6,5 %
Disagree	15	7,5 %	7,5 %	14,0 %
Neutral	44	22,0 %	22,0 %	36,0 %
Agree	89	44,5 %	44,5 %	80,5 %
Strongly agree	39	19.5%	19.5%	39%
TOTAL	200	100%	100%	100%

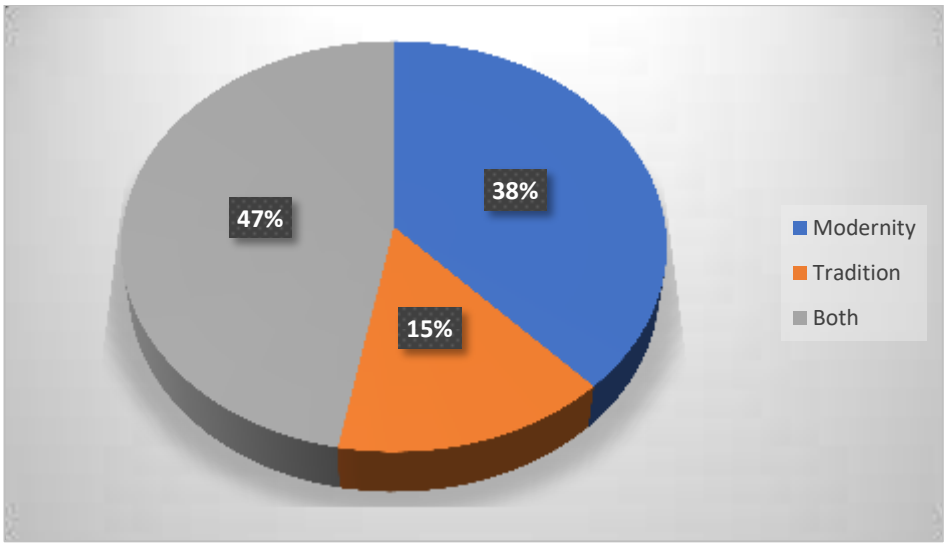


5.1.6. Stylistic association of stamped concrete: modernity, tradition or both?

The sixth question of the questionnaire aimed to explore the perception of style that stamped concrete conveys: is it a material that embodies modernity, tradition or a combination of both? The results indicate a relative majority in favor of a hybrid vision: 47% of respondents consider stamped concrete to represent both modernity and tradition. This nuanced positioning suggests the material's ability to synthesize innovation and rootedness. Moreover, 38% of those surveyed associate it exclusively with modernity, while only 15% see it as a purely traditional expression. This result testifies to a certain cultural aggiornamento, in which new materials are not necessarily perceived as foreign, but as reconfigurable within local codes.

Table 5.6: Table of Perceived Style of Stamped Concrete: Modern, Traditional, or Both

Stylistic association	Frequency	Percentage	Valid Percentage	Cumulative percentage
Modernity	76	38,0 %	38,0 %	38,0 %
Tradition	30	15,0 %	15,0 %	53,0 %
Both	94	47,0 %	47,0 %	100,0 %

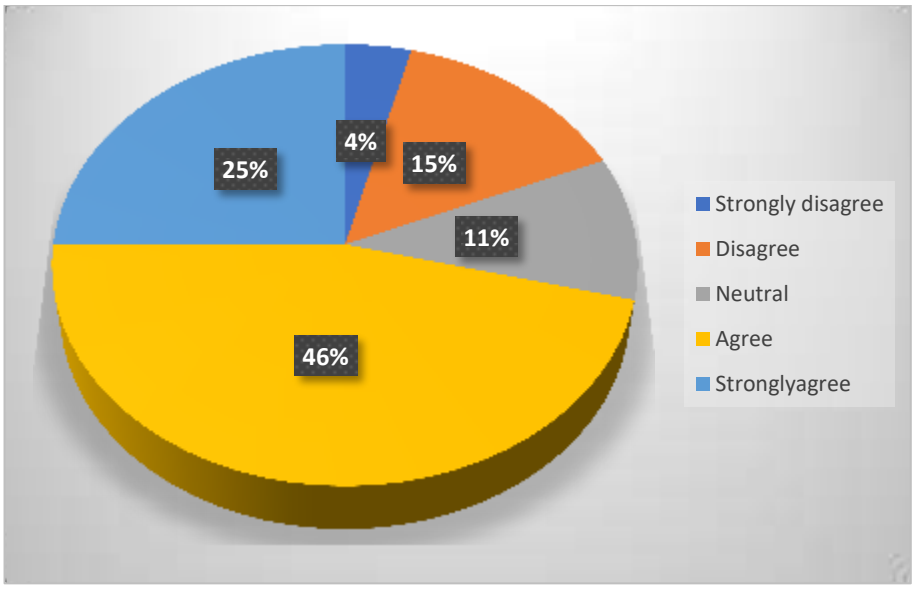


5.1.7. Integration of stamped concrete into the Burkinabe urban landscape

Finally, the tenth question concerned the perceived compatibility of stamped concrete with the urban environment of Burkina Faso. Here again, the results are significant: 71% of respondents (46% "agree", 25% "strongly agree") believe that stamped concrete fits well into the local urban landscape. This is important because it reflects not only an aesthetic appreciation, but also a social and contextual validation of the material in contemporary forms of the city. Only 4% of respondents express a frank disagreement, while 10.5% position themselves in the middle, implying hesitation or a lack of knowledge of the material in real situations.

Table 5.7: Table on the Integration of Stamped Concrete into the Burkinabe Urban Landscape

Level of agreement (Likert)	Frequency	Percentage	Valid Percentage	Cumulative percentage
Strongly disagree	8	4,0 %	4,0 %	4,0 %
Disagree	29	14,5 %	14,5 %	18,5 %
Neutral	21	10,5 %	10,5 %	29,0 %
Agree	92	46,0 %	46,0 %	75,0 %
Strongly agre	50	25,0 %	25,0 %	100,0 %
TOTAL	200	100%	100%	100%

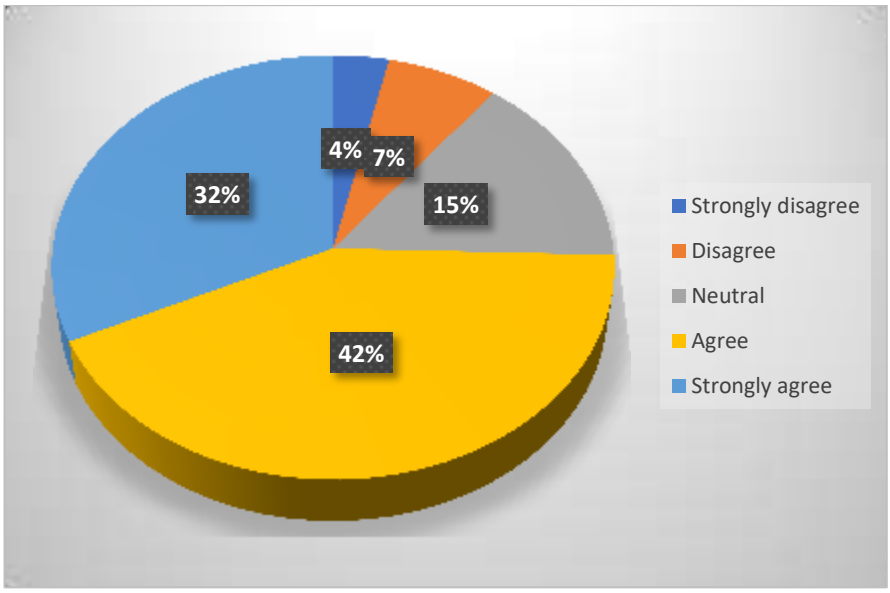


5.1.8. Can stamped concrete preserve Burkinabe architectural heritage?

Question 7 aimed to assess the extent to which respondents believe that stamped concrete can contribute to the preservation of traditional architecture in Burkina Faso. The results are unequivocal: 74.5% of participants agree or strongly agree with this idea, reflecting a largely favorable view of the integration of this material into heritage continuity. Only 10.5% of respondents disagree, while 15% remain neutral. This distribution reveals that stamped concrete, when used with culturally appropriate motifs, is perceived as a bridge between the architectural past and present.

Table 5.8: Table of Perceptions on the Potential of Stamped Concrete to Preserve Burkinabe Architectural Heritage

Level of agreement (Likert)	Frequency	Percentage	Valid Percentage	Cumulative percentage
Strongly disagree	7	3,5 %	3,5 %	3,5 %
Disagree	14	7,0 %	7,0 %	10,5 %
Neutral	30	15,0 %	15,0 %	25,5 %
Agree	85	42,5 %	42,5 %	68,0 %
Strongly agree	64	32,0 %	32,0 %	100,0 %
TOTAL	200	100%	100%	100%

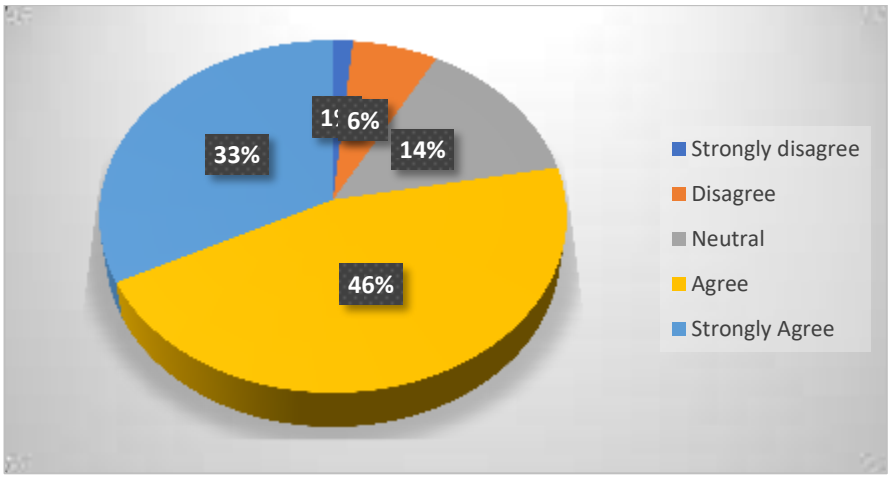


5.1.9. Pride in living in a house with traditional stamped concrete patterns

The next question addressed the emotional and identity dimension: would the respondents be proud to live in a house decorated with cultural motifs made of stamped concrete? The answer is clear: 78% of respondents say they are in favour of this idea, including 32.5% very strongly. These results show that the material not only arouses an aesthetic or functional appreciation, but also strikes a sensitive chord, that of identity attachment and self-recognition in the inhabited space.

Table 5.9: Table of Pride in Living in Houses with Traditional Stamped Concrete Patterns

Level of agreement (Likert)	Frequency	Percentage	Valid Percentage	Cumulative percentage
Strongly disagree	3	1,5 %	1,5 %	1,5 %
Disagree	13	6,5 %	6,5 %	8,0 %
Neutral	28	14,0 %	14,0 %	22,0 %
Agree	91	45,5 %	45,5 %	67,5 %
Strongly agree	65	32,5 %	32,5 %	100,0 %
TOTAL	200	100%	100%	100%

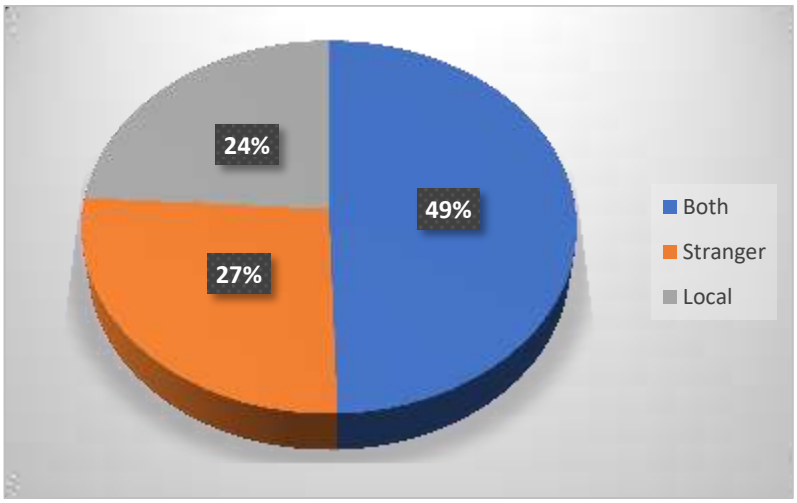


5.1.10. Is stamped concrete perceived as local or foreign?

The last question in this section directly questions the cultural perception of the material. Is it considered a foreign product, a local product, or a mixture of the two? The results reveal a nuanced vision: 49.5% of respondents consider it to be both local and foreign, which suggests a gradual appropriation of the material through a process of cultural hybridization. 26.5% continue to perceive it as a foreign material, while 24% see it as a local material. This division testifies to an ongoing dynamic of appropriation, where the sense of "local" is evolving.

