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ADDIS ABABA UNIVERSITY
SINCE 1950

The Morphological Transformation of Ethiopian Orthodox Church Buildings over Time: The case of Addis Ababa

This thesis is submitted to the Department of Architecture (DARCH), School of Built Environment, College of Technology and Built Environment (CTBE), Addis Ababa University for partial fulfillment of all requirements of Master of Science Degree in Conservation of Urban and Architecture Heritage.

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October, 2025

THESIS APPROVAL CERTIFICATE

This thesis is submitted to the Department of Architecture, School of Built Environment (SBU), College of Technology and Built Environment (CTBE), Addis Ababa University for partial fulfillment of all requirements of Master of Science Degree in Conservation of Urban and Architecture Heritage.

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DECLARATION FORM

I declare that, this thesis prepared for the partial fulfillment of the requirements for the degree of Masters of Science in Conservation of Urban and Architectural Heritage entitled " Morphological Transformation of EOTC Building Over Time: The case of Addis Ababa, Ethiopia" is my original research work prepared independently by my own effort with close advice and guidance of my advisor. I also declare that this thesis has not been presented in any university and all sources that I have used or quoted have been indicated and acknowledged by means of complete references..

AMANUEL BAYU SHEFERAW

Signature: _____ **Date:** _____

CONFIRMATION

Here with, I state that Amanuel Bayu Sheferaw has carried out this research work on the topic "The morphological transformation of Ethiopian Orthodox Church of buildings over times; The case of Addis Ababa" under my supervisions and it is sufficient for the partial fulfillment for award master's degree of in Conservation of Urban and Architectural Heritage.

YOHANNES MEKONEN

Name of Advisor	Signature	Date

ACKNOWLEDGMENT

This thesis has come to reality with the kind support, and guidance of many individuals whom I would like to extend my deepest gratitude. Foremost I would like to thank Almighty God for the strength, good health, patience, and wisdom to understand the course of work for this thesis and finish it.

My deepest gratitude goes to my advisor Yohannes Mekonen for allowing me to do this research under his supervision and for his able guidance through the research. The completion of this thesis would not have been possible without the contribution of different individuals. Mesfin sahle (Ph.D.) and Tibebu Assefa (Ph.D.) deserves heartfelt thanks to their willingness to contribute to the success of the thesis by giving different data and precious time during the discussion.

I would also like to give my special gratitude and extreme gratefulness to my mother Mrs Yenenesh Girma for her love, prayers, caring, and sacrifices for educating and preparing me for my future. I want to extend my gratitude to my wife Dr. Samrawit Bisrat for her support and advice throughout the entire study period.

My kind thanks and appreciation are also extended to those who helped and supported me directly or indirectly during my survey or writing period of this thesis. Finally, my deepest gratitude goes to all those who stood by me, always ready to lend a hand throughout my journey at the University.

Amanuel Bayu

October 2025

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ACRONYMS

EOTC – Ethiopian Orthodox Tewahedo Church

UNESCO – United Nations Educational, Scientific, and Cultural Organization

ICCROM – International Center for the Study of the Preservation and Restoration of Cultural Property

ICOMOS – International Council on Monuments and Sites

LIST OF PHONETIC ALPHABETS

***k'idasē* –** Liturgy service

k'idisitek'idusani - The holy of Holies Space

***k'idisiti* –** The space where the parishioners offer the Holy Communion

***k'inē mahilēti* –** The Chant Space

***mahilēti* –** Holy song of praise service

***mahit'eniti* –** Holly incense service

mek'idesi – The Holy of Holies Space

***se'ātati* –** Public prayer of the church service

***Sibket wengel* –** Preaching service

***siri'ate gabicha* –** Church Wedding ceremony

***siri'ate k'uribani* –** Holly Communion time

***taboti nigisi* –** escorting the ark of the Covenant

GENERAL NOTE

1. All tables, photographs, and figures included in the research are the original work of the author where the source is not indicated.
2. The years mentioned throughout the thesis are in the Gregorian calendar.

ABSTRACT

Church architecture reflects religious devotion, cultural identity, and historical continuity. The Ethiopian Orthodox Tewahedo Church (EOTC) embodies a unique ecclesiastical tradition, yet its architecture—especially in rapidly urbanizing Addis Ababa—has undergone significant transformation. This study explores the Morphological transformation of EOTC churchs and identifying key drivers of change: political shifts, liturgical developments, technological advances, socio-cultural dynamics, and urban growth. Through case studies and surveys of clergy, scholars, and congregants, the research reveals a shift from traditional round and basilica forms to modern "monumental" and "abstract" structures. While church scholars stress preserving spiritual symbolism, professionals emphasize functional and aesthetic innovation—highlighting tensions between tradition and modernity. Despite these changes, core theological values persist. The study calls for contextual design guidelines, participatory conservation, and heritage impact tools to balance tradition with contemporary needs.

Keywords: *EOTC, Heritage Conservation, Morphological transformation, Sacred Architecture, Typological Change,*

CHAPTER ONE – INTRODUCTION

1.1. Background to the Study

Throughout history, church architecture has acted as a vital medium for religious expression, cultural identity, and artistic innovation (Sidorenko, 2018). Churches are not just buildings; they are living symbol of a community's faith, social values, and technological progress (Haussmann et al, 2024). The design, layout, and decoration of church structures have changed worldwide in response to shifts in theological beliefs, sociopolitical changes, and technological advances (Fletcher, 1996). These buildings showcase how religious communities over time and across regions have understood the divine and their connection to the sacred (Ching, 2007).

In the Western Christian tradition, church architecture originated from Roman basilicas, which were repurposed for Christian worship after the religion was legitimized in the Roman Empire. This led to the development of Romanesque architecture (9th–12th centuries), marked by thick walls, barrel vaults, and rounded arches. The Gothic period (12th–16th centuries) introduced elements emphasizing verticality and light, such as pointed arches, flying buttresses, and stained-glass windows that conveyed biblical stories (Fletcher, 1996). During the Renaissance and Baroque periods, church design became more theatrical and human-centered; featuring domes and elaborates ornamentation to reflect divine grandeur and ecclesiastical power (Kostof, 1995).

Meanwhile, in eastern Christianity, particularly in Byzantine and Slavic traditions, church architecture emphasized the transcendence of God. Notably, Hagia Sophia in Constantinople showcased a centralized dome supported by pendentives and highlighted spiritual experience through gold mosaics and sacred geometry (Mango, 1986). The iconostasis separated the congregation from the altar, underscoring the sacredness of the liturgical space, and these designs influenced churches across Russia, Greece, and the Balkans for centuries, preserving a sense of timeless rituality.

Church architecture in the Global South, particularly in Africa, Latin America, and parts of Asia, was shaped by missionary activities during the colonial era. Initially, European styles like Gothic and Romanesque were imitated, but over time, hybrid designs emerged, using local materials such as mud and timber, tailored to local

conditions (Lentz, 2018). Today, urbanizing regions see churches evolving in response to growing congregations, changing worship practices, and real estate constraints. These transformations highlight the tension between modernization and tradition, global influences and local identity, as well as heritage conservation and functional needs (Oliver, 2003; Jenkins, 2012).

Architectural morphology helps us understand transformations in buildings over time. The term, introduced by Johann Wolfgang von Goethe in the late 18th century, originally described forms in biology but was later applied to architecture and urban studies (Oliveira, 2020). Morphological transformation refers to changes in form, structure, and appearance influenced by evolving cultural practices or external forces like war and natural disasters. This concept allows us to see how built environments respond to and shape social, spiritual, and ecological systems (Moudon, 1997).

The Ethiopian Orthodox Tewahedo Church (EOTC) boasts a rich ecclesiastical architectural tradition rooted in the country's early adoption of Christianity in the 4th century CE. The Church has significantly influenced Ethiopia's religious, cultural, and political landscape, contributing to the development of the Geʿez script, liturgical music, ecclesiastical art, and a unique architectural heritage (Sergew, 1972; Merahi, 1999). Ethiopian churches are characterized by diverse forms—from rock-hewn structures to circular tekul-style buildings—and follow strict canonical designs reflecting spiritual symbolism and a tripartite layout: *mek'idesi* (Holy of Holies), *k'idisiti* (sanctuary), and *k'inē mahilēti* (chanting area) (Naigzy, 1976).

EOTC churches were traditionally built using local materials and techniques by clergy or trained artisans, reflecting the landscape and rituals of their communities. However, in recent decades, especially in urban areas like Addis Ababa, these traditions have changed. Churches such as Holy Trinity Cathedral and Bole Medhanealem now feature mezzanine floors, non-traditional materials like concrete and steel, cosmetic façades, and altered interior spaces. These transformations aim to meet practical needs, such as larger congregations and better acoustics, but are also influenced by modern aesthetics, diaspora trends, real estate pressures, and shifts in religious leadership (n.d, 2019).

While transformations can enhance functional capacity, they raise questions about heritage preservation, theological integrity, and architectural identity. Incorporating

non-traditional features may weaken symbolic coherence and disrupt architectural continuity. This study critically examines the morphological changes in EOTC church buildings, focusing on alterations in physical form, spatial content, and façade treatment. It aims to document these transformations, analyze their causes, and assess their implications for the future of Africa's sacred architectural traditions.

1.2. Statement of the Problem

The Ethiopian Orthodox Tewahedo Church (EOTC) possesses one of the most historically significant and spiritually rich architectural traditions in Africa. For centuries, EOTC church buildings have adhered to theological principles, symbolic spatial configurations, and vernacular construction methods rooted in both religious canon and cultural identity (Naigzy, 1976; Merahi, 1999). These structures are more than religious spaces—they are also embodiments of Ethiopian cosmology, theology, and heritage. The spatial layout, typically composed of the *mek'idesi*, *k'idisiti*, and *k'inē mahilēti*, as well as exterior forms and façades, follow strict canonical and symbolic designs reflecting a spiritual worldview shaped by centuries of religious tradition (Marāḥi, 1999).

However, in recent decades, particularly in rapidly urbanizing contexts such as Addis Ababa, the traditional architectural morphology of EOTC churches is undergoing significant transformation. Addis Ababa, as the political, economic, and religious capital of Ethiopia, has witnessed unprecedented urban expansion, population growth, and spatial reorganization. This urban transformation has not only altered the city's skyline and infrastructure but also reshaped its sacred spaces. Contemporary EOTC churches increasingly depart from traditional models due to new functional demands, land constraints, aesthetic trends, and broader processes of modernization (Ayala, 2016).