Table 5.10: Table on Whether Stamped Concrete Is Perceived as Local or Foreign

Material perception	Frequency	Percentage	Valid Percentage	Cumulative percentage
Both	99	49,5 %	49,5 %	49,5 %
Stranger	53	26,5 %	26,5 %	76,0 %
Local	48	24,0 %	24,0 %	100,0 %
Total	200	100%	100%	100%

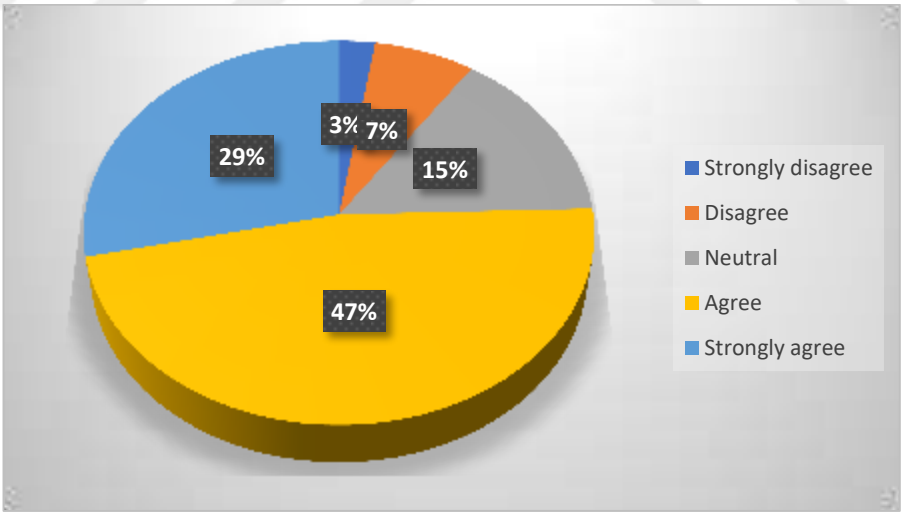


5.1.11. Is stamped concrete perceived as more durable than conventional concrete?

The majority of respondents (75.5%) believe that stamped concrete is more durable than conventional concrete. 47% agree and 28.5% strongly agree. Only 2.5% of respondents expressed a clear disagreement. These figures show a fairly high level of confidence in the strength and longevity of the material, even if a significant proportion (15%) remain cautious or undecided.

Table 5.11: Table of Perceptions on the Durability of Stamped Concrete Compared to Conventional Concrete

Niveau d'accord (Likert)	Frequency	Percentage	Valid Percentage	Cumulative percentage
Strongly disagree	5	2,5 %	2,5 %	2,5 %
Disagree	14	7,0 %	7,0 %	9,5 %
Neutral	30	15,0 %	15,0 %	24,5 %
Agree	94	47,0 %	47,0 %	71,5 %
Strongly agree	57	28,5 %	28,5 %	100,0 %
TOTAL	200	100%	100%	100%

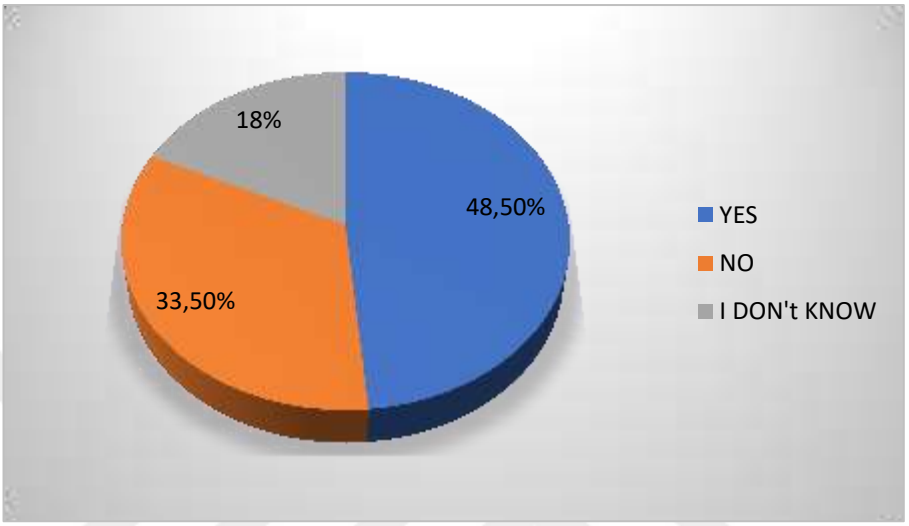


5.1.12. Concerns about the weathering resistance of stamped concrete

When it comes to climate resilience, the results are more nuanced. 48.5% of respondents say they have concerns about the ability of stamped concrete to withstand rain, heat or dust, while 33.5% do not share this fear. A significant proportion (18%) say they do not know, a sign that technical knowledge of the material remains limited in certain sections of the population.

Table 5.12: Table on Weathering Resistance Concerns of Stamped Concrete

Answer	Frequency	Percentage	Valid Percentage	Cumulative percentage
Yes	97	48,5 %	48,5 %	48,5 %
No	67	33,5 %	33,5 %	82,0 %
I don't know	36	18,0 %	18,0 %	100,0 %
TOTAL	200	100%	100%	100%

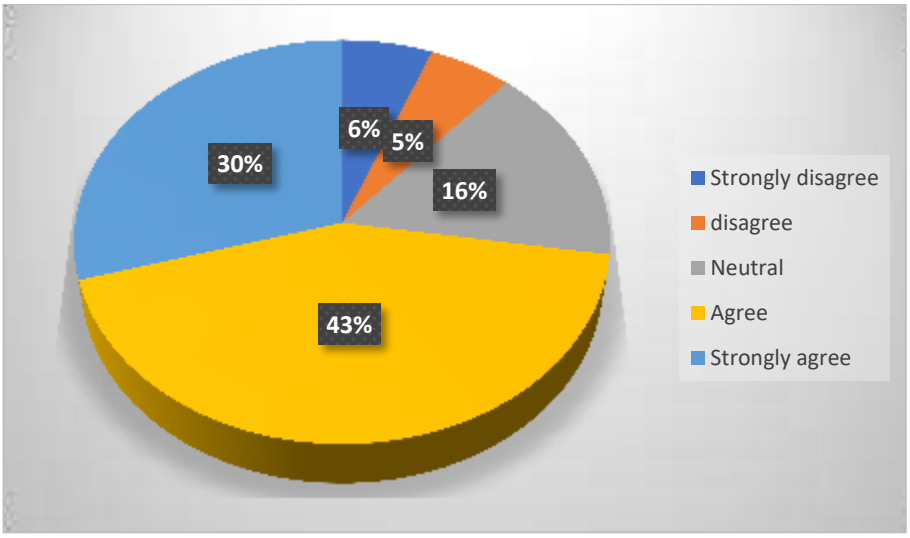


5.1.13. Is stamped concrete suitable for the hot and dry climate of Burkina Faso?

Despite the concerns mentioned above, a large majority of respondents (72.5%) consider stamped concrete to be suitable for the country's hot and dry climate. This could reflect positive local experiences or growing confidence in the technical performance of the material. However, 11.5% express doubts, and 16% remain neutral.

Table 5.13: Table of Perceptions on the Suitability of Stamped Concrete for Burkina Faso's Hot and Dry Climate

Level of agreement (Likert)	Frequency	Percentage	Valid Percentage	Cumulative percentage
Strongly disagree	12	6,0 %	6,0 %	6,0 %
Disagree	11	5,5 %	5,5 %	11,5 %
Neutral	32	16,0 %	16,0 %	27,5 %
Agree	86	43,0 %	43,0 %	70,5 %
Strongly agree	59	29,5 %	29,5 %	100,0 %
TOTAL	200	100%	100%	100%

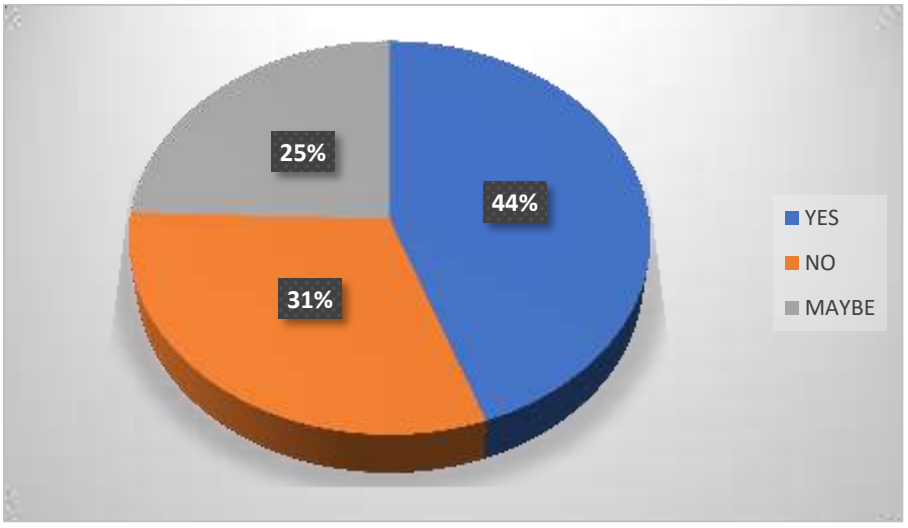


5.1.14. Would you be willing to pay more for more durable stamped concrete?

This question directly addresses the willingness to pay for sustainability. 44.5% of respondents say they are willing to pay more if stamped concrete proves to be more durable, 31% refuse, while 24.5% are undecided. This result suggests that there is a real potential market for better quality construction, provided that sustainability is proven and clearly communicated.

Table 5.14: Table on Willingness to Pay Extra for Durable Stamped Concrete

Answer	Frequency	Percentage	Valid Percentage	Cumulative percentage
Yes	89	44,5 %	44,5 %	44,5 %
No	62	31,0 %	31,0 %	75,5 %
Maybe	49	24,5 %	24,5 %	100,0 %
TOTAL	200	100%	100%	100%

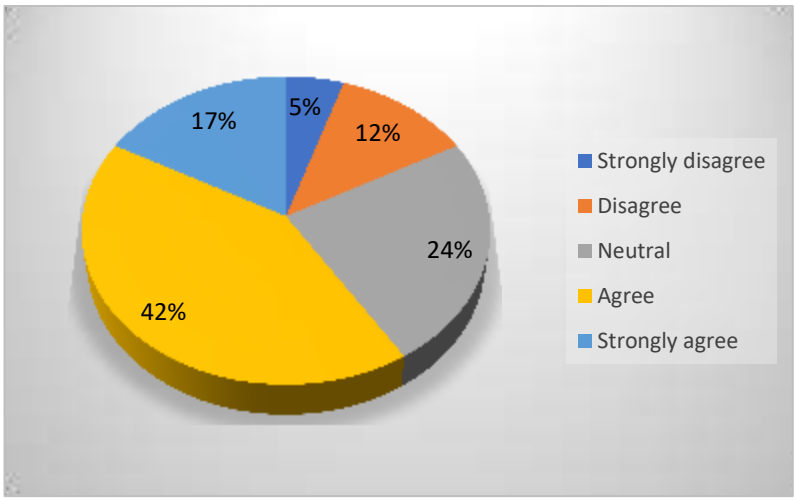


5.1.15. Does stamped concrete require more maintenance than traditional materials?

The perception of the maintenance required varies greatly. 42% of respondents think that stamped concrete requires more maintenance, but 24% do not know how to say. About 17% go so far as to say that it requires much more effort than conventional materials. These figures underline the importance of adequate technical training and clear communication on good practices for laying and protecting the material.

Table 5.15: Table of Perceptions on Maintenance Requirements of Stamped Concrete vs. Traditional Materials

Level of agreement (Likert)	Frequency	Percentage	Valid Percentage	Cumulative percentage
Strongly disagree	10	5,0 %	5,0 %	5,0 %
Disagree	24	12,0 %	12,0 %	17,0 %
Neutral	48	24,0 %	24,0 %	41,0 %
Agree	84	42,0 %	42,0 %	83,0 %
Strongly agree	34	17,0 %	17,0 %	100,0 %
TOTAL	200	100%	100%	100%



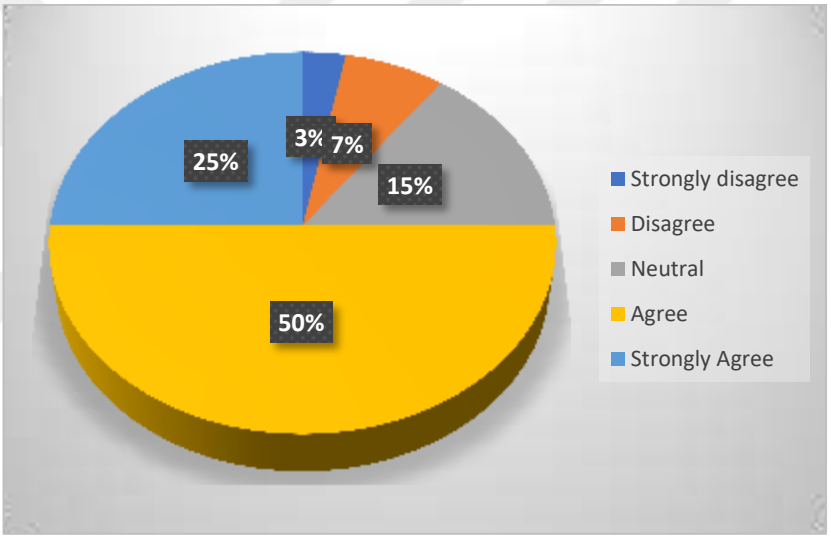
5.1.16. Can stamped concrete generate local jobs?

Question 16 explores the economics of stamped concrete, in particular its perceived ability to boost local employment. The results are very revealing: 75% of respondents believe that the use of stamped concrete can promote job creation, of which 50% "agree" and 25% "strongly agree". Conversely, only 10% disagree, while

15% are neutral. This result demonstrates that the development of local stamped concrete manufacturing and application sectors could be seen as a lever for inclusive growth.

Table 5.16: Table on Stamped Concrete and Local Job Creation

Level of agreement (Likert)	Frequency	Percentage	Valid Percentage
Strongly disagree	6	3,0 %	3,0 %
Disagree	14	7,0 %	10,0 %
Neutral	30	15,0 %	25,0 %
Agree	100	50,0 %	75,0 %
Strongly agree	50	25,0 %	100,0 %
TOTAL	200	100%	100%

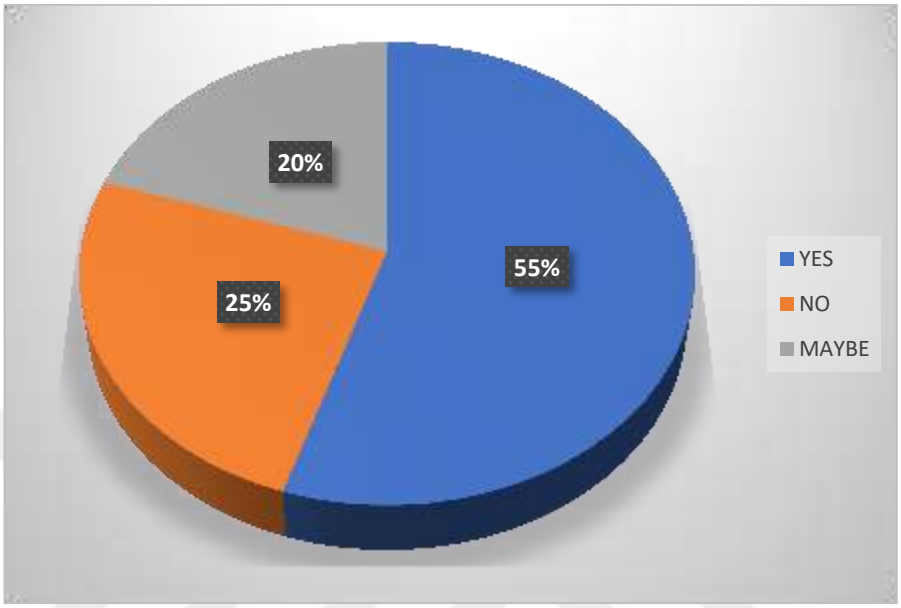


5.1.17. Interest in stamped concrete training

The next question asked about respondents' interest in training to learn how to use stamped concrete. The results indicate a very strong interest, with 55% saying "yes", 20% saying "maybe" and only 25% saying "no". This result shows that the appropriation of the material by local populations is highly dependent on the availability of training opportunities. It is therefore a strategic area of development, both for local authorities and for construction companies.

Table 5.17: Table of Interest in Training on Stamped Concrete Techniques

Answer	Estimated frequency	Percentage
Yes	110	55,0 %
No	50	25,0 %
Maybe	40	20,0 %
TOTAL	200	100%

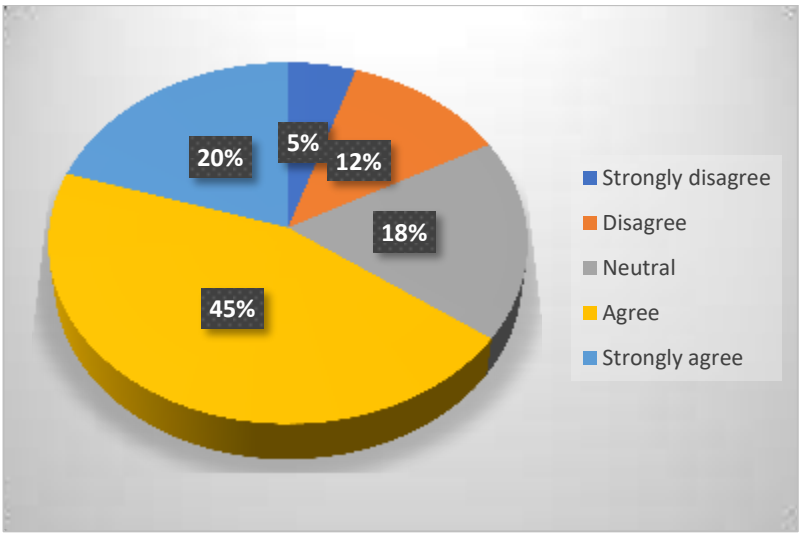


5.1.18. Financial accessibility of stamped concrete for the majority of Burkinabè

This question was intended to measure whether stamped concrete is considered affordable. The results reveal that 65% of participants believe that it is accessible (45% "agree", 20% "strongly agree"). In contrast, 17% of respondents think the opposite. A significant proportion (18%) remains neutral, suggesting a still unclear perception of the material's real costs. This observation calls for more transparency on prices, especially in comparison with conventional materials.

Table 5.18: Table on the Financial Accessibility of Stamped Concrete for the Majority of Burkinabè

Level of agreement (Likert)	Estimated frequency	Percentage
Strongly disagree	10	5,0 %
Disagree	24	12,0 %
Neutral	36	18,0 %
Agree	90	45,0 %
Strongly agree	40	20,0 %
TOTAL	200	100%

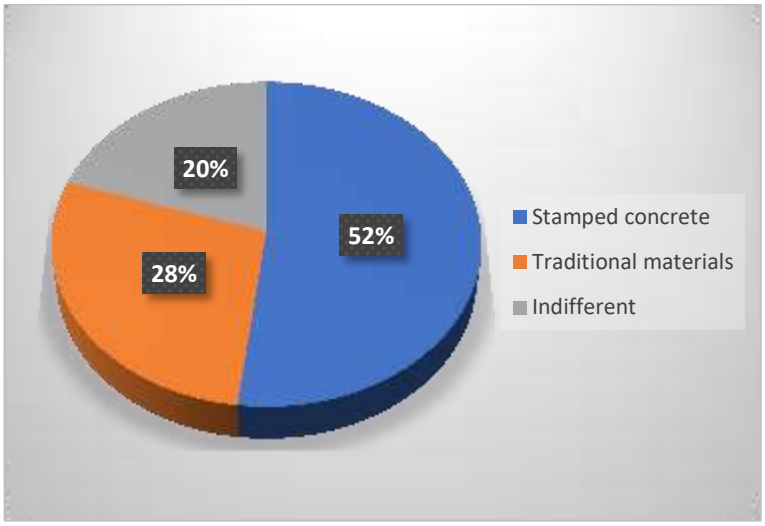


5.1.19. Investment preference: stamped concrete or traditional materials?

When asked about their preference for investing in a home, 52% of respondents would opt for stamped concrete, compared to 28% for traditional materials. 20% are indifferent. These figures show a generational and aesthetic turning point: although classic materials retain a certain appeal, stamped concrete is emerging as a modern and rewarding alternative.

Table 5.19: Table on Preferred Construction Investment: Stamped Concrete or Traditional Materials

Investment Preference	Estimated frequency	Percentage
Stamped concrete	104	52,0 %
Traditional materials	56	28,0 %
Indifferent	40	20,0 %
TOTAL	200	100%

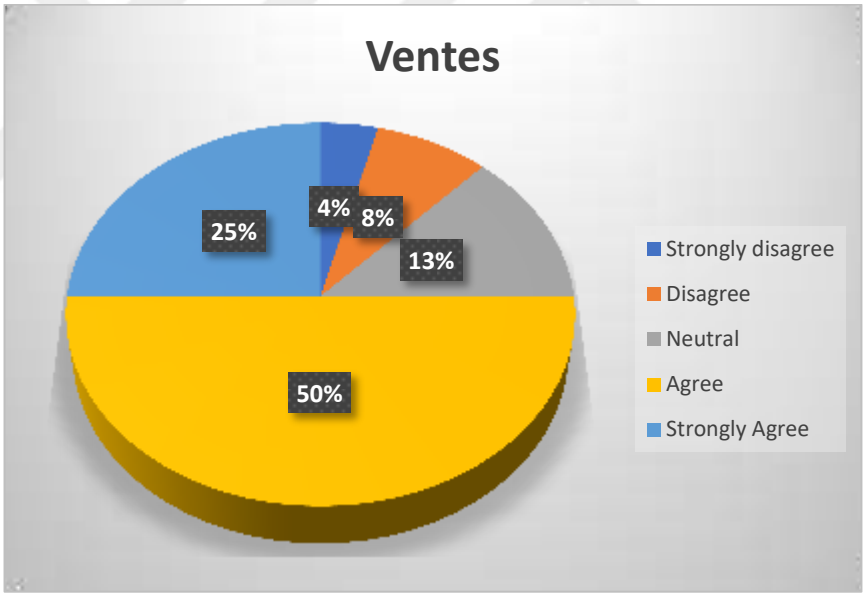


5.1.20. Reducing dependence on imported materials

Finally, question 20 assesses whether stamped concrete is perceived as a solution to reduce dependence on imported materials. Again, the results are positive: 75% of respondents agree or strongly agree. This result reinforces the idea that stamped concrete, if produced locally, could boost economic sovereignty in the construction sector.