Church buildings in Addis Ababa now often feature modern construction materials such as reinforced concrete and aluminum cladding, mezzanine levels that alter the vertical and horizontal organization of sacred space, and cosmetic façades that reflect modern architectural tastes rather than canonical symbolism. For instance, structures such as Holy Trinity Cathedral, Bole Medhanealem Church, and Jate Kidanemihret Church exemplify a new wave of architectural design that integrates commercial-style elements, large-scale structures, and eclectic façade treatments. While these changes

aim to enhance spatial capacity and visual prominence, they also risk diluting the theological meaning, symbolic coherence, and cultural continuity of EOTC architecture (Ayala, 2016).

The issue is further compounded by the absence of formal architectural guidelines or conservation policies specifically designed to protect and guide the evolution of EOTC architecture in urban contexts. Unlike modern urban churches remain largely unregulated in terms of architectural integrity and symbolic consistency. As a result, many newly constructed churches in Addis Ababa reflect aesthetic eclecticism and spatial discontinuity, driven more by donor preferences, real estate pressures, and institutional decisions than by traditional liturgical or symbolic principles.

Despite the scale and significance of these transformations, limited scholarly research exists on the morphological evolution of EOTC churches in urban Ethiopia, particularly in the post-1990s urban expansion period. Most existing studies focus on ancient rock-hewn churches or rural structures, leaving a critical gap in understanding the architectural dynamics of contemporary urban churches (Kefyalew, 2009). Given the current trajectory of urban growth, the absence of architectural documentation and critical analysis may result in the erosion of one of Ethiopia's most unique and spiritually significant architectural legacies.

This study aims to address this gap by investigating the morphological transformation of EOTC church buildings in Addis Ababa, with particular attention to changes in building form, spatial organization, and façade treatment. It aims to understand the internal and external forces—cultural, economic, institutional, and technological—that drive these transformations. Through a heritage and architectural lens, the research will explore how these morphological changes affect the symbolic, functional, and aesthetic meanings of church spaces and what implications they hold for the future of EOTC ecclesiastical architecture in urban Ethiopia.

1.3. Research Questions

1.3.1. General Question

- How the Morphology of EOTC Buildings Transform over time?

1.3.2. Specific Questions

- What Morphological changes have occurred in the EOTC Buildings over time?
- What agents of changes have contributed to the transformation of the EOTC Buildings Morphology through time?

1.4. Research Objectives

1.4.1. General Objective

- To examine the Morphological Transformation of EOTC Buildings over time.

1.4.2. Specific Objectives

- To document the Morphological Changes in the EOTC Buildings.
- To identify the agents of change of the church building over time.

1.5. Significance of the Study

The significance of this study lies in several key areas. Firstly, it aims to document the morphological changes necessary to preserve the architectural tradition of Ethiopian Orthodox Tewahedo Church (EOTC) buildings. Additionally, it establishes a connection between past architectural practices and future interventions for EOTC followers, promoting unity and heightened awareness. The research also provides critical insights for researchers and academics regarding the morphological transformations of EOTC buildings over time, focusing on aspects such as shape, spatial content, physical form, and cosmetic façade. Moreover, the findings serve as valuable data for heritage conservation and restoration efforts, facilitating a deeper understanding of the historical and technical survey of EOTC building morphology.

1.6. Scope of the Study

The study focuses on selected EOTC buildings in Addis Ababa. These church buildings have been chosen based on their adherence to criteria related to traditional and morphological changes, specifically concerning their physical shape (form) and Architectural details, as well as the spatial content of the church buildings. All the selected buildings are Living Architectures.

1.7. Limitation of the Study

Given the broad scope of the study, it was not feasible to explore and assess all churches in other cities of Ethiopia due to limitations in time, budget, scale, and other practical constraints. Another limitation was related to sampling challenges, particularly the difficulty in identifying the exact number of church believers. Rapid urban development and demographic changes also affected the accuracy of data analysis. Nevertheless, the selected sample of churches provided accessible and relevant insights in the absence of consistent secondary and qualitative data on historical church architecture in Addis Ababa, Ethiopia.

1.8. Structure of the Thesis

This thesis is organized in to Five Chapters. The First Chapter introduces the background and context of the study. It outlines the significance, objectives, and scope of the research, including the key questions that guide the investigation into the morphological transformation of EOTC buildings. The Second Chapter discusses a comprehensive review of existing literature relevant to the study. It presents both general and contextual discussions on church buildings, typologies, and architectural evolution, with specific emphasis on Ethiopian Orthodox church traditions. Chapter Three presents the research methodology employed in the study. It describes the approach, tools, data sources, and analysis methods used to examine the morphological transformation of EOTC buildings in Addis Ababa. The Fourth chapter provides data analysis and findings on selected case studies, representing traditional and modified architectural styles of Ethiopian Orthodox churches. It explores how typologies differ and evolve over time and under various influences. And also discusses findings from the previous chapters are synthesized and critically analyzed. It integrates theoretical perspectives and empirical data to interpret patterns, implications, and the significance of observed architectural transformations. The Final Fifth Chapter Discussion, conclusion, and recommendations also provides practical recommendations for future church design and conservation efforts, as well as suggestions for further research presents as well.

CHAPTER TWO – LITERATURE REVIEW

2.1. Conceptual framework of morphological change of church architecture

Morphology in architecture is the study of how forms evolve within the built environment. This idea, often to a certain vernacular language of building, highlights changes in the formal syntax of buildings and cities as their relationship with people evolves and changes. Morphology is also used to describe processes, such as the evolution of a design concept from first conception to construction, but it may also be interpreted as a categorical study of building change and use across time (Alex, B., 2018).

Church Architecture is "a building designed for Christian worship" (Parul Jain, 2011). The purpose of church architecture is to reflect the truth of the synergy of God offering himself and man offering himself to help believers' deification become reality (Marāḥi.K, 1999). The word Church is originated from "*Kyriakos*" which is a Greek word, meaning "of the Lord" (McNamara, 2011). In its Geez definition, the word Church is derived from two words "*Bet*" which means Dwelling and "*Christian*" derived from Christ. The church building is a special place where God is expected to dwell, is manifested in his work, where his help resides, and where his name is praised (Tsegaye, 2009).

2.2. Agents of changing Factors for Morphological Transformation of buildings

Morphological transformation refers to the changes in the form and structure of buildings over time. Several key factors influence these transformations: Cultural Influences; Architecture reflects the cultural values and practices of a society. Changes in societal norms, lifestyle, and technology can lead to morphological transformations (Blundell Jones, 2000). Economic Factors: Economic conditions significantly affect building practices. Market demands, property values, and investment opportunities can drive changes in building morphology (Scully, V, 1994). Technological Advances: Innovations in construction techniques and materials often result in morphological changes. The advent of new technologies can enable different forms and uses of building materials (Ching, F. D. K, 2007). Sustainability and environmental impact are increasingly shaping architectural design. Adaptations for energy efficiency, climate resilience, and sustainable practices lead to transformations (Vale, B., & Vale, R, 1991). Urban Planning Policies: Local zoning laws, building

codes, and urban development plans can significantly dictate the morphological evolution of buildings. Changes in policy often lead to adaptations in existing structures or the creation of new forms (Jacobs, J., 1961). The historical significance of a building often influences its preservation or transformation. Buildings may be modified to meet contemporary needs while retaining historical features (Ashworth, G. J., & Tunbridge, J. E.,1990). Therefore, the morphological transformation of buildings is a dynamic process influenced by a complex interplay of cultural, economic, technological, environmental, urban, and historical factors. Understanding these agents of change is essential for architects, urban planners, and policymakers to create responsive and adaptive built environments.

2.3. Historical Overview of the World Christian Churches

According to the bible, the root history of churches starts in the 10th-century BC by the time of the Solomon temple (1 Kings 5-9, 2 chronicles 2-7, Ezekiel 40-43. “1 Kings 5,) “ *Behold I purpose to build a house for the name of Yahweh my God, as Yahweh spoke to David my father, saying, your son, whom I will set on your throne in your room, he shall build the house for my name*”. The architecture of the Christian temple has a background. (Liliya, 2016). In the bible the tabernacle which Moses constructed on God's command, God-given on Mount Sinai is described: "*Also they will build me a sanctuary, and I will live in the middle of it*" (Ref. 25; 8). The idea of construction comes from above, from God "*The temple which the tsar built Solomon to the Lord, 60 elbows, 20 wide and 30 elbows high, and the ante church before the temple is 20 elbows long, according to the width of the temple and 10 elbows wide before the temple*" (3rd Tsar.6; 2, 3) So, architectural ratios of the sizes of the temple were established based on a God-given example. (Liliya, 2016).

According to (Fr. Tadrous Y. Malaty, 1994) on his article asserted that, Church and the physical Building transformation were started from **Elementary Altars:** Initially, church buildings began with simple, mobile forms of altars. These altars emphasized the concept of sacrifice as a means of reconciliation with God, reflecting a personal and direct relationship with the divine. **The Tabernacle:** As the Israelites journeyed through the wilderness, God instructed them to build the tabernacle, which served as a portable "House of God." This marked the first official divine commandment for a communal place of worship, symbolizing God's presence among His people as they

traveled towards Jerusalem. **The Temple in Jerusalem:** Once the people settled in Jerusalem, the temple was constructed as a more permanent structure, designed according to divine specifications given to King David. This temple represented God's kingdom and included similar elements to the tabernacle, but with a fixed location, signifying a deeper establishment of God's presence among His people. **The Church of the New Testament:** The final transformation occurred with the establishment of the Church of the New Testament, which was founded on the incarnation of the Word (Jesus Christ). This phase marked a new relationship with God, where believers became part of the holy Body of Christ. The church building in this context is seen as sacred, and the act of entering it is filled with reverence, as it symbolizes the presence of God among the congregation (Fr. Tadrous Y. Malaty, 1994). After the teaching of Christ, The house church was the first Christian space of worship when Christianity wasn't recognized as official religion by the Roman Empire. The house church could be many houses of Christians which were used as place of worship. Later on Basilica was adapted with little adaptation from roman secular buildings which were used as low court, council, chamber etc. (Mebratu, 2012).