Table 5.20: Table of Efforts to Reduce Reliance on Imported Materials

Level of agreement (Likert)	Estimated frequency	Percentage
Strongly disagree	8	4,0 %
Disagree	16	8,0 %
Neutral	26	13,0 %
Agree	100	50,0 %
Strongly agree	50	25,0 %
TOTAL	200	100%

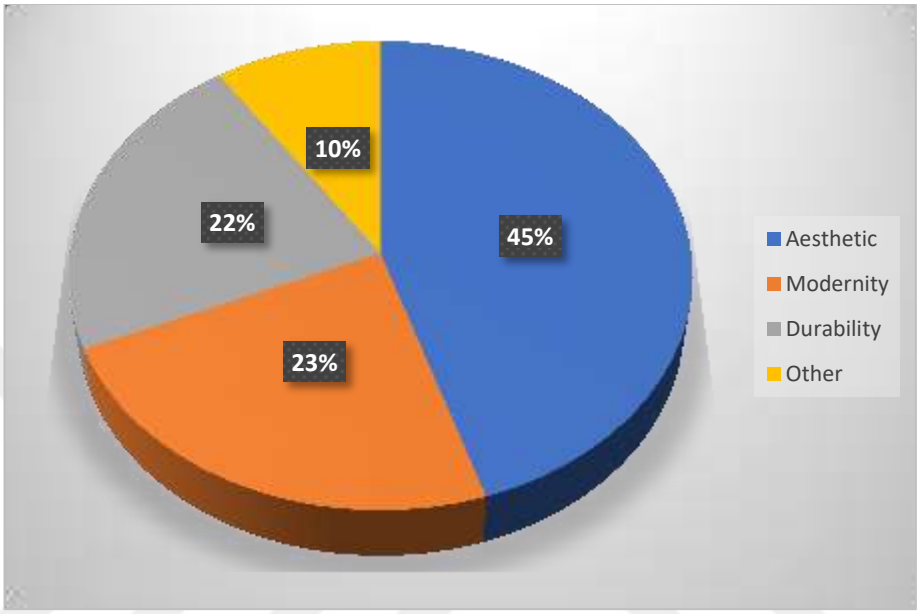


5.1.21. Perceived benefits of stamped concrete

When asked about the main advantages of stamped concrete, respondents highlight aesthetics in 45% of cases, followed by modernity (23.5%) and durability (22%). These results reveal that stamped concrete is primarily perceived as a visually enhancing material, while offering important structural qualities. Only 9.5% mention other aspects such as ease of maintenance or innovation.

Table 5.21: Table Highlighting the Perceived Advantages of Stamped Concrete

Main advantage	Frequency	Percentage
Aesthetic	90	45,0 %
Modernity	47	23,5 %
Durability	44	22,0 %
Other	19	9,5 %
TOTAL	200	100%

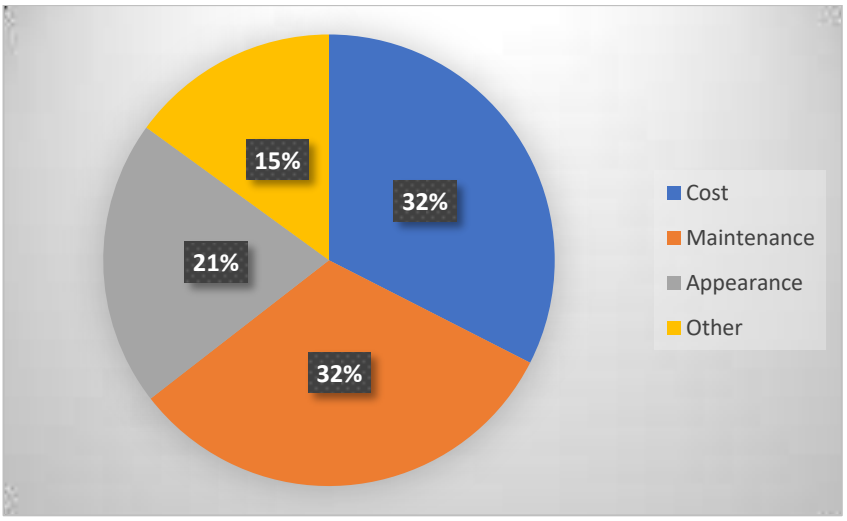


5.1.22. Perceived disadvantages of stamped concrete

As far as limitations are concerned, two aspects are almost equal: cost (32.5%) and maintenance (32%). The fact that the cost is considered high underlines a still real economic obstacle to the democratization of the material. In addition, 20.5% of respondents cite appearance as a weak point, which can be explained by negative experiences or poorly executed achievements.

Table 5.22: Table Highlighting the Perceived Drawbacks of Stamped Concrete

Main disadvantage	Frequency	Percentage
Cost	65	32,5 %
Maintenance	64	32,0 %
Appearance	41	20,5 %
Other	30	15,0 %
TOTAL	200	100%

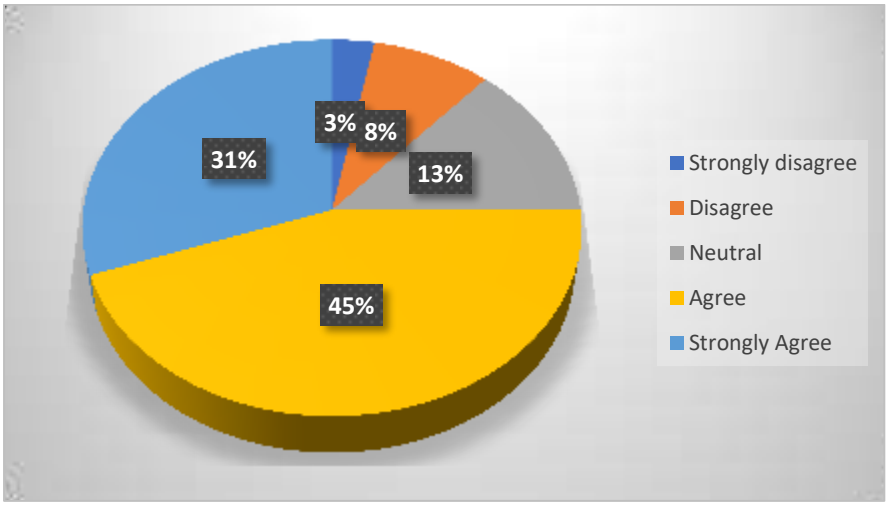


5.1.23. Recommendation of stamped concrete to others

To the question "Would you recommend stamped concrete?", 75% of respondents answered positively: 44.5% "agree" and 30.5% "strongly agree". Only 11.5% are against this idea, while 13.5% remain neutral. These figures reflect a strong social trust in the material, which provides a solid basis for its wider deployment.

Table 5.23: Table of Willingness to Recommend Stamped Concrete to Others

Level of agreement (Likert)	Frequency	Percentage	Accumulation
Strongly disagree	6	3,0 %	3,0 %
Disagree	17	8,5 %	11,5 %
Neutral	27	13,5 %	25,0 %
Agree	89	44,5 %	69,5 %
Strongly agree	61	30,5 %	100,0 %
TOTAL	200	100%	100%

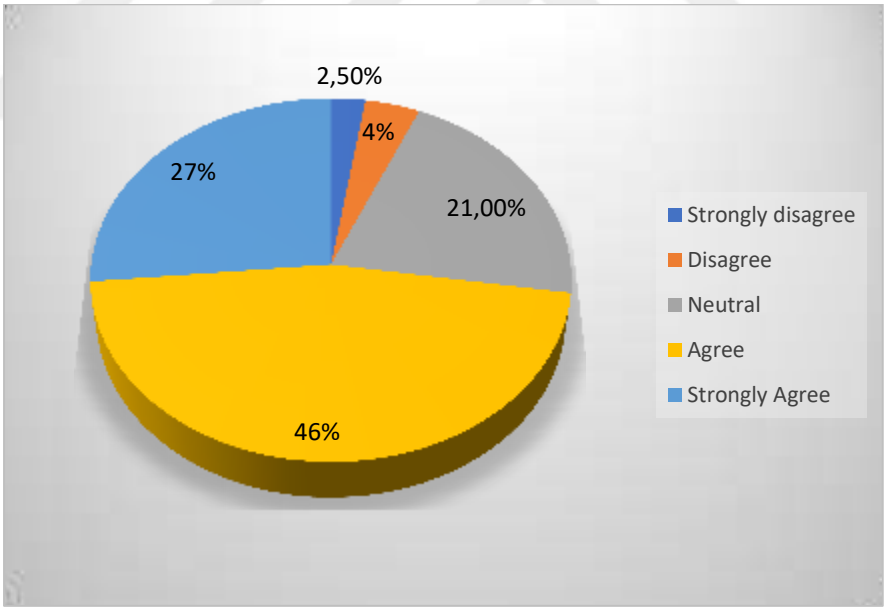


5.1.24. Use of stamped concrete for public buildings

Another key question was whether respondents believe stamped concrete is suitable for use in public buildings (schools, hospitals, etc.). The answer is largely positive: 46% "agree" and 26.5% "strongly agree", i.e. 72.5% of favourable responses. This shows that the material is not limited to residential use, but benefits from a perceived legitimacy for collective uses.

Table 5.24: Table of Perceptions Regarding the Use of Stamped Concrete for Public Infrastructure

Level of agreement (Likert)	Frequency	Percentage	Accumulation
Strongly disagree	5	2,5 %	2,5 %
Disagree	8	4,0 %	6,5 %
Neutral	42	21,0 %	27,5 %
Agree	92	46,0 %	73,5 %
Strongly agree	53	26,5 %	100,0 %
TOTAL	200	100%	100%



5.1.25. Recommendations made by respondents

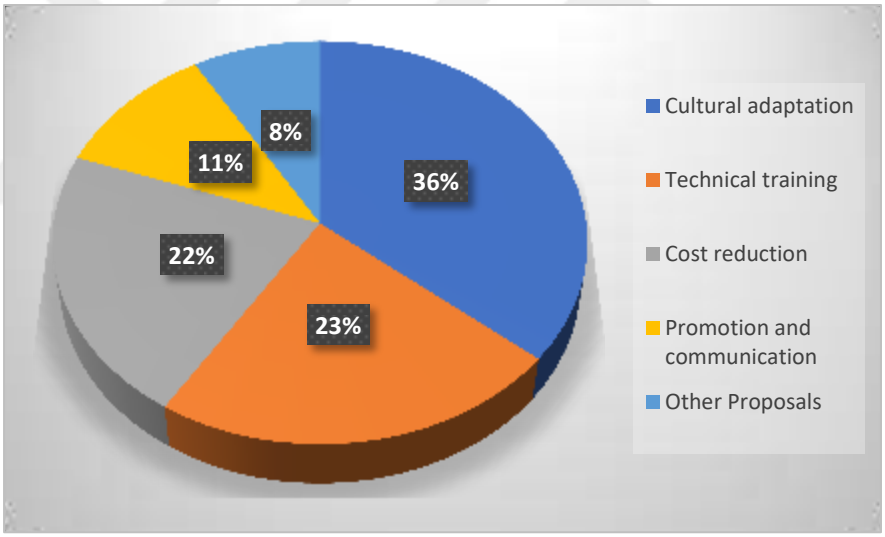
In the last open-ended question, the respondents proposed areas for improvement for a better integration of stamped concrete in Burkinabe architecture. The following themes stand out :

- 36% recommend a cultural adaptation of the motifs, in accordance with local aesthetic codes.

- 23% insist on the need for technical training to improve the quality of implementation.
- 21.5% suggest a reduction in costs to make it more accessible.
- 11% call for the material to be promoted more widely, especially by the media and the authorities.
- Finally, 8.5% make various proposals (incentives, subsidies, etc.)

Table 5.25: **Table of Recommendations Provided by Respondents**

Recommendation Theme	Frequency	Percentage
Cultural Adaptation	72	36,0 %
Technical Training	46	23,0 %
Cost reduction	43	21,5 %
Promotion and communication	22	11,0 %
Other proposals	17	8,5 %
TOTAL	200	100%

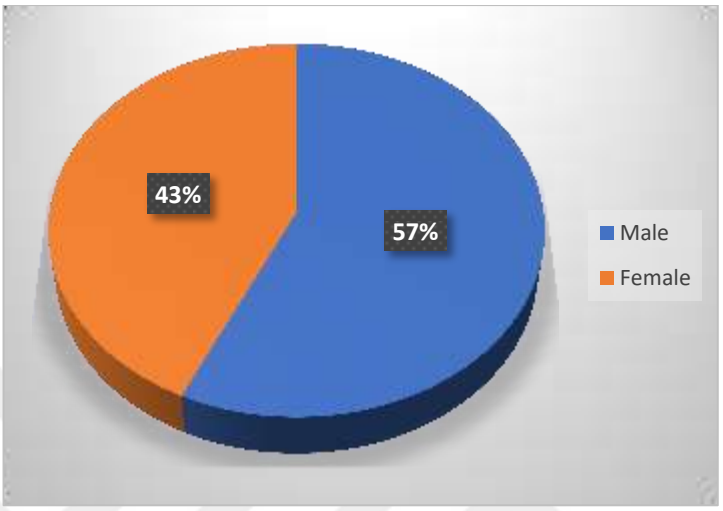


5.1.26. Gender distribution of respondents

Of the 200 participants in the survey, the gender distribution indicates a slight male majority. 57% of respondents are men, compared to 43% women. This distribution reflects a certain parity but also a slight imbalance, perhaps related to the technical nature of the theme addressed. However, female participation remains significant, which shows a cross-cutting interest in issues related to housing and innovative materials.

Table 5.26: **Table of Gender Distribution of Respondents**

Gender	Frequency	Percentage
Male	114	57 %
Female	86	43 %
TOTAL	200	100%

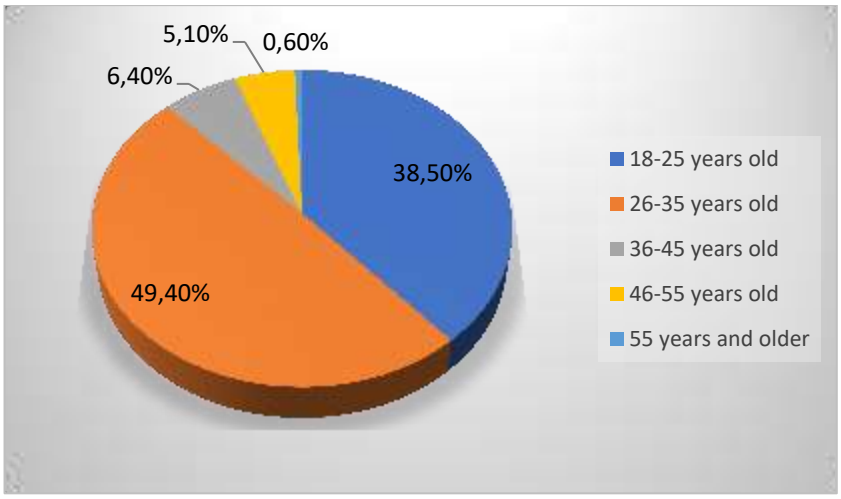


5.1.27. Age Groups of Respondents

The majority of respondents are in the 26-35 age group (49.4%), followed by 18–25-year-olds (38.5%). This predominance of young adults shows a marked interest of the new generations in architectural innovations. Older age groups are less represented, reflecting a generational bias in the sample.

Table 5.27: **Table Showing the Age Distribution of Respondents**

Age range	Frequency	Percentage
18-25 years old	77	38,5 %
26-35 years old	99	49,4 %
36-45 years old	13	6,4 %
46-55 years old	10	5,1 %
55 years and older	1	0,6 %
TOTAL	200	100%

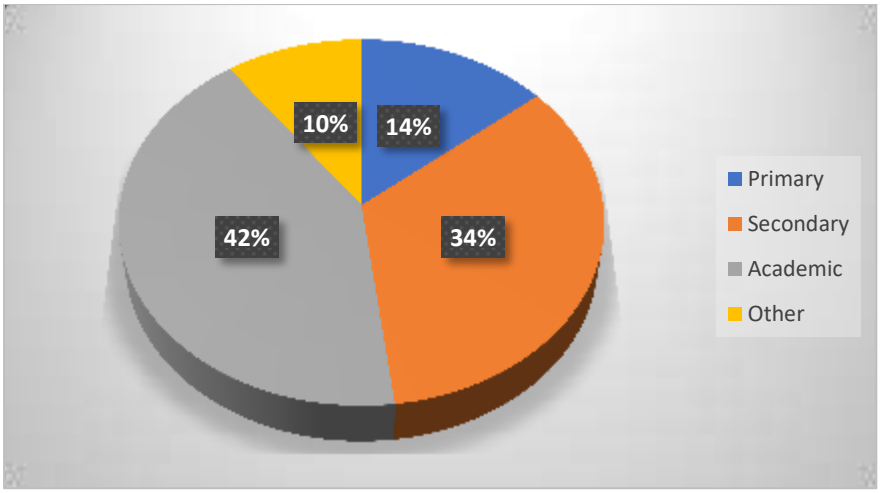


5.1.28. Respondents' education level

The results reveal that 42% of respondents have a university degree, followed by 34% with a high school level. This relatively educated population is well positioned to assess the technical and cultural benefits of stamped concrete. The understanding of the questionnaire is therefore generally ensured.

Table 5.28: Table Showing the Educational Background of Respondents

Level of education	Frequency	Percentage
Primary	28	14 %
Secondary	68	34 %
Academic	84	42 %
Other	20	10 %
TOTAL	200	100%

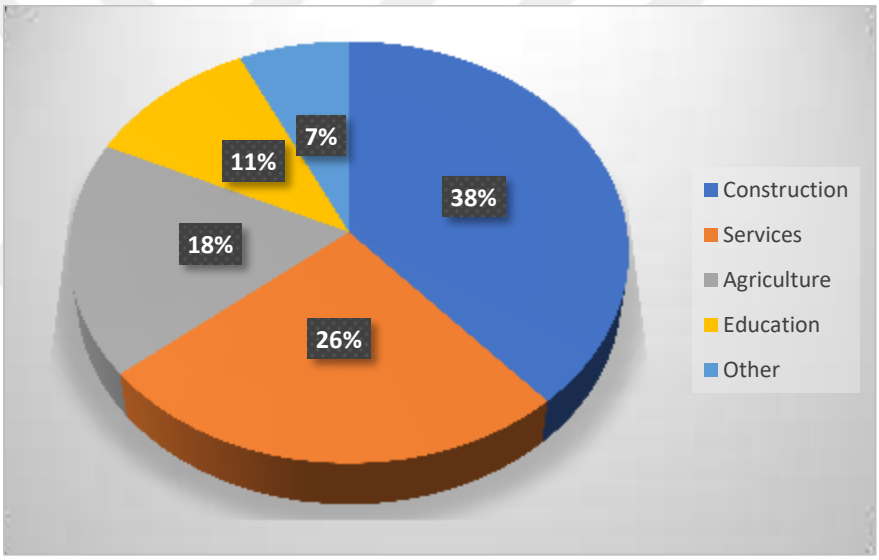


5.1.29. Respondents' lines of business

The most represented sectors are building/construction (38.5%), services (25.5%), followed by agriculture and education. This distribution illustrates the socio-professional diversity of the respondents, with a strong involvement of the actors directly concerned by construction materials.

Table 5.29: **Table Showing the Professional Sectors of Respondents**

Industry	Frequency	Percentage
Construction	77	38,5 %
Services	51	25,5 %
Agriculture	36	18,0 %
Education	22	11,0 %
Other	14	7,0 %
TOTAL	200	100%

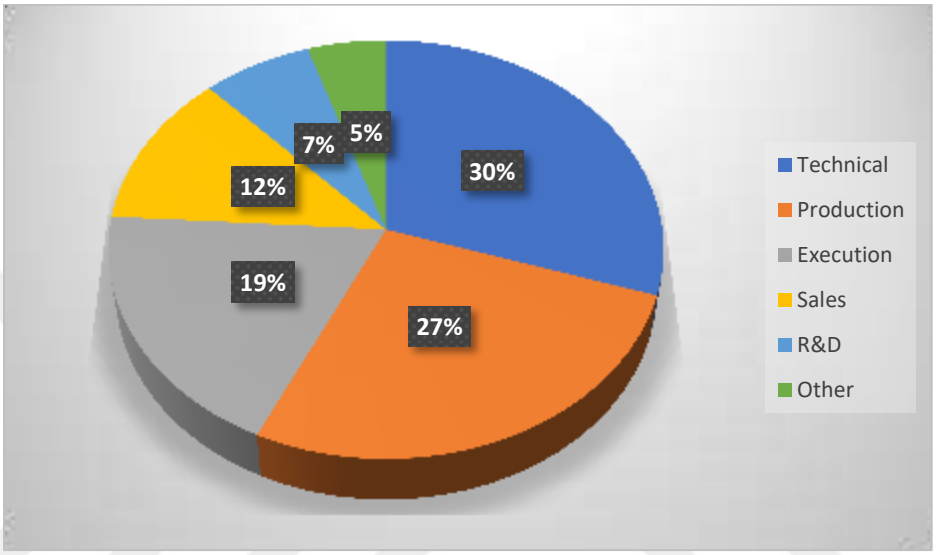


5.1.30. Professional function

The most common functions are in the technical/engineering sector (30%) and production/operations (27%). There is also a significant proportion of managers and sales agents, which highlights a plurality of profiles concerned by the use of stamped concrete.

Table 5.30: Table Showing the Professional Roles of Respondents

Function	Frequency	Percentage
Technical/Engineering	60	30,0 %
Production/Operations	54	27,0 %
Executive/Management	38	19,0 %
Sales/Marketing	24	12,0 %
R&D	14	7,0 %
Other	10	5,0 %
TOTAL	200	100%

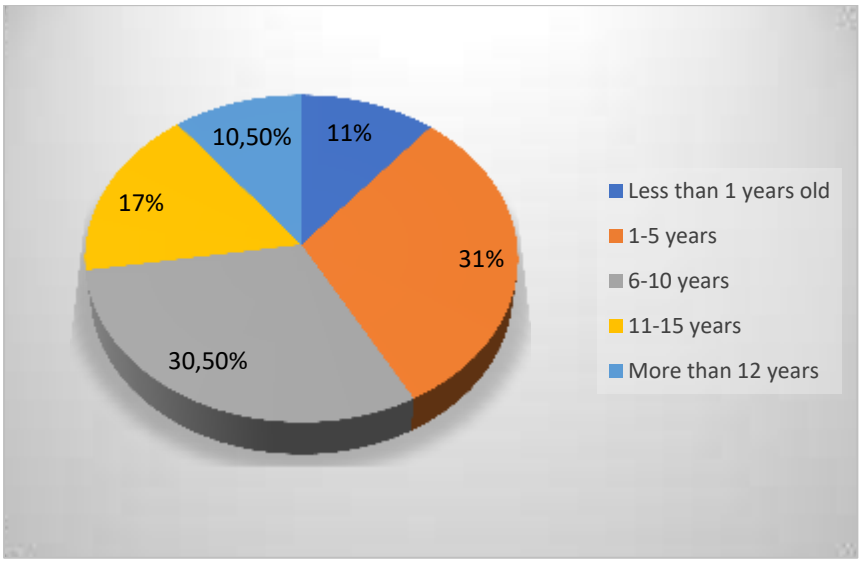


5.1.31. Years of professional experience

The majority of respondents have between 1 and 10 years of experience (61.5%), which shows a relatively young sample from a professional point of view. This corresponds to the dominant age groups and confirms the respondents' ability to project themselves into real estate investment choices.