2.4. Morphological Changes of World Church Buildings

The development of Church architecture has unfolded over two millennia of Christian history, shaped both by innovation and the adaptation of various architectural styles, as well as by evolving beliefs, practices, and regional customs. From Christianity's inception to today, the key milestones in the transformation of Christian architecture have been the grand churches of Byzantium, Romanesque abbey churches, Gothic cathedrals, and Renaissance basilicas, with a particular focus on harmony in design (Hamlin, 1907).

According to Fletcher (1920), Early Christian Architecture Morphology originated in Rome and shaped by various influences due to its central position within a vast empire, which significantly influence the development of Christianity despite its eastern roots. Geographically, Rome's location facilitated the blend of diverse architectural styles, particularly seen in Ravenna, where Justinian's conquest in A.D. 537 bridged early Christian and Byzantine designs. Geologically, the remains of Roman structures influenced the architectural approach of the new basilica churches. Builders incorporated columns and decorative elements from older edifices, using marbles and features salvaged from Roman ruins. Climate variations also played a

role, with the milder Italian weather favoring different building techniques compared to the northern regions. The rise of Christianity, especially post-Constantine's Edict of Milan in A.D. 313, transformed Christians from marginalized worshippers in the Catacombs to a prominent religion, leading to open services. Social and political changes, such as Constantine's move of the capital to Byzantium and the subsequent division of the Roman Empire, further impacted architectural developments, with influences from the Gothic dynasty enriching Early Christian art in Ravenna. The Early Christian period (A.D. 300 to 604) saw significant historical events, including the Teutonic invasions and Alaric's sack of Rome, which helped solidify Christianity's presence in Europe. Architecturally, remnants of Roman structures inspired the design of basilica churches, which repurposed materials from earlier edifices, and gradually evolved, in style, utilizing columns and arches that marked a transition toward Romanesque architecture. The resulting basilica churches, characterized by their spacious interiors and dignified proportions, reflected both the continuity of Roman traditions and the emergence of new religious expressions in a changing sociopolitical landscape (Fletcher, 1920).

2.5. Characteristics of Orthodox Christian Churches

In the 3rd Century AD, after Constantine legitimated the church institution to be antique for the world church architecture was started. But some part of the world such as northern Africa and Central Syria had freedom to enjoy the worship, so there was attempt to make worship space and looks the current basilicas (Hamlin, 1907).

According to Fletcher (1920), the province of the Roman Empire in the East had a Christian state, and St. Peter, St. Paul, and other missionaries carried Christianity toward Rome because the center of the world empire was found in Rome. Roman Architecture was the start-up idea and the ruins helped them to develop the early style of Christian Architecture Fletcher (1920).

The development of Christian Architecture have mainly four phases; Early Christian & Byzantine (300AD-800AD), Romanesque (800AD-1200AD), Gothic (1200AD - 1500AD), and Renaissance (1500AD-1700AD). The architecture is developed through phase; the plan, forms and the architectural elements. This has brought establishing new norms, new construction features, new materials, different types of

façade treatments and also has influence for secular domestic architecture (Alfred D. and Foster H., 1907).

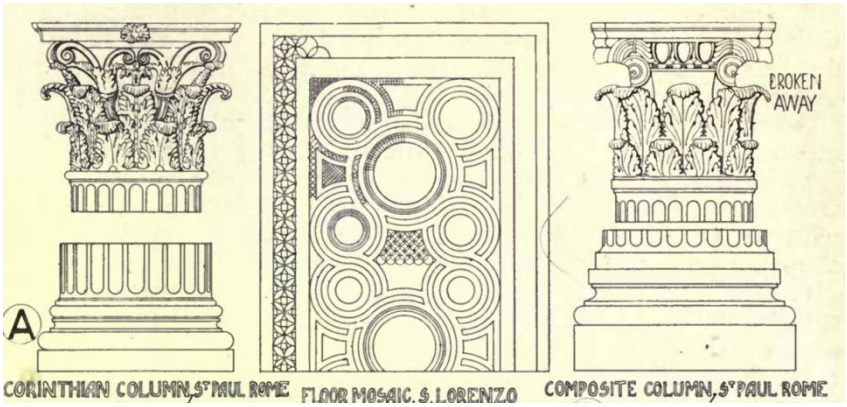


Figure 1: Corinthian and Composite column and floor mosaic of Christian Ornaments Source- (Fletcher, 1920)

Figure 2:Early Basilica Church of St. Peter, Rome Source - (Fletcher, 1920)

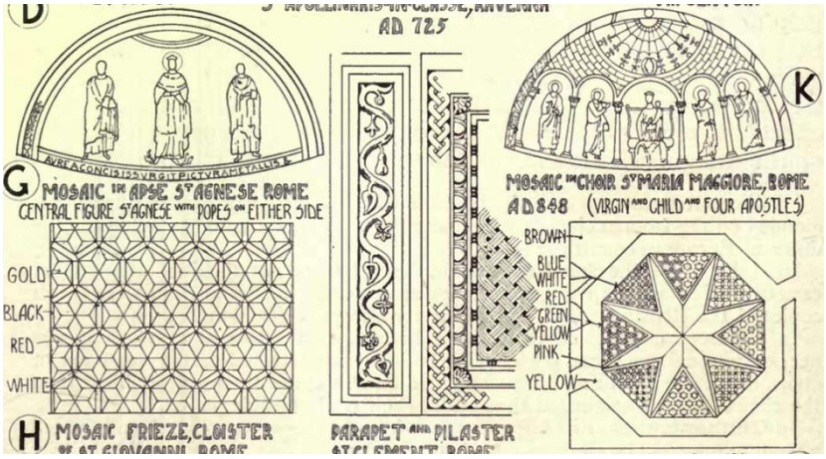


Figure 3: Mosaic Dome, wall, Parapet, and floor of early Christian Ornaments Source - (Fletcher, 1920)

2.6. Contextual Overview of EOTC Buildings and its Characteristics

The concept of Ethiopian Orthodox Tewahdo Church has begun by the *Ethiopian eunuch Pakos* in 34 AD after being baptized by St. Philip and later the religion founded by Fremnatos (*Aba Kesateberhan*) and the nine saints. These become known as Ethiopian Orthodox Tewahdo (Gorgorios, 1993).

As a revered space where heaven and earth meet, a church building is a sign of the whole heavens. The (*k'idisitek'idusani) or (mek'idesi)* [Holy of Holies of the Ethiopian Church building represents heaven, whereas the nave (*k'idisiti)* symbolizes the earth. The altar is the "Table of the Kingdom" where the bread of life is obtainable (Mebratu, 2012).

According to A. Gorgorios in his book asserted that In EOTC church building design there are 3 concentric parts of space; (*k'inē mahilēti),* means the place where cantors stand to sing hymns and where the (*dabtera)* or cantors stand. To this part the community at large has ready access. It corresponds to the outer part of the Tabernacle, or of Solomon's Temple (Gorgorios, 1993).

On the North side of the *k'inē mahilēti*, clergy and deacons stand at midnight and at dawn hours. In the ancient church, this space was used for baptisms. On the West side of the *k'inē mahilēti*, there is a space where the clergy, monks and deacons sing the Psalms (*Itane moger)* during the midnight hours and the *Mahlet* in the morning. On the south side of the *k'inē mahilēti*, the available space is a women's stand. In church ordinance, it is divided by curtains because men and women is not allowed stand together and pray (Merahi K, 1999).

The next chamber is (*k'idisiti)* Place of miracles which is generally reserved for priests, but to which laymen have access for the administration of Holy Communion. This is equivalent to the middle part of the Tabernacle, or of Solomon Temple. The bishop sits are reserved in this space. The sacrament takes place in this space on the west side. Standing on the west and facing to East direction is the memorize of direction where the Christ will come, and the east is the image of Our Lady (Marāḥi.K, 1999). In the Old Testament, a table, a lampstand, and an altar of incense were placed. Sacred paintings are painted or placed on the wall separating this room from the poetry chamber, or else they are hung. Sub-Christians are not allowed to enter this room (Mebratu, 2012).

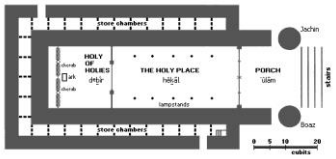
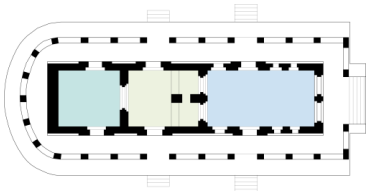
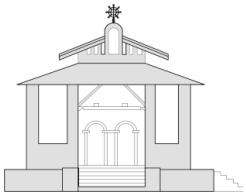
On the East side of the *k'idisiti* stands where the parishioners offer the Holy Communion and the peoples receive the body according to their ranks. On the west side of the *k'idisiti* is a place for standing clergies, deacons, delegates, teachers and bridesmaids. On the north side of the *k'idisit,* virgin nuns, men who cut and male laity consecrate it. On the south side of the sanctuary, virgin nuns, wives of clergy and deacons, and succulents consecrate the parishioners (Mebratu, 2012).

With the exception of baptism and penance, the other sacraments of the church are performed in the same section. The inner most part is the *(mek'idesi) or* (*k'idisite k'idusani)* Holy of Holies, where the (*tabot)* rests and to which only access by priests and deacons (Lindahl, 1970).

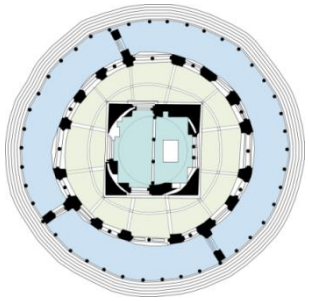
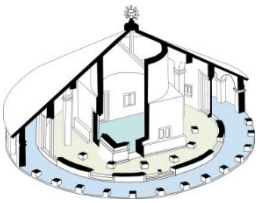
Orthodox Church Architecture in general has its own theological principles that guide the design of the Church. Ethiopian Orthodox Church as well has indigenous design principles and cosmological symbols that interpreted in the design. (Mebratu, 2012).