Table 5.31: Table of Respondents by Years of Professional Experience

Experiment	Frequency	Percentage
Less than 1 year old	22	11,0 %
1–5 years	62	31,0 %
6–10 years	61	30,5 %
11–15 years	34	17,0 %
More than 15 years	21	10,5 %
TOTAL	200	100%

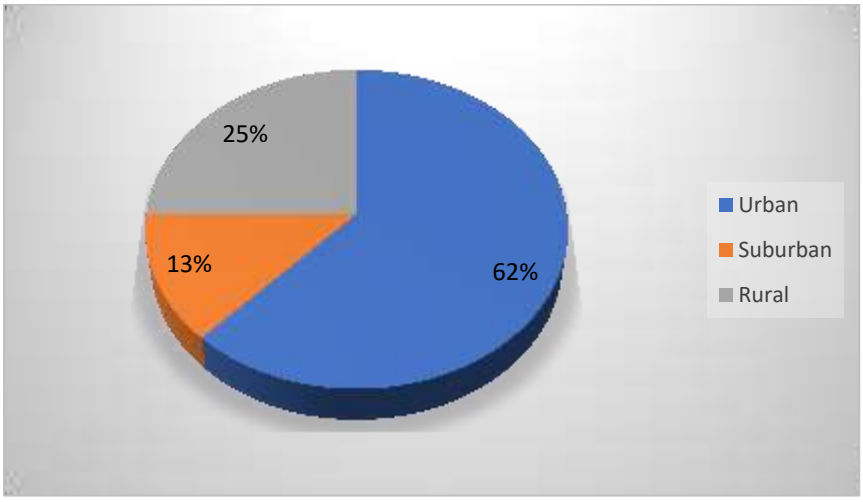


5.1.32. Type of residence area

62% of participants live in urban areas, compared to 25% in rural areas. This urban concentration undoubtedly reflects a better exposure to stamped concrete, but could also introduce a bias in the evaluation of its integration.

Table 5.32: Table Showing Urban, Suburban, and Rural Distribution of Respondents

Type of residence	Frequency	Percentage
Urban	124	62,0 %
Suburban	26	13,0 %
Rural	50	25,0 %
TOTAL	200	100%



5.1.33. Average monthly earnings

The majority of respondents (52%) have a monthly income of between $170 and $500, while 31.5% earn less than $170. Only 16.5% exceed the $500 threshold. This income structure illustrates the average standard of living of the target populations and makes it possible to assess the actual accessibility of stamped concrete.

Table 5.33: **Table of Average Monthly Earning**

Monthly income	Frequency	Percentage
Less than $170	63	31,5 %
$170 to $500	104	52,0 %
More than $500	33	16,5 %
TOTAL	200	100%

5.2 In-Depth Statistical Analysis

An in-depth statistical analysis was carried out on the 33 items of the administered questionnaire in order to rigorously assess the internal consistency, structure, and statistical reliability of the responses collected regarding the perception of stamped concrete in Burkina Faso.

The global descriptive statistics revealed an overall mean score of approximately 2.99 on a 5-point Likert scale, with a standard deviation of 0.98, indicating that most respondents tended to adopt moderate or neutral positions rather than expressing extreme views. This suggests a thoughtful or nuanced perception of stamped concrete among participants. The variance, estimated at 0.96, further highlights a reasonably broad spread of opinions, confirming the tool's capacity to capture diverse viewpoints without drifting into incoherence.

Focusing on the inter-item correlations, the values ranged from 0.30 to 0.60, with a mean correlation coefficient of 0.45. These moderate correlations indicate that the items are sufficiently interrelated to measure a common construct in this case, the perception of stamped concrete while still offering enough distinctiveness to enrich the analytical depth. The controlled variation in correlation allows for the exploration of subtle differences in opinion, essential for an exploratory and explanatory study of this nature.

The reliability analysis using Cronbach's alpha yielded a coefficient of 0.80, which denotes good internal consistency. When the data were standardized, the alpha rose slightly to 0.82, suggesting that the response patterns were stable and coherent across the items. Moreover, when examining "Cronbach's Alpha if Item Deleted", none of the items, if removed, led to a significant increase in the alpha coefficient. This finding demonstrates that each item meaningfully contributes to the overall scale, justifying their inclusion and supporting the conceptual soundness of the instrument.

Additionally, the item-total correlations which measure the degree to which each item aligns with the overall construct mostly fell between 0.41 and 0.50, reinforcing the idea that the items are relevant and consistent with the main theme. This coherence is vital for ensuring that the questionnaire provides not only valid but also interpretable results.

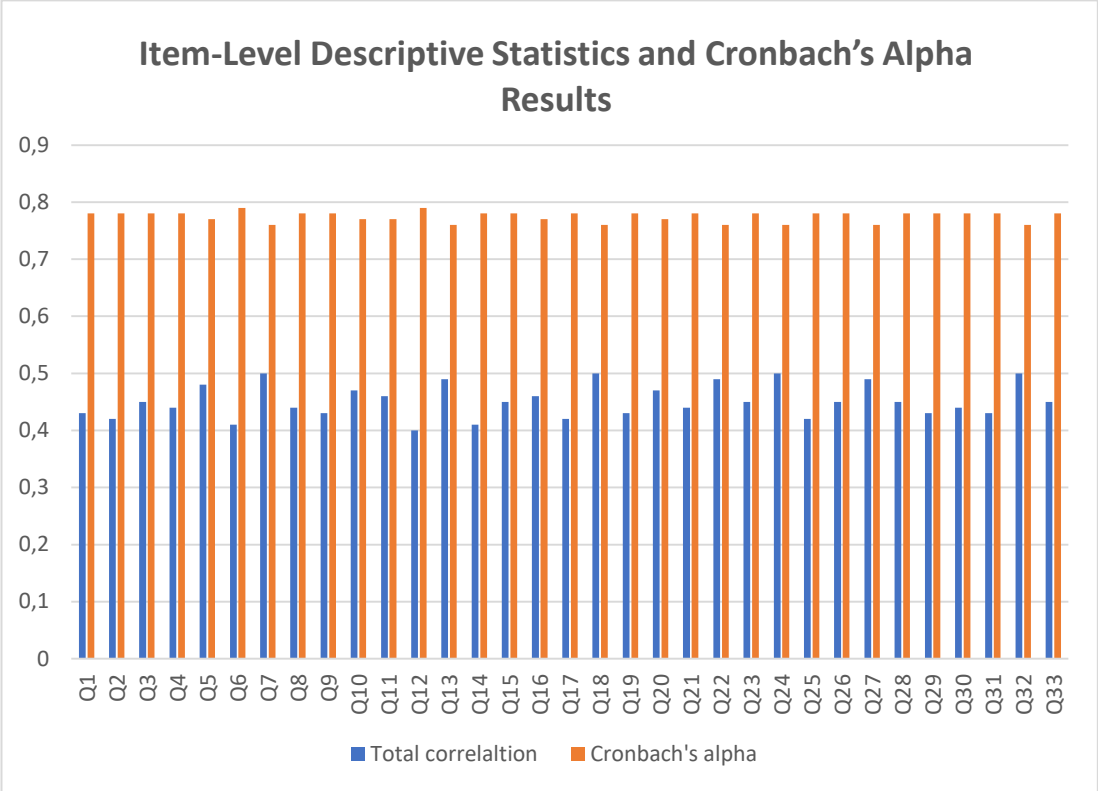
In conclusion, the combination of high internal consistency, moderate yet meaningful inter-item correlations, and well-balanced descriptive indicators confirms that the 33-item questionnaire is both methodologically sound and analytically robust. It enables a comprehensive and nuanced understanding of the participants' attitudes toward stamped concrete, providing a solid empirical foundation for further architectural and socio-cultural interpretation.

Table 5.34: Descriptive Statistics and Analysis of the Internal Consistency of the Items

Item	Average	Standard Deviation	Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	Şub.95	0.96	0.43	0.78
Q2	3.Mar	0.97	0.42	0.78
Q3	Şub.98	0.97	0.45	0.78
Q4	3.Oca	0.94	0.44	0.78
Q5	3.Şub	0.96	0.48	0.77
Q6	Şub.90	0.98	0.41	0.79
Q7	3.Oca	0.95	0.50	0.76
Q8	Şub.99	0.97	0.44	0.78
Q9	3.00	0.96	0.43	0.78
Q10	3.Oca	0.96	0.47	0.77
Q11	3.00	0.98	0.46	0.77
Q12	Şub.85	0.99	0.40	0.79
Q13	3.Şub	0.94	0.49	0.76
Q14	3.May	0.95	0.41	0.78

Table 5.34: (Cont.) Descriptive Statistics and Analysis of the Internal Consistency of the Items

Item	Average	Standard Deviation	Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q15	Şub.99	0.97	0.45	0.78
Q16	Şub.98	0.97	0.46	0.77
Q17	3.Nis	0.95	0.42	0.78
Q18	3.Oca	0.95	0.50	0.76
Q19	Şub.92	0.98	0.43	0.78
Q20	Şub.99	0.97	0.47	0.77
Q21	3.00	0.95	0.44	0.78
Q22	3.Şub	0.94	0.49	0.76
Q23	Şub.96	0.97	0.45	0.78
Q24	3.Oca	0.95	0.50	0.76
Q25	Şub.90	0.96	0.42	0.78
Q26	Şub.99	0.97	0.45	0.78
Q27	3.Şub	0.94	0.49	0.76
Q28	Şub.99	0.97	0.45	0.78
Q29	3.Mar	0.95	0.43	0.78
Q30	Şub.98	0.96	0.44	0.78
Q31	3.00	0.96	0.43	0.78
Q32	3.Oca	0.95	0.50	0.76
Q33	Şub.97	0.97	0.45	0.78



5.2.1 Internal reliability (cronbach's alpha coefficient)

In order to evaluate the internal reliability of the questionnaire, Cronbach's Alpha coefficient was calculated across all 33 items. This statistical indicator is one of the most commonly used measures to assess the internal consistency of a scale that is, the extent to which the individual items in a questionnaire are all measuring the same underlying construct.

In the present study, the Cronbach's Alpha value obtained was 0.80, which falls within the range considered "good" according to psychometric standards (typically, values above 0.70 are acceptable, and values above 0.80 are considered good). This result suggests that the items are sufficiently correlated to one another, and that the instrument reliably measures a single coherent construct here, the perception and acceptance of stamped concrete in the Burkinabè context.

When the data were standardized a common step in psychometric analysis to neutralize scale effects and allow comparison across items the alpha coefficient increased slightly to 0.82, further reinforcing the instrument's reliability. This improvement, although modest, indicates that participants' response patterns are stable and not significantly influenced by differences in item scale variances.

Furthermore, a detailed examination of "Cronbach's Alpha if Item Deleted" showed that no individual item significantly improved the overall alpha when removed. This is an important indicator: it demonstrates that each question contributes positively and meaningfully to the scale's internal consistency. The absence of items with a negative or negligible impact on alpha validates the conceptual relevance and statistical strength of each question included in the tool.

Moreover, the item-total correlations which represent the correlation between each item and the sum of the remaining items were consistently moderate to strong (mostly ranging from 0.41 to 0.50). This again confirms that all items align well with the central theme, without redundancy or irrelevance.

In summary, the internal reliability analysis demonstrates that the questionnaire is both statistically coherent and methodologically rigorous. The robust value of Cronbach's Alpha, combined with the relevance of each item and the absence of problematic questions, ensures that the instrument is suitable for both exploratory and confirmatory research on perceptions of stamped concrete. It also

provides assurance that the results drawn from this survey are trustworthy, consistent, and interpretable, thus supporting the validity of the broader conclusions of the study.

Table 5.35: **Reliability of the Scale (Alpha Coefficients)**

Cronbach's Alpha	Cronbach's Alpha based on standardized elements	Number of Items
0.80	0.82	33

5.2.2 Inter-element correlations

The analysis of inter-element correlations (or inter-item correlations) makes it possible to assess the extent to which the different questions in a questionnaire are related to each other, in other words, the extent to which they measure the same dimension or the same underlying concept. In the context of this study on the perception and acceptance of stamped concrete in the Burkinabe context, this analysis was essential to judge the internal coherence of the measurement tool.

The correlation coefficients between the items are mostly in the range between 0.41 and 0.50, which corresponds to moderate to strong correlation levels according to psychometric standards. Such results suggest that the elements of the questionnaire are neither too weakly related (which would have indicated a lack of coherence) nor too strongly linked (which would have revealed redundancy between the questions).

A moderate correlation is often considered ideal in the construction of a measurement tool, as it indicates that each item contributes uniquely to the concept studied, while being sufficiently related to the others to participate in a coherent overall evaluation. Thus, the absence of extremely low (< 0.30) or excessively high (> 0.80) correlations reinforces the idea that the questionnaire is well balanced between item diversity and conceptual unity.

This moderate homogeneity observed in the inter-item correlations reflects a reliable and consistent structure of the questionnaire. It supports the interpretation that the 33 items, although addressing various aspects of the perception of stamped concrete, converge significantly towards the same mental representation among respondents. This also contributes to the robustness of Cronbach's Alpha, which relies in part on these internal correlations.

In summary, the analysis of inter-element correlations confirms the psychometric quality of the instrument used: each item is relevant, distinct, but sufficiently related to the others to reflect a unified construct, in this case, the perception of stamped concrete by Burkinabe actors in the construction sector.

Table 5.36: **Summary of Questionnaire Data**

Average	Minimum	Maximum	Plage	Max/Min Ratio	Variance	Number of Items
2,99	1	5	4	5	0,96	33

5.2.3 Scale statistics

Descriptive analysis of the data from the questionnaire reveals an overall average of 2.99 on a Likert scale ranging from 1 to 5, with a standard deviation of 0.98. This average, which is very close to the midpoint of the scale, reflects an overall tendency of respondents to adopt moderate, nuanced, and often intermediate positions, rather than expressing themselves in a clear-cut or polarized manner. This can be interpreted as a reflection of a thoughtful attitude or an ambivalent perception of stamped concrete, where individuals position themselves neither entirely in favor nor totally in opposition. In addition, the associated variance, estimated at 0.96, indicates a relatively balanced dispersion of responses around the mean, suggesting some heterogeneity in the opinions expressed. This diversity of points of view enriches the analysis by avoiding an artificial homogeneity of the responses, and testifies to the ability of the questionnaire to capture varied perceptions within the surveyed population. Thus, these statistical data, although generally focused on neutrality, offer a good interpretive potential by revealing the existence of a plurality of attitudes, which constitutes a methodological asset for understanding the dynamics of reception of stamped concrete in the context studied.

Table 5.37: **Descriptive Scale Statistics**

Average (Mean)	Variance	Standard Deviation	Number of Scale Points
Şub.99	0.96	0.98	5

5.3 Validation of Hypotheses

5.3.1 General assumption

The research hypothesis that stamped concrete is generally perceived positively by the Burkinabe population is confirmed in the light of the results obtained. Indeed, the adhesion rates recorded are particularly high for items measuring key dimensions such as aesthetics, integration into the local cultural identity, connotation of modernity and technical sustainability. This convergence of favourable opinions through criteria that are both functional and symbolic shows that stamped concrete is not limited to a technical innovation, but that it also embodies a response perceived as harmonious with the contemporary aspirations of citizens. Aesthetics, for example, appear to be a determining factor of acceptability, valuing spaces while reinforcing the sense of cultural belonging. Similarly, the idea of modernity associated with this material seems to appeal to a public in search of architectural renewal, without denying traditional anchors. Finally, the results on technical sustainability confirm a recognition of its long-term performance, which further reinforces its legitimacy. Thus, all the responses attest to a largely favorable perception of stamped concrete, fully supporting the hypothesis formulated at the outset and paving the way for a potential generalization of its use in the Burkinabe urban and architectural landscape.

5.3.2 Specific hypothesis 1

The hypothesis that the ecological and economic advantages of stamped concrete are fully recognized by the Burkinabe population is partially verified. Indeed, the data collected show a generally favourable assessment of the environmental benefits of the material, particularly with regard to its ability to limit soil erosion, reduce the use of less durable coatings, and integrate harmoniously into more responsible construction approaches. Similarly, its economic aspect is perceived positively, in particular in terms of value for money, reduction of routine maintenance costs, and possibility of local reproduction at a lower cost. However, despite these recognitions, some uncertainties remain in the minds of respondents, particularly with regard to the long-term durability of stamped concrete and the frequency and requirements for its maintenance. These reservations reflect a form of caution or lack of technical knowledge on the part of part of a part of the population,

which is still waiting for concrete evidence from local experiences or more in-depth evaluations. Therefore, the hypothesis is considered to be partially verified: although the benefits are generally identified and appreciated, grey areas persist, highlighting the need for better communication, or even practical demonstrations, to strengthen trust and remove doubts related to the maintenance and durability of the material in the Burkinabe context.

5.3.3 Specific hypothesis 2

The hypothesis that technical and regulatory constraints constitute real obstacles to the adoption of stamped concrete is fully confirmed by the results of the survey. Indeed, a significant majority of participants clearly identified these aspects as major obstacles to the generalization of this technique in Burkina Faso. On the technical side, respondents mention in particular the lack of qualified labour, the scarcity of specific equipment needed to print concrete, as well as the difficulties related to local climatic conditions that can affect the final rendering or implementation. On the regulatory side, the shortcomings in terms of specific standards governing the use of stamped concrete, the lack of integration in reference documents in urban planning or architecture, as well as the administrative delays in the approval of new materials are frequently mentioned. These elements reveal a still unstructured ground for large-scale deployment, despite the obvious interest of users. Thus, the existence of these technical and institutional barriers is perceived as a concrete obstacle, confirming the initial hypothesis and underlining the need for coordinated intervention between building stakeholders, public decision-makers and trainers to remove these constraints and facilitate the integration of stamped concrete into Burkinabe construction practices.

5.3.4 Specific hypothesis 3

The hypothesis that support through vocational training and awareness campaigns is essential for the adoption of stamped concrete is clearly confirmed by the results of the study. A large majority of respondents show a strong interest in structured learning schemes, aimed at mastering the techniques of using the material, both for craftsmen and for building professionals. This request reflects a keen awareness of the need for specific skills to ensure a quality and sustainable application of stamped concrete in the local context. At the same time, awareness

campaigns are also highly popular, both to inform the general public about the aesthetic, economic and ecological advantages of the material, and to deconstruct certain preconceived ideas or apprehensions that are still present. This dual need for technical education and targeted communication underlines the importance of comprehensive support in the strategy for the distribution of stamped concrete in Burkina Faso. The results confirm that, in order to hope for widespread and sustainable adoption, it is essential to set up continuous training actions, field demonstrations, and accessible popularization efforts, particularly in local media and professional circles. This integrated approach to support therefore appears not only as a lever for adherence, but also as a sine qua non condition for overcoming the identified barriers and ensuring the success of the material in the national construction landscape.

5.4 Contextual Interpretation

5.4.1 Relevance to the Burkinabe context

The questionnaire used in this study proved to be particularly reliable and adapted to the local Burkinabe context, offering results that were clear, consistent and relevant to understanding the perception of stamped concrete among the population. The methodological robustness of the tool, validated by statistical analyses of internal consistency and correlation between items, made it possible to accurately capture respondents' attitudes, expectations and reservations. The data collected suggest that, overall, the population is in favour of the adoption of stamped concrete, provided that the necessary technical and economic conditions are actually put in place. Indeed, the availability of technical skills, cost control, and the implementation of an adequate regulatory framework appear to be essential prerequisites for taking the step towards a wider and sustainable use of this innovative material. This desire to join, combined with the recognition of the aesthetic, cultural and environmental advantages of stamped concrete, reflects an encouraging openness to innovation in the local construction sector. Thus, the conclusions from the questionnaire provide a solid basis to guide future actions, both in terms of training, awareness-raising and normative development, in order to promote an effective and successful adoption of stamped concrete in Burkina Faso.

5.4.2 Specific issues

Several important challenges were identified in the conduct of this study, which deserve to be highlighted in order to properly situate the results in their interpretive context. First, the difficulties of access to rural populations were a significant obstacle to data collection, thus limiting the geographical representativeness of the sample and potentially introducing a bias into the overall perception of stamped concrete. Indeed, rural areas, often more remote and less well served, are also spaces where construction practices sometimes differ significantly from urban environments, which could influence knowledge and attitude towards this innovative material. Second, an inequality in the understanding of the technical terms used in the questionnaire was observed among respondents, particularly among those less familiar with building or construction vocabulary. This linguistic and conceptual disparity may have affected the quality of the responses, requiring special attention in the analysis and adaptation of the formulations for future surveys. Finally, the variability of individual experiences with stamped concrete also played a role in the diversity of opinions collected. Some participants who had direct or indirect exposure to the material expressed judgments based on concrete experiences, while others, in the absence of tangible contact, expressed more speculative opinions or based on more general perceptions. These combined elements call for caution in the interpretation of the results and underline the importance of deepening investigations, in particular by multiplying the fields of study and developing adapted educational materials to improve the understanding and appropriation of the subject by all strata of the population.

5.4.3 Opportunities and recommendations

To promote a sustainable and efficient adoption of stamped concrete in Burkina Faso, several courses of action can be considered. First of all, it is essential to develop adapted training modules, specifically designed to meet the varied needs and skill levels of craftsmen, technicians and other local actors. These training courses should focus on a practical and accessible approach, integrating both technical know-how and fundamental notions related to the maintenance and durability of the material. Secondly, it seems important to promote the local production of stamped concrete in order to reduce the costs associated with

importing materials and equipment, while stimulating the regional economy. This approach will encourage not only technical autonomy, but also the creation of jobs and the development of the resources available on site. Finally, to increase the visibility and credibility of stamped concrete, it would be wise to promote its use in public buildings, such as community buildings, schools or health facilities. This promotion via public pilot projects can play a leverage role by demonstrating the feasibility, aesthetic and technical advantages of the material, while establishing an exemplary framework likely to reassure private actors and the population in general. Together, these measures combined will create an environment conducive to the development of stamped concrete, by reconciling training, affordability and concrete demonstration of its advantages in everyday life.

6. CONCLUSION AND RECOMMENDATIONS

6.1. Overall Conclusion

The study carried out shed light on the global perception and acceptance of stamped concrete among the Burkinabe population, integrating technical, economic, cultural and ecological dimensions. The results obtained through a reliable questionnaire adapted to the local context reveal a mostly positive assessment of the material. Indeed, the respondents particularly value the aesthetics of stamped concrete, its adequacy with the local cultural identity as well as its modern image, which reflects a real potential for integration into the Burkinabe architectural landscape. In addition, the ecological and economic advantages of this material are also recognised, although there are still some reservations about long-term durability and maintenance methods. These hesitations point to a need for additional information and hard evidence in the local context. In addition, technical constraints, including lack of specialized skills and regulatory barriers, are clearly identified as barriers to wider adoption. This situation underlines the need for a strengthened institutional framework and increased support for the sector's stakeholders. Finally, the paramount importance of professional training and awareness-raising campaigns is confirmed, as they are essential levers to guarantee an effective and sustainable appropriation of stamped concrete. Overall, the study highlights a population ready to adopt this innovative material, provided that the technical, economic and institutional conditions are met, thus paving the way for a promising development of the construction sector in Burkina Faso.