Church books, scholars and researchers such as Aba Gorgorios (2014), Tamene, (1998) on their book and article asserted that Ethiopians have developed three types of church Architecture style and construction in EOTC building system. It can be observed in different parts of Ethiopia. These are;

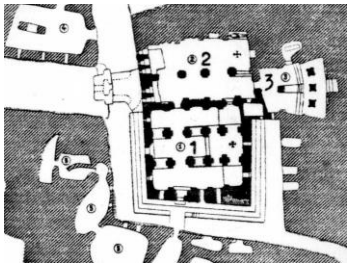
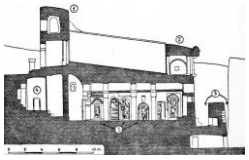
Table 1: Types of traditional Ethiopian Orthodox Church buildings

Types of Traditional Ethiopian Orthodox Church Building			
Basilica/ Rectangular Church			
Type plan	**Description**	**Elevation/Section**	**Description**
 *Temple of St. Solomon (Source - Google.com, 2020)*	The design of this type of church building originated in the eastern part of Jerusalem, on the temple of St. Solomon on Mount of Mariah. It is the first church type which looks the shape of an old Testament temple or synagogue (Aba Gorgorios, 2014).	 *Temple of St. Solomon (Source - Google.com, 2020)*	Basilica type of church officially present as the most common church typology in the whole of Christian world (Aba Gorgorios, 2014).
 *Exemplary of EOTC Basilica/ rectangular church type (Source - Phillipson. 2009)*		 *Exemplary of EOTC Basilica/ rectangular church type (Source - Phillipson. 2009)*	The church building looks the shape of an old testament temple or synagogue. It has 3 chambered spaces.

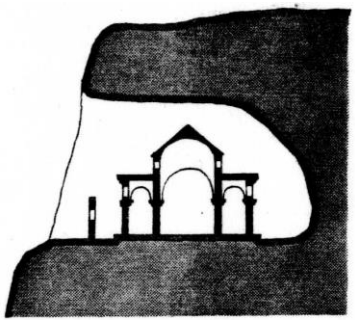
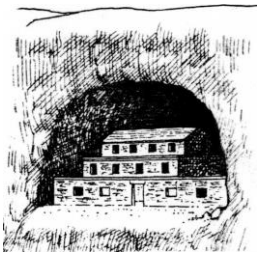
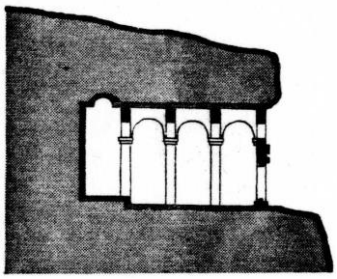
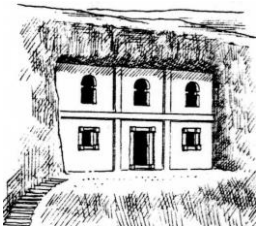
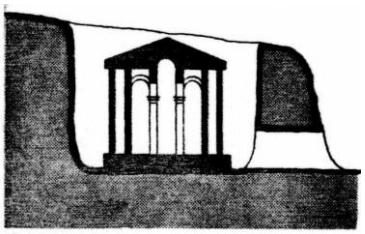
In the church theological architecture believes, Holy book says about Solomon's fist church design; *"Now the house which King Solomon built for the lord, its length was sixty cubits, its width twenty, and its height thirty cubits. The vestibule in front of the sanctuary of the house was twenty cubits long across the width of the house, and the width of the vestibule extended ten cubits from the front of the house. And he made for the house windows with beveled frames"* (1Kings 6:2-4).

Circular/ Round Church			
Type plan	**Description**	**Elevation/Section**	**Description**
 *Exemplary of EOTC circular church type, (Source - Phillipson. 2009)*	The most famous and familiar church type in Ethiopia. It has been built majorly since the 16th century (Lindahl, 1970).	 *Sectional view* Source - Author 	It has three chamber spaces and clearly defined the gentle, ladies and lead church master's space. This kind of church structure can be either circular or Octagonal style

Ethiopians inspired the concept of round type churches style from the southern Ethiopia traditions of customary vernacular *"Tikul"* house (Tamene G., 1998) (Friedlander, 2015). On the other hand, there is also another perspective, Ullendorff asserts that the typically circular Ethiopian Church structure "is clearly derived from the threefold division of the Hebrew temple (*temple of St. Solomon)*" (Ullendorff, Edward, 1957).

Rock Church Type plan	Description	Elevation/Section	Description
 (Source - Lindahl, 1970).	These types of churches are sculptured from single piece of monolithic rock. It is mostly constructed in remote places among steep mountains (Lindahl, 1970).	 *Sectional view* (Source - Lindahl, 1970).	These types of church building have been made for protection and isolation of churches (Lindahl, 1970).

Lindahl (1970) on his book asserted that, the inside of the rock churches has three types;

	Built-up cave churches		
 (Lindahl, 1970).	It is an ordinary church building type placed inside a natural cave. They have been made for protection and isolation of churches (Lindahl, 1970).	 (Source - Lindahl, 1970).	It have independent roof so the church is additional part of the cave (Lindahl, 1970)..
	Rock – hewn cave churches		
 Source - (Lindahl, 1970).	These types are cut the rock inwards from a vertical cliff and it have continuous roof.	 (Source- Lindahl, 1970).	
	Rock- hewn monolithic churches		
 (Source - Lindahl, 1970).	It is cut in one piece from the rock and separated from it all around by a trench and it is an open upward (Lindahl, 1970).	 (Source - Lindahl, 1970).	These monolithic types are always imitated a built – up structure. Other countries have not constructed church in this particular manner (Lindahl, 1970).

In the Ethiopian Orthodox church, Compound spaces have 3 chamber spaces. According to church book asserted that, before entering to the main church building there is 3 compounds which has different activities and considers part of the church space. The church and outer court most of places are often thatched, with mud or stone built walls. The main church buildings are normally surrounded by a forested area all the compound, which acts as a biodiversity reservoir in areas of the world that

are otherwise deforested. And also gives good sound effect for the prayers in the compound.

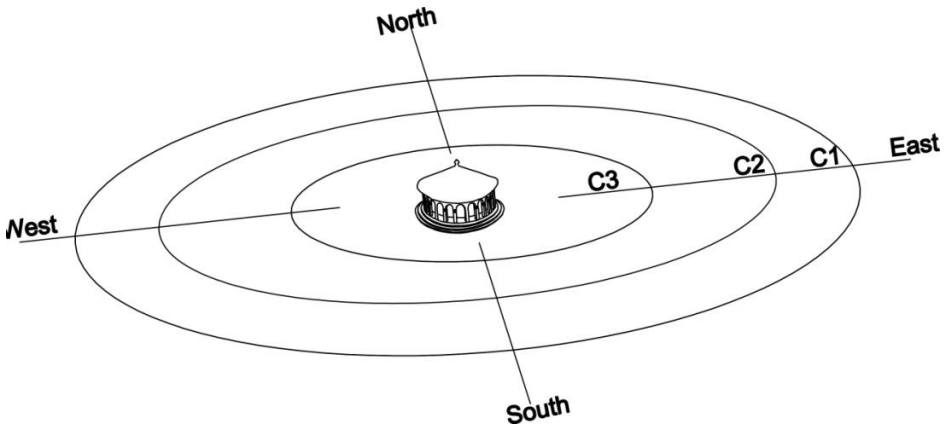


Figure 4: Characteristics of indigenous church compounds conceptual diagram

According to the church key informants said, as the ancient apostolic church, EOTC has had design principles that have developed over time with deep spiritual meanings. The mains are as follows. It has 3 main compounds.

Orientation – Buildings are organized on the east, west, south, and north. They are always stable unless they change in different circumstances. North – for Bell space, South – the house of baptism is being built in this direction, East – The direction in which Bethlehem is to be built and the entrance for priests to the church building. West – The dominant orientation which is different from church services will be held outside on the west side (Aba Gorgorios, 2014).

Everything done in the Orthodox Tewahdo church has its own and story that defines the identity of the church. Elements of the church building have each their own cosmological symbolic meaning. The following are some symbols, Pillars- Angeles and Apostles, Steps- Jesus Christ, Compound of the church - Eden Paradise and Help of God, Trees and forests – Angeles, Partition walls – Prophets, Carved stones and woods – Martyrs, Bell – John The Baptist, and *Gulilat* (Dome) – Jesus Christ's crucification. According to his interpretation the numbers of columns (pillars), steps, compound of the church, walls of the church space partition and the rest determined by the scale of the church building and the given site context and this church symbolism is the recent interpretation (Gorgorios, 2014), (መጽሐፈ ቅዳሴ, 1988).

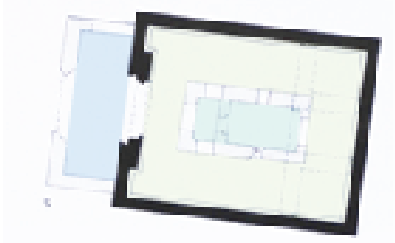
2.7.Morphological Changes of EOTC Buildings through time.

(Marāḥi K., 2009) asserted that from the Morphological transformation of EOTC architecture, there were interventions coming from different direction through time. There were different stages to reach the current look of the church architecture. The sequences here presented on a national bases, taken together to give rise to several important conclusion about the church styles (Phillipson, 2009).

2.7.1. Axumite period (before Christianity become official)

Before Christianity became the official religion, the Axumite period marked Aksum itself as the principal metropolis, which later evolved into the royal capital and eventually the ecclesiastical center of the country. During this time, they built the multistory temple at Yeha, which exhibits strong South Arabian influence, a feature that was extremely common in monumental structures of that era (Phillipson, 2009).

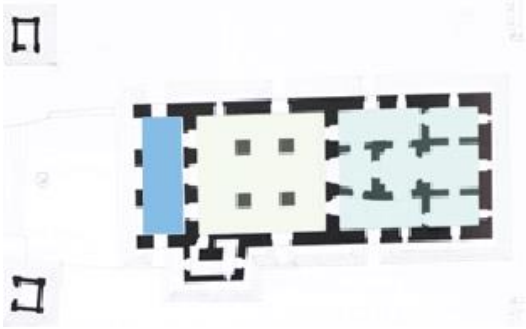
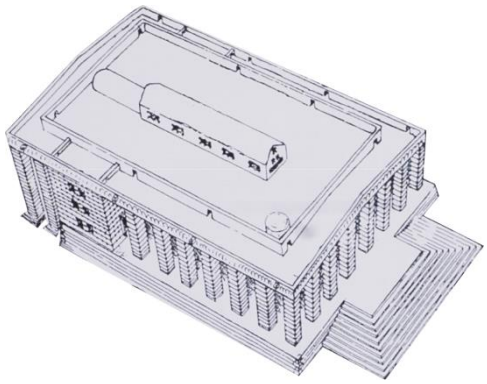
Table 2: Exemplary from the oldest standing structure and former temple of Yeha

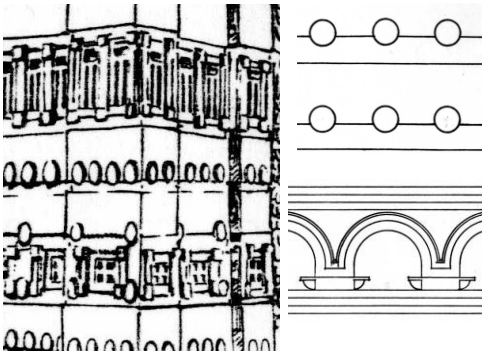
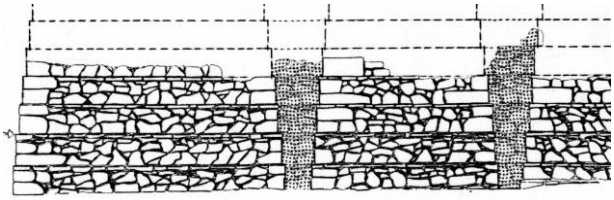
Space Content	Building Shape, Physical Form, and Architectural details
 *Yeha plans of Great Temple (Phillipson, 2009)*	 The southern Arabian influence which is extremely common for monumental structure.
 *After sacred the temple to church of Great Temple (Phillipson, 2009)*	

2.7.2. 4th-8th century Ethiopian church Architecture

Ethiopian church architecture (including present-day Eritrea) developed as a complex synthesis of local Axumite building traditions, introduced Christian liturgical plans, and techniques adapted to regional materials and cultural practices (Villa, M. 2017). One of the key features inherited from Axumite architecture is the use of alternating stone and timber — especially horizontal wooden beams integrated into stone walls. These beams often project slightly from the wall surface in what is known colloquially as the "monkey-head" technique, both as structural reinforcement and for aesthetic articulation (Kribus, B. 2024).

Table 3: Exemplary from the Axumite structure, Axum Stele, and stone masonry wall

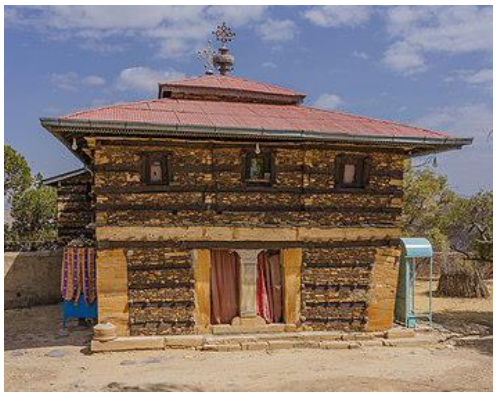
Space Content	Building Shape, Physical Form
 *(Phillipson, 2009)* The old testament church adapted the new testament while the space arrangement establish Syrian basilica plan. Some church buildings such as Aksum Tsion have 7 *mek'idesi* space.	 *Formal plans possible reconstructions of the Axumite cathedral (Source - Phillipson, 2009)*

Architectural details
 (Source - Lindahl, 1970). It expands the Axumite style to other church buildings
 (Source - Lindahl, 1970). The typical technique of dry – stone masonry with large and squarely dressed stones at the corners, small broken stones for the main bulk of walls, and slabs of schist or similar thin flat stones to cover narrow "shelves" which are formed (Lindahl, 1970).

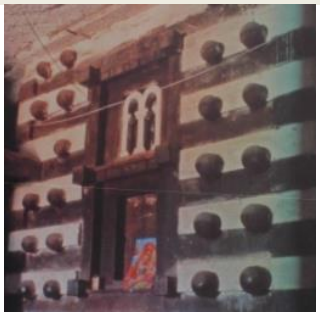
Based on the available data summarized in the above shows strong continuity from Axumite period the 3 ambulatory spaces are clearly defined according to sequences. It

is rectangular plan divided in to three parts. *k'inē mahilēti* (cantors stand area), *k'idisiti* (the holy of holies) and *mek'idesi* (sanctuary). The church has two vestibules which lead to *k'idisiti.* Double door way in the east gives access to the main body (*k'idisiti*) of the church which is divided in to a nave and two isles. (Phillipson, 2000) *mek'idesi* is separated in to three chambers. The central one is sanctuary.

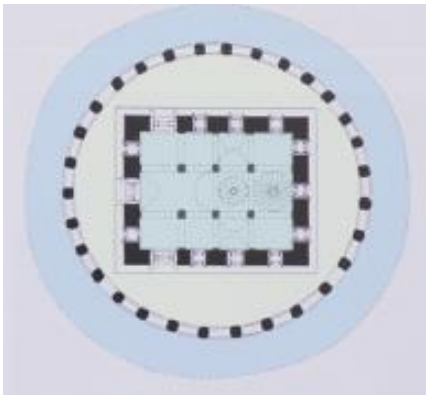
Table 4: Characteristics of the Axumite structure, in terms of space and elements

Space Content	Building Shape, Physical Form
 *Space organization of Debredamo church in Aksum (David, 2009, pp. 17)*	 *Debradamo, external view of the large church (Google.com, 2020)*

The stone masonary for these houses follows the old Axum traditions. Large well dressed stones at the corners and small stones else where.

Elements and decorations	
 All the curved ornaments and symbols are made of fine wooden material This method of construction was captivated from the anicent monolithic structure of Axum (Naigzy, 1976).	 The stones are joind together with "chika" mortar. Chika is basically a mixture of any kind of earth clay with water. The system of construction called "Monkey head".

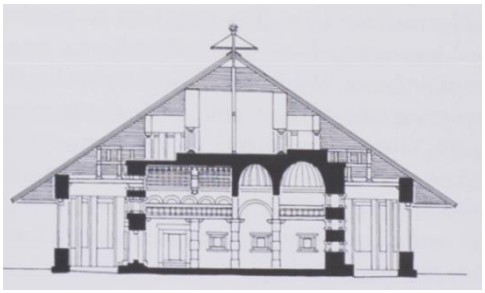
Space Content	Building Shape, Physical Form



Debra Tekle Haimanot Bethlehem Ground planar view (David, 2009)

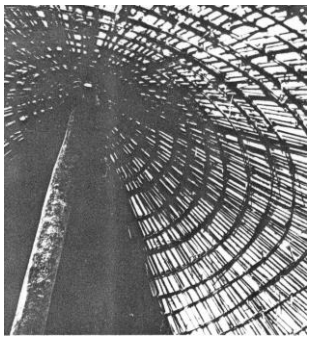
The interior of the rectangular spaces is divided by two rows. It has 2 chambers with the conical roof and the surround of the church zone delimited by outer columns of the round structures serving as the *Qinemahlet* (David, 2009).

Architectural details



Debra Teklehaimanot Bethlehem Section view (David, 2009)

The external ambulatorical space extention is built in 19th periods.



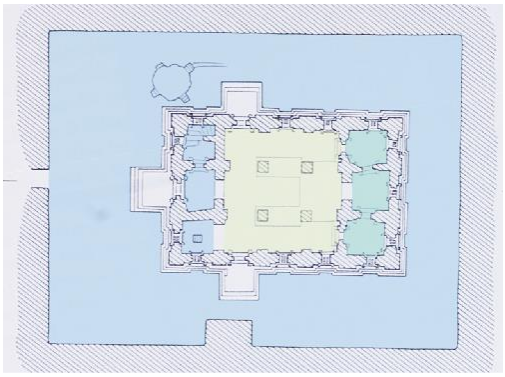
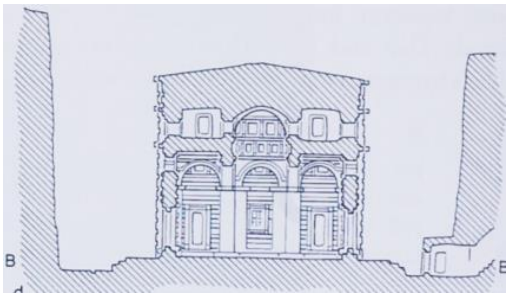
The church utilizes material which is collected from the land nearly free for the taking. The *"Sembelet"* used for thatching the roof of the church. Have common pattern to tie the roof structure and cover built by the weaving process (Naigzy, 1976).

2.7.3. 9th-12th century Ethiopian church Architectures

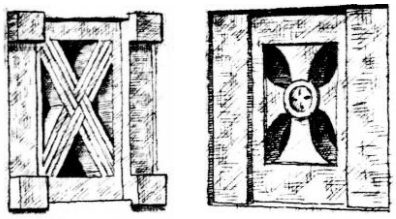
From the historical context of Ethiopia, numerous rock-hewn churches were developed in the northern regions, particularly in Tigray and Lasta. However, the most advanced and architecturally sophisticated examples emerged during the reign of the Zagwe dynasty (12th–13th centuries). Under the leadership of King Lalibela, a remarkable group of monolithic rock-hewn churches was carved directly from solid volcanic tuff, creating some of the most extraordinary examples of medieval architecture in the world (Phillipson, 2009; Buxton, 1970). These churches—such as Bete Medhanealem, Bete Maryam, and Bete Giyorgis—demonstrate exceptional craftsmanship, symbolic design, and liturgical functionality. Their construction

reflects not only the high level of technical innovation but also the spiritual devotion of the period, intended to establish "a New Jerusalem" in response to the Crusades that had made pilgrimage to the Holy Land difficult (Finneran, 2007). As a result, Ethiopia's monolithic rock-hewn churches remain among the most impressive architectural achievements in both African and world architectural history.