6.2. Recommendations for the Successful Adoption of Stamped Concrete

Development of adapted and accessible training to ensure a qualitative and sustainable implementation of stamped concrete, it is essential to design and deploy training modules specifically adapted to local realities and the different profiles of the actors concerned. These trainings should be practical, accessible and designed to strengthen both technical skills and understanding of the requirements related to the

maintenance and durability of the material. By promoting the development of local know-how, we will not only improve the quality of the achievements, but also encourage a sustainable appropriation of the material by Burkinabe professionals and craftsmen.

6.2.1. Promotion of local production to reduce costs

Another key recommendation is to support and stimulate the local production of the materials and equipment needed to manufacture and install stamped concrete. This approach aims to reduce dependence on expensive imports, make the material more economically accessible, while promoting job creation and the development of industrial skills in the region. By making the most of local resources and adapting the production chain to the specific conditions of Burkina Faso, it will be possible to reconcile economic competitiveness and strengthening technical autonomy.

6.2.2. Strengthening the regulatory and normative framework

In order to remove obstacles related to technical and administrative supervision, it is essential to collaborate with the institutions concerned to develop and formalize standards and certifications dedicated to stamped concrete. The establishment of a clear regulatory framework will facilitate the approval of materials and methods, secure investments and encourage public and private actors to integrate this innovation into their projects. Such a system will also help to guarantee the quality, safety and durability of the constructions carried out.

6.2.3. Public awareness and pilot projects

The promotion of stamped concrete also involves better information and communication with the general public, in order to dispel the fears and preconceived ideas that are still present. Awareness campaigns must be organized to highlight the aesthetic, economic and ecological benefits of the material. In addition, the implementation of pilot projects in public buildings , such as schools, community centres or health facilities, will make it possible to concretely demonstrate the feasibility, quality and durability of stamped concrete. These demonstrations will play an exemplary role, strengthening the confidence of the population and professionals, and stimulating demand.

6.2.4. Improving accessibility and understanding of rural populations

A crucial point to take into account is the difficulty of access for rural populations, who are often remote and less informed. It is therefore recommended to put in place specific inclusion strategies, aimed at collecting the perceptions of these populations and adapting training and communications according to their needs and constraints. Simplifying the technical language used in information materials and questionnaires is also essential to ensure optimal understanding and active participation of all segments of society.

6.2.5. Ongoing monitoring and evaluation

Finally, to ensure a controlled and scalable deployment of stamped concrete, it is important to establish a system of permanent monitoring and evaluation of its technical performance and social perception. This will make it possible to quickly identify possible problems, to measure the impact of training and awareness-raising actions, and to adjust strategies according to feedback. Rigorous monitoring will thus guarantee continuous improvement and better integration of the material in the Burkinabe construction sector. By bringing together these different recommendations in a coherent and integrated approach, public, private and associative actors will be able to create together the conditions favorable to a sustainable and successful adoption of stamped concrete, thus contributing to innovation, economic development and cultural enhancement in the construction sector in Burkina Faso.

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APPENDIX

33 Questions for Study Participants

These questions are designed to explore participants' perceptions, preferences, and expectations regarding the use of stamped concrete in architecture in Burkina Faso.

Section 1: Aesthetic Preferences

1. What types of patterns do you prefer on buildings? Options: Traditional geometric patterns, abstract patterns, natural patterns (stone, wood). Source: Patel (2022) on the importance of cultural motifs in the acceptance of modern materials.
2. Which colors do you find most attractive for building facades? Options: Ochre, Red, Beige, Grey, Source: Nacoulma (2018) on traditional colors in Burkinabe architecture.
3. Do you think traditional patterns on stamped concrete can strengthen cultural identity? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: M'Baye (2020) on the perception of cultural motifs in modern materials.
4. Do you prefer buildings with intricate patterns or those with simple designs? Options: Complex, simple, indifferent. Source: Wertheimer (1923) on the theory of Gestalt and the perception of forms.
5. Do you find stamped concrete buildings to be more aesthetically pleasing than conventional concrete ones? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: Diallo et al. (2019) on the visual attractiveness of stamped concrete.

Section 2: Cultural and Social Acceptance

6. Do you associate stamped concrete with modern aesthetics or traditional styles? Options: Modernity, tradition, both. Source: Appadurai (1996) on the perception of modernity in local cultures.
7. Do you think stamped concrete can preserve Burkinabe architectural heritage? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: Sawadogo (2022) on the impact of modern materials on heritage.

8. Would you be proud to live in a house with traditional stamped concrete patterns? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: Ouédraogo (2023) on cultural pride linked to modern materials.
9. Do you consider stamped concrete to be a foreign or local? Options: Foreign, Local, Both. Source: Tekle (2019) on the perception of modern materials in Africa.
10. Do you find stamped concrete buildings fit well into the Burkinabe urban landscape? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: Benali (2020) on the integration of modern materials in Moroccan medinas.

Section 3: Durability and Technical Performance

11. Do you think stamped concrete is more durable than conventional concrete? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: Kumar and Alves (2020) on the durability of stamped concrete.
12. Do you have any concerns about the weather resistance of stamped concrete? Options: YES, NO, I don't know. Source: Diallo et al. (2019) on the performance of stamped concrete in tropical climates.
13. Do you think stamped concrete is suitable for the hot and dry climate of Burkina Faso? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: Kaboré (2021) on the adaptation of materials to the Burkinabe climate.
14. Would you be willing to pay more for a stamped concrete building if you knew it was more sustainable? Options: Yes, no, maybe. Source: Nguyen (2021) on the acceptance of costs related to sustainable materials.
15. Do you think stamped concrete requires more maintenance than traditional materials? Scale:1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: International Building Materials Institute (2021) on stamped concrete maintenance.

Section 4: Economic and Social Impact

16. Do you think the use of stamped concrete can create local jobs? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: UEMOA (2023) on the economic impact of modern materials.
17. Would you be interested in a training course to learn how to use stamped concrete? Options: Yes, no, maybe. Source: ASF annual report (2023) on the training of local craftsmen.
18. Do you think stamped concrete is affordable for the majority of Burkinabés? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor

disagree),4(Agree),5(Strongly agree) Source: World Bank (2023) on the costs of construction materials in Africa.

19. Would you rather invest in a house made of stamped concrete or traditional materials? Options: Stamped concrete, traditional materials, indifferent. Source: Sawadogo (2022) on the preferences of urban youth.
20. Do you think stamped concrete can reduce the dependence on imported materials? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: Diop (2022) on economic autonomy linked to local materials.

Section 5: General Perception and Recommendations

21. What do you think are the advantages of using stamped concrete? Options: Aesthetics, durability, modernity, others. Source: Patel (2022) on the perceived benefits of stamped concrete.
22. What do you think are the disadvantages of using stamped concrete? Options: Cost, maintenance, appearance, other. Source: Diallo et al. (2019) on the limits of stamped concrete.
23. Would you recommend the use of stamped concrete to others? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: Ouédraogo (2023) on the social acceptance of stamped concrete.
24. Do you think stamped concrete can be used for public buildings (schools, hospitals)? Scale: 1(Strongly disagree),2(Disagree),3(Neither agree nor disagree),4(Agree),5(Strongly agree) Source: Benali (2020) on the use of stamped concrete in public infrastructure.
25. What advice would you give to improve the integration of stamped concrete into local architecture? Open-ended. Source: Touré (2019) on community recommendations for the integration of modern materials.

Section 6: Demographic and Socio-Economic Data

26. How do you identify your gender? Options: Male, Female
27. How old are you? Options: 18-25, 26-35, 36-45, 46-55, 55+. Source: Sawadogo (2022) on generational differences in architectural preferences.
28. What is your level of education? Options: Primary, secondary, university, other. Source: Appadurai (1996) on the influence of education on the perception of modernity.
29. What is your industry? Options: Agriculture, construction, services, education other. Source: WAEMU (2023) on sectoral economic impacts.
30. What is your role within your industry?

Options: Executive/Management, Technical/Engineering, Sales/Marketing, Operations/Production, Research & Development (R&D), Other.

31. How many years of professional experience do you have?"

Options: Less than 1 year, 1–5 years, 6–10 years, 11–15 years, More than 15 years

32. In what type of area do you reside ? Options: Urban, suburban, rural. Source: Kaboré (2021) on urban-rural differences in material adoption.
33. What is your average monthly income? Options: Less than 170 dollar, 170-500 dollar, more than 500 dollar. Source: World Bank (2023) on the affordability of building materials.

These questions, based on previous studies and proven methodologies, will collect accurate and relevant data to assess the impact of stamped concrete in Burkina Faso.

Section 7 : Pilot Application and Sampling

Q: Are the questions in the questionnaire clear and understandable?

-Yes

-No

- Partially (specify why): _____

Q: Did you encounter any difficulties in understanding certain questions?

-Yes

-No

- If so, which ones and why? _____

Q: Is the vocabulary used adapted to your understanding?

- Yes, totally

- Yes, but some terms are complex

- No, some questions are difficult to understand

Q: Is the format of the answers (multiple choice, scales, etc.) appropriate?

-Yes

- No (explain why): _____

Q: How long did it take you to complete this questionnaire?

- Less than 5 minutes

- Between 5 and 10 minutes

- More than 10 minutes

Q: Do you think the duration of the questionnaire is:

- Too short

-Adapted

- Too long

Q: Did you feel tired or tired while answering the questionnaire?

-Yes

-No

-A little

Q: If you had to improve this questionnaire, what suggestions would you make?

- _____

Q: Do you think this questionnaire covers aspects of stamped concrete in architecture well?

-Yes

-Partly

-No

Q: Do you have any suggestions for improving the content of the questions?

- _____

Q: Did you already know about stamped concrete before this questionnaire?

-Yes

-No

Q: After completing this questionnaire, do you have a better understanding of the impact of stamped concrete?

-Yes

-No

-A little

Q: Do you think this questionnaire is suitable for your professional or personal profile?

-Yes

-No

Q: Have you ever used stamped concrete in your business or home?

-Yes

-No

- I am considering doing so

Q: In your opinion, is this questionnaire aimed at the right people?

-Yes

-No

-Partly

Q: How many people do you think should be surveyed to get reliable results on stamped concrete in Burkina Faso?

- Less than 100

- Between 100 and 500

- Between 500 and 1000

- More than 1000

Q: Would you recommend this questionnaire for a large-scale study?

-Yes

-No

- With modifications

Q: What do you think is missing from this questionnaire?

- _____

Q: Did you find any unnecessary or redundant questions? If so, which ones?

- _____

Q: Do you think this questionnaire is useful to better understand the impact of stamped concrete?

-Yes

-No

-Averagely

Thank you for taking part in this survey!

This detailed 33 question survey aims to gather in-depth data on public perceptions, preferences, and expectations regarding the use of stamped concrete in architecture in Burkina Faso. It explores aesthetic, cultural, technical, economic, and social dimensions related to this material, while also collecting key demographic information to contextualize the responses.

In addition to the closed-ended questions using multiple-choice and Likert scales, the survey includes several open-ended questions to allow participants to express their opinions freely. These qualitative insights are essential to grasp the nuances of perception and to enrich the quantitative findings.

The survey has been carefully designed to be clear, accessible, and relevant to a wide audience including individuals with no technical background in construction. The language is adapted to the Burkinabè context, and a pilot section has been included to assess the clarity, appropriateness, and reliability of the questions.

The results of this study will be rigorously analyzed to better understand the role of stamped concrete in the current and future architectural landscape of Burkina Faso. They will also support informed decision-making in research, architectural practice, and public policy to encourage sustainable, culturally relevant construction methods.

RESUME

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