Table 5: Exemplary of 9th - 12th century Ethiopian Church Architecture

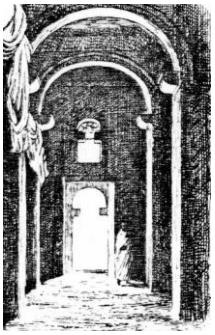
Space Content	Building Shape, Physical Form
 Source - (Phillipson, 2009). The church spatial arrangement is clearly demarked the 3 ambulatories of church internal spaces and it has one compound for gathering the church participants (Phillipson, 2009).	 *The section of Bete Medhanialem church building* Source - (Phillipson, 2009). This types of church are so called rock hewn monolithic church which is cut in one piece from the rock and separated from it all around by a trench and it is an open upward from all direction (Phillipson, 2009).

Architectural details



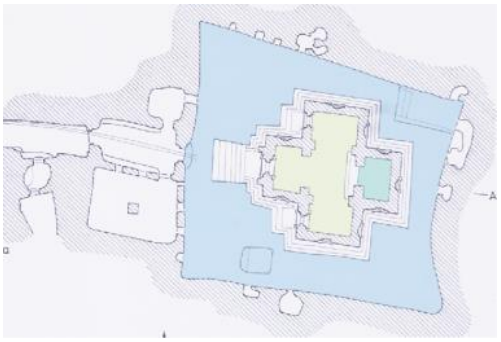
(Lindahl, 1970).

Most of the windows in Lalibela can be analyzed in terms of easily understandable structural elements. Such combination must have been characteristic of medieval Christian architecture in Ethiopia, as far as can be judged from the preserved rock churches (Naigzy, 1976).



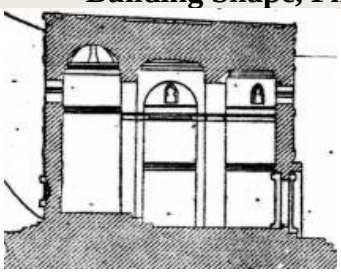
The roof was probably decorated by the senior masons while they were waiting for the less skilled masons to excavate the walls and start hollowing out the Interior. It shows with particular clearness the combination of plan and section of Mediterranean or eastern basilica with structural technique of an Axumite palace or temple (Naigzy, 1976).

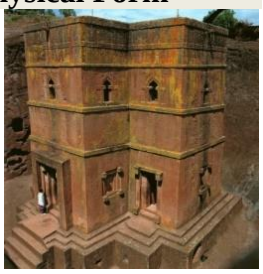
Space Content	Building Shape, Physical Form



Source - (Phillipson, 2009).

Two major spaces found inside, become act as one but the *Qidist* space clearly demarcated and peoples participate the liturgy outside of building space if they are not ready to take holy communion (Lindahl, B., 1970).

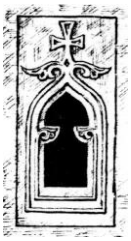


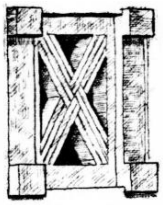


Source - (Lindahl, B., 1970).

The church of Lalibela Bête Giorgis was not constructed but they were excavated (Lindahl, B., 1970).

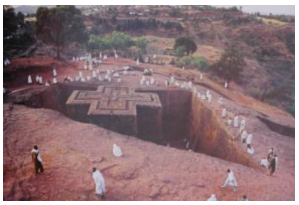
Architectural details

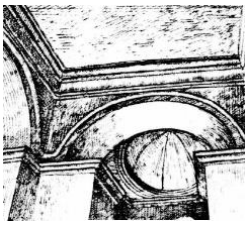




Source - (Lindahl, B., 1970)

When the decoration is purely architectural it may consist of small column with bases and capitals, joined by arches. The columns are often much shorter than normal and the pattern becomes something like the example showed in the left (Lindahl, B., 1970).





Source - (Lindahl, B., 1970)

The church was created by first carving out a wide trench on all four sides of the rock, then painstakingly chiseling out the interior. Such a task required to complete only hammers and chisels is astounding. Each carved entirely out of single block of stone with its roof at "ground" level. The Arch system, Cupolas dome are major features of this church styles (Lindahl, B., 1970).

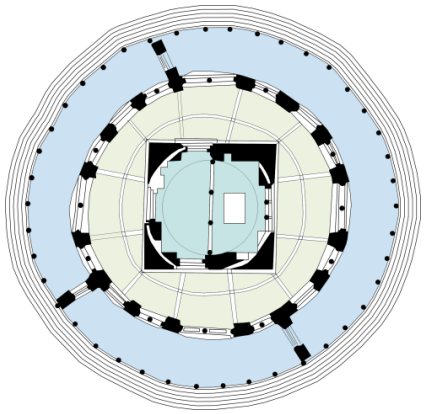
2.7.4. 13th-17th century Ethiopian church Architectures

Between the 13th and 17th centuries, Ethiopian church architecture underwent significant transformation influenced by both internal and external socio-political events. During this period, numerous ecclesiastical buildings and cultural artifacts were destroyed due to repeated conflicts—including the incursions of Ahmad ibn Ibrahim al-Ghazi (commonly known as Ahmad Gragn) in the 16th century—and the ensuing attempts by foreign powers to introduce Roman Catholicism during the reigns of Emperors Susenyos and his son Fasilidas (Merahi, 1999; Pankhurst, 1998).

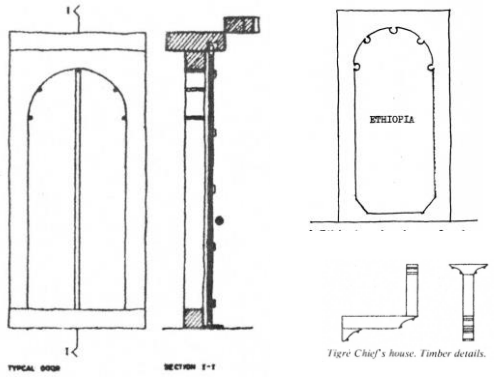
These upheavals caused widespread devastation to religious and architectural heritage across the Ethiopian highlands.

When Emperor Fasilidas ascended the throne in the mid-17th century, he initiated an extensive program of reconstruction and revival of Ethiopian Orthodoxy. The architectural style of this era, particularly evident in Gondar, marked a shift from the traditional Axumite building techniques—characterized by the use of alternating wood and stone layers—to more durable masonry construction influenced by Portuguese, Indian, and possibly Ottoman architectural traditions (Finneran, 2007; Phillipson, 2009). The resulting structures, such as the Gondarine castles and churches of Debre Berhan Selassie, exhibited a synthesis of indigenous design and early modern stylistic elements, signifying a gradual evolution toward more monumental and permanent ecclesiastical architecture in Ethiopia's cultural landscape.

Table 6: Exemplary of 13th - 17th century Ethiopian church Architecture

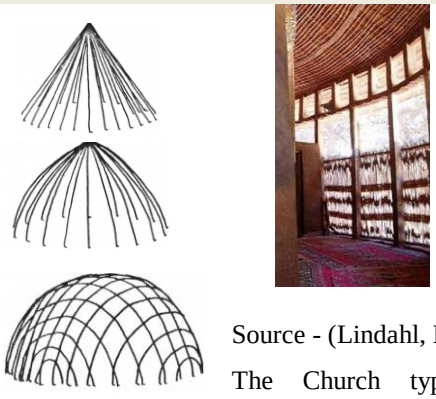
Space Content	Building Shape, Physical Form
 Source - (Lindahl, B., 1970)	 Source – Google.com
The type of traditional round church space is quite different from rectangular basilica. Derived from the ordinary southern part of Ethiopia round hut with its conical thatched roof house (Tamene, 1998).	Verandahs are often present, although made as decorative wood arches in the Axum house and as structural stones. The habits of kings in the 15th & 16th centuries to use more or less round tents. It has three chamber spaces and clearly defined the gentle, ladies and lead church master's space (Naigzy, 1976).

Architectural details



Source - (Lindahl, B., 1970)

The woodwork for this house is indicative of the level which Axumite building practices had attained. Impressive pieces can be produced by the use of such simple tools as the axe and adze. All joinery elements are cut from tree trunk(Lindahl, B., 1970).



Source - (Lindahl, B., 1970)

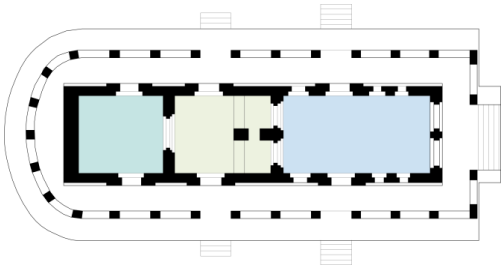
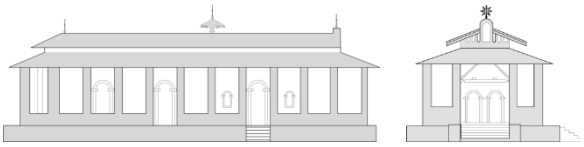
The Church types around Axum have borrowed much from the practice of ancient Axumite architecture. Their form and plan layout have changed. The roof is conical, thatched, normally not supported by a central pole, and with some kind of clay pot as top, gulilat.

Ethiopian circular church plan is characterized by its interior space that is subdivided into ambulatories encircling a central enclosed cube. This design includes a tripartite division of the interior space, with a holy of holies embedded at the center, which reflects a distinctive spatial organization unique to this architectural style. The circular church plan is unrelated historically to the centralized church plans of early Christian and Byzantine architecture. While those styles typically feature a more linear or centralized layout, the Ethiopian circular plan introduces a round structure with concentric ambulatories, marking a significant innovation in church design that is specific to Ethiopian culture. The development of the circular church plan in Ethiopia was significantly affected by the early sixteenth-century jihad led by Graññ against the Christian Ethiopian state, which resulted in the destruction of many royal churches in the regions of Amhara and Shoa. This tumultuous period obscured the origins and initial development of the circular plan, making it difficult to ascertain its precise date and location of inception (Heldman, M.E.,1992).

2.7.5. 18th-19th century Ethiopian church Architectures

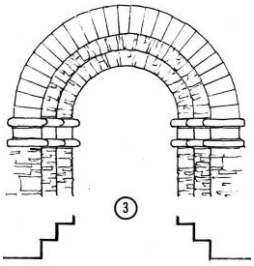
During the 18th and 19th centuries, Ethiopian church architecture experienced significant external influences resulting from increased international contact and geopolitical changes. The architectural style of this period incorporated elements from Baroque, Arab, Turkish, and Indian Gujarati traditions. This transformation was largely facilitated by expanding trade networks and diplomatic exchanges with the Ottoman Empire, India, and Europe. The presence of Portuguese soldiers and missionaries, who introduced European artistic and architectural ideas such as the Baroque and Jesuit styles, also played a crucial role in shaping the aesthetic of Ethiopian ecclesiastical buildings (Pankhurst, 1982; Finneran, 2007). Moreover, the Ottoman–Ethiopian conflicts and subsequent commercial relations along the Red Sea brought exposure to Arab and Turkish architectural motifs, including domes, arches, and decorative plasterwork (Merahi, 1999; Chojnacki, 2000). Likewise, contact with Indian merchants from the Gujarati coast introduced new ornamental designs and construction materials, reflecting Ethiopia's position as a cultural crossroads between Africa, the Middle East, and South Asia. Consequently, church architecture from this era embodies a hybridized visual language that integrates both indigenous traditions and foreign stylistic influences, demonstrating Ethiopia's adaptive response to global currents of artistic exchange (Mercier, 1997; Phillipson, 2009).

Table 7: Exemplary of 18th - 19th century Ethiopian Churches

Space Content	Building Shape, Physical Form
 Source – Author An Imposing rectangular structure, and is regarded by some experts to contain the finest art of its period anywhere in Ethiopia. The space arrangement establish basilica plan with clearly defined the 3 chambers *mek'idesi, k'idisiti, k'inē mahilēti* (David, 2009).	 Source - Author Built of stone and contained under a two-tiered thatched roof. Standing guard over the church are 12 circular towers connected by a stone wall with large arched wooden gates (David, 2009).

Architectural details

In most church's cupolas and ostrich eggs are placed over the apex of the thatch & a stick often projects through it (A. Gorgorios, 1993).



The door and window arches in this church architecture are semicircular or sometimes lower. In the simplest case the openings bridged by the normal arch straight stone slabs.

Source - Author

The church utilizes material which is collected from the land nearly free for the taking. The *"Sembelet"* used for thatching the roof of the church. Have common pattern to tie the roof structure and cover built by the weaving process (Lindahl, B., 1970).

Since natural stone is the predominant building material, the color of the church building as a whole blend in to the surrounding landscape and the building do not stand out particularly strongly despite their simple geometrical shapes and sharp outlines.

2.7.6. 20th century Ethiopian church Architectures

In the 20th century, Ethiopian church architecture underwent significant transformation in response to the rapid modernization and urbanization of the country. As cities such as Addis Ababa evolved into political and diplomatic centers—particularly following Emperor Menelik II's and later Emperor Haile Selassie's modernization programs—the built environment began to reflect Western architectural ideals and technologies. Consequently, Ethiopian Orthodox Tewahedo Church (EOTC) architecture was increasingly influenced by Western modernist principles, incorporating new materials such as reinforced concrete and steel, geometric simplicity, and functional spatial organization (Heldman, 1992; Finneran, 2007). These shifts mirrored broader national aspirations toward progress and international recognition, as church buildings began to adopt features resonant with modern civic architecture rather than purely traditional forms (Pankhurst, 1982; Phillipson, 2009).

Despite these visible transformations, there remains a notable lack of comprehensive documentation or scholarly analysis addressing the morphological evolution of EOTC architecture—specifically concerning changes in form, spatial composition, and façade articulation—from both heritage and architectural perspectives. The absence of

such studies has created a critical research gap in understanding how traditional ecclesiastical identity negotiated modern design influences during the 20th century (Merahi, 1999; Chojnacki, 2000). Therefore, this research aims to fill this gap by examining the transformation of Ethiopian church architecture within the context of modern urban development and global architectural exchange.

CHAPTER THREE – RESEARCH MATERIAL AND METHODS

3.1.Study Area Description

The study was conducted in Addis Ababa, the capital city of Ethiopia. Geographically, Addis Ababa is situated just north of the Equator at 9°2′ latitude and 38°45′ longitude, with an elevation exceeding 2,500 meters above sea level. The city is encircled by mountainous terrain, including the Entoto Mountains to the north, the Yerer Mountains and other volcanic cones to the south and east, and the Wechecha Mountains to the west. As the political and administrative center of Ethiopia, Addis Ababa also serves as a major transportation hub and hosts multiple international organizations, including the United Nations Economic Commission for Africa (UNECA). Established in 1887 by Emperor Menelik II, Addis Ababa has evolved as a city that blends traditional cultural values with emerging modern institutions. Although formal urban planning was introduced during the Italian occupation, these plans were primarily grounded in Western ideologies and often disregarded local cultural contexts (Tufa, 2008). The city's urban morphology has been shaped by multiple influences, including political regimes, religious institutions, and social developments. Churches have played a pivotal role in this transformation, serving not only as places of worship but also as symbols of spiritual, cultural, and political identity. EOTC churches in particular have significantly influenced the city's spatial structure and cultural landscape. For this study, the churches selected are those constructed after the establishment of Addis Ababa, representing different periods and architectural forms that reflect broader societal changes.

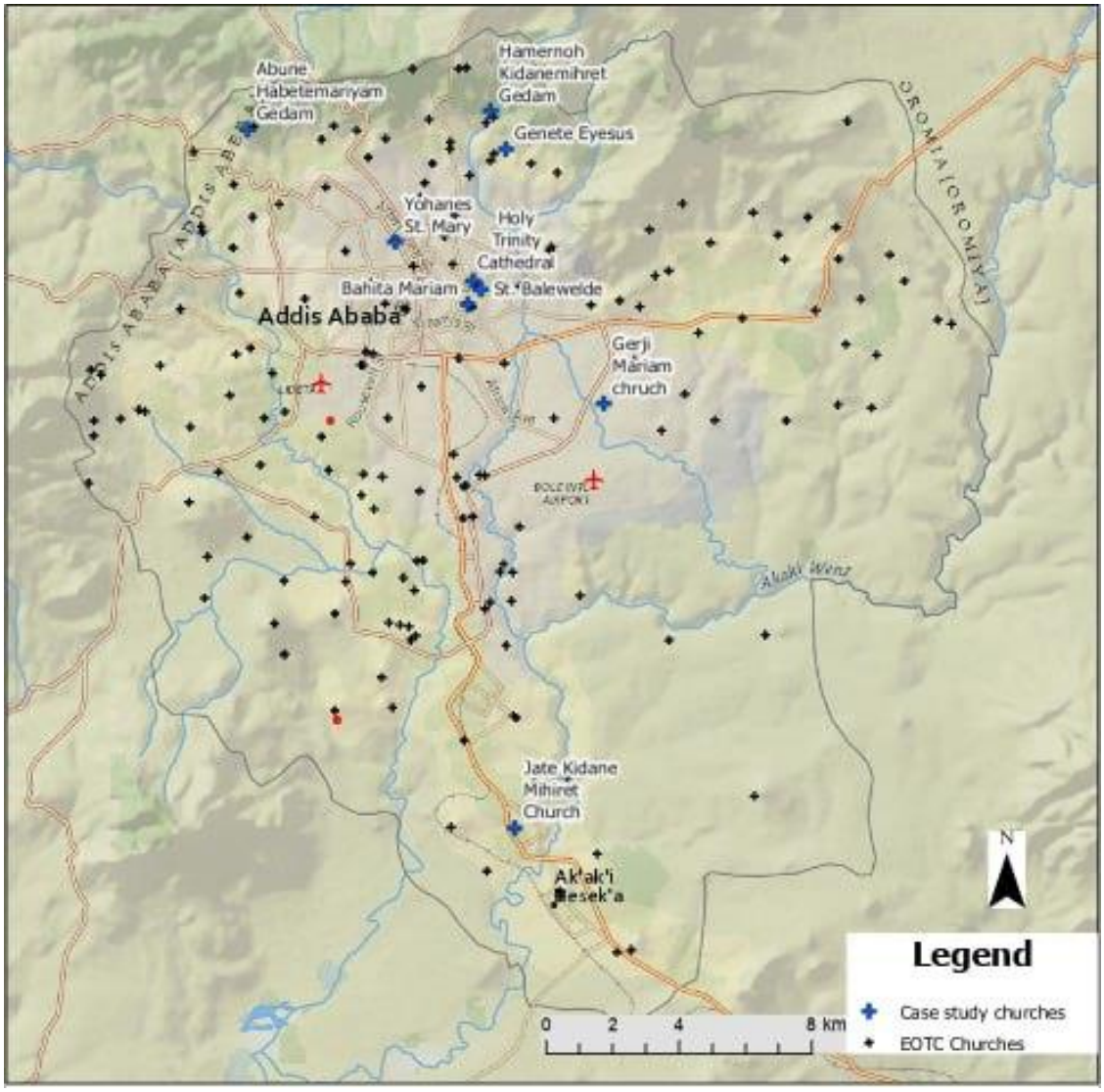


Figure 5: Map of EOTC buildings in Addis Ababa

3.2.Research Design and Approach

According to the nature of the problem and the research objective, which is derived from a complex setting such as factors and morphological change occurrence, the research requires multiple research methods to capture different dimensions like physical shape (form) and cosmetic façade, as well as the spatial content of the church buildings. As a result the study has employed the following research approach

Descriptive research basically acts as a fundamental approach for this study by extracting its data from observation and documenting different aspects of its existing circumstance (Bender, 2010). It supports the first objective of the research by detailing what morphological changes occurred in the EOTC buildings over time. Here, observations can be made by the researcher as a base for understanding the

physical existence of the church architecture through different time period and shape of the church buildings. Documentation on the other hand, includes description of how the morphology of EOTC Buildings transform over time.

As a research method, a case study design combined with a mixed-methods approach was used, offering particular benefits in creating a coherent and comprehensive research framework.

- Case study methods were employed in selected churches, which were treated as representative of specific historical periods and typologies. This approach enabled an in-depth exploration of their unique architectural traditions. In addition, it allowed for the collection of detailed information about various aspects of the churches, including their physical form, façade characteristics, and spatial organization. The method also facilitated a comprehensive understanding of the morphological evolution of Ethiopian Orthodox Tewahedo Church (EOTC) buildings and their transformation over time

Mixed method Approach

To support the case studies and offering logical ground, methodological flexibility, and in-depth understanding of the study, employs a Mixed Method research design combining both qualitative and quantitative methods to provide a comprehensive understanding of the research problem. (Saraswati Dawadi, 2021) (Creswell, 2009).

- Quantitative method to assess the agents of changes contributed to the transformation of the EOTC Buildings Morphology through time. Structured questionnaire survey helps all targeted church believers, scholars, and professional's perception (non-randomly selected across different selected churches) to assess the factor and impact of changed EOTC buildings.
- Qualitative method used to support the quantitative data in relation to the changing factors. Open ended question used for church scholars and professional to explore experiences, concerns, changing relevance and perceptions.

Finally, the implantation of all three enables the researcher to have a holistic analysis that can reinforce the study's validity and reliability. Each method complements the

others to link equal spatial patterns, adequacy indicators, and community perceptions, aligned directly with the study's objectives.

3.3. Church Case study selection

The criteria for selection of purposive sampling are based on the time frame that church architecture tradition changed and the shape of church Architecture was used to select sampling of the churches. From a total of 251 EOTC buildings in Addis Ababa, 215 EOTC buildings were documented on this research. Nine churches were purposively selected to represent different historical periods and typologies. The table below summarizes their classification:

Table 8: Categorizing selected EOTC buildings in Addis Ababa city

Criteria I	Criteria II	No of church	%	One Smpl	Selected churches names
Period	**Building type**				
Pre establishment of Addis Ababa up to end of Emperor Menelik period	Round	13	100%	1	Holy Be-ale Wold Church
	Ethiopian Basilica	-			
	Cathedral type	-			
	Modern and Complex	-			
	Temporary & Unavailable	-			
Empress Zewditu period	Round	5	100%	1	Ta'eka Negest Bata LeMariam Church
	Ethiopian Basilica	-			
	Cathedral type	-			
	Modern and Complex	-			
	Temporary & Unavailable	-			
Emperor Haile Selassie period	Round	5	26.3%	1	Genete Eyesus Church
	Ethiopian Basilica	2	10.5%	1	Entoto Hamere Nohe Kidane Mihret Church
	Cathedral type	12	63.2%	1	Holy Trinity Cathedral
	Modern and Complex	-			
	Temporary & Unavailable	-			
1970's and after	Round	34	19.2%	1	Yohanns St. Mary Church
	Ethiopian Basilica	4	2.3%	1	Kale Terara (mount) Abune Habtemariam Monastry
	Cathedral type	58	32.7%	1	Gerji St. Mariam Church
	Modern and Complex	6	3.8%	1	Jate kidanemihret church
	Temporary & Unavailable	76	42%	No	
Total Number of non - random sampling				**9**	

- Total no. Round type of Church[1] buildings – **57 = 26.2%**
- Total no. Ethiopian Basilica Church[2] Buildings – **6 = 2.6%**

[1] **Round type of Church:** refer to complexes that are circular in function. This includes circle, octagonal, square church plan typologies. This is not limited to circular plan typologies.

- Total no. of Cathedrals type of Church[3] Buildings – **70 = 32.2%**
- Total no. of Modern and Complex type of church[4] Buildings – **5 = 2.3%**
- Total no. of Temporary and Unavailable photo data Church Buildings - **76 = 35.7%**

3.4.Respondent Sampling Selection

The second techniques were questionnaire survey. Because of current Addis Ababa city development and demographic change, the researcher faced challenge to give equal chance for respondents and use random sampling. Therefore non probability sampling techniques were used to select sample respondents. Based on selected nine living churches, questionnaire survey was prepared for believers, Architects and builders, Theologians, Abnet Scholars, Priests, Sunday school representatives, and Sebeka Gubaie Committee Members. The target sample covered 5 – 10% of each group, as shown below:

Table 9: Selection of respondents

Criteria	Detail's criteria	Expected no. of respondents
Believers	5-10% of the selected church population	15 - 30
Church scholars	5-10% of selected church Theologians	3-6
	5-10% of selected church Abnet Scholars	3-6
	5-10% of selected church Priests	3-6
	5-10% of selected church Sunday School representatives	3-6
	5-10% of selected church Sebeka Gubaie Committee Members	3-6
Professionals	Church Architects	3-6
	Architect and Heritage conservator	3-6
	Engineer/ Church Building contractors	3-6

3.5. Type and Sources of Data

Two main types of data have been used in this research: primary and secondary data's. Primary data was collected to understand the current perceptions, spatial practices, and architectural characteristics of selected church buildings. These data were obtained through structured survey questionnaires and direct field documentation at

[2] **Ethiopian Basilica Church:** refers to authentic Ethiopian Orthodox building types that eventually developed over centuries such as Gonder debrebirhan sillassie church.
[3] **Cathedrals type of Church:** are religious edifices that are original to western Basilica church typologies.
[4] **Modern and Complex type of church:** are churches that were highly influenced by modern architecture philosophies, so much so that they deviated from the authentic church architecture tradition.

purposively sampled church sites. Secondary data was collected through the review of historical records and architectural archives related to Ethiopian church architecture plans. Together, these data types supported a robust understanding of the physical and symbolic changes in church morphology over time.

3.6.Data collection techniques

3.6.1. Quantitative Method

Quantitative data was collected by survey questionnaire for a total of 265 respondents participated in the survey, including 200 believers, 30 architects and builders, and 35 religious scholars and affiliated representatives to gain measurable data on agents of change. The questionnaires were designed to gather perceptions about architectural form, typology, construction timelines, liturgical function, and institutional influence. Initially prepared in English and translated into Amharic, the surveys were distributed both individually and in group formats.

3.6.2. Qualitative Method

The qualitative data was collected by using various instruments to ensure methodological precision in data collection and analysis. The instrument included Observation, case study, and archived document analysis. The questionnaire for the scholars and professionals has an open ended question to support the case study.

3.7. Tools Used for the Research

To ensure accuracy, clarity, and effective analysis, a range of tools and technologies were employed throughout the research process. These tools supported both field data collection and post-field analysis, enabling the integration of qualitative observations with spatial and visual documentation.

3.7.1. Global Positioning System (GPS)

GPS devices were used to identify and record the precise geographic coordinates of each selected church site. This ensured accurate spatial referencing for mapping and comparative spatial analysis. The data collected from GPS facilitated the verification of site locations, distances between structures, and alignment with topographical or urban features. In addition, GPS coordinates were later integrated into mapping and visualization software to support geospatial representation of the case studies.

3.7.2. Digital Camera

A high-resolution digital camera was utilized to document the architectural features, façades, interior spaces, and environmental contexts of the studied churches. Photographic documentation provided visual evidence for architectural typologies, material conditions, and morphological transformations over time. These images were also used to analyze stylistic details, decorative motifs, and construction techniques that characterize Ethiopian Orthodox church architecture.

3.7.3. AutoCAD Software

AutoCAD was employed for the preparation and refinement of architectural drawings, including site plans, floor plans, elevations, and sections of the selected churches. This software enabled accurate scaling, geometric analysis, and visualization of the spatial configuration and structural organization. AutoCAD outputs were essential for illustrating the architectural morphology and transformations observed across different historical periods.

3.7.4. Adobe Illustrator

Adobe Illustrator was used for the graphic enhancement of drawings, diagrams, and maps produced in AutoCAD and other programs. It allowed for improved visual presentation and consistent formatting of figures used in the thesis. Illustrator was particularly useful in producing schematic representations of architectural typologies, spatial hierarchies, and stylistic comparisons between case study churches.

3.8. Data analysis techniques

As the study used a mixed research method, data was analyzed using different techniques. Descriptive statistics methods have been used to analyze the quantitative data and comparative cases used to investigate the causes and factors that led to the current changed situations. Here, the presentation techniques are tables, charts, and graphs with statistical summaries showing frequency and percentage. Thus, qualitative research methodology was selected to create broad understanding about the aforementioned church building styles related matters. Qualitative data from open-ended survey responses and direct observation notes were thematically analyzed to identify recurring patterns, narratives, and interpretations related to the architectural evolution of the churches.

CHAPTER FOUR – DATA ANALYSIS AND FINDINGS

4.1. Typological case study of EOTC buildings

This chapter examines the typology of Ethiopian Orthodox Tewahedo Church (EOTC) buildings in Addis Ababa, concentrating on their spatial organization, physical form, and architectural development. It categorizes selected churches into four main types - Round Churches, Ethiopian Basilica-type Churches, Cathedral-type Churches, and Modern and Complex Forms - and examines their development across various historical periods.

The analysis draws on case studies to identify key morphological transformations in space design, form, and highlighting the interplay between tradition and modernity. Both chronological (diachronic) and cross-sectional (synchronic) perspectives are used to understand how EOTC architecture reflects broader socio-cultural and liturgical shifts within the urban context of Addis Ababa.

4.2. Space Content pattern recognition

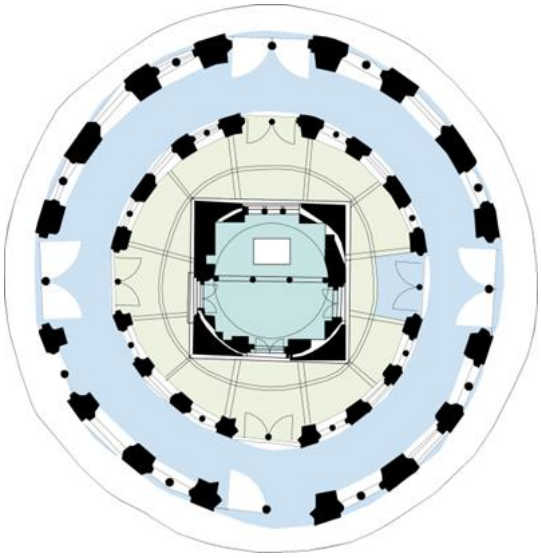
This study examines the spatial organization of Ethiopian Orthodox Tewahedo Church (EOTC) buildings through a typological lens. The analysis reveals how sacred space is articulated and transformed over time, reflecting shifts in theology, cultural values, and architectural influences. The major typologies observed include Round Churches, Ethiopian Basilica-type Churches, Cathedral-type Churches, and Modern and Complex Forms.

4.2.1. Round Church's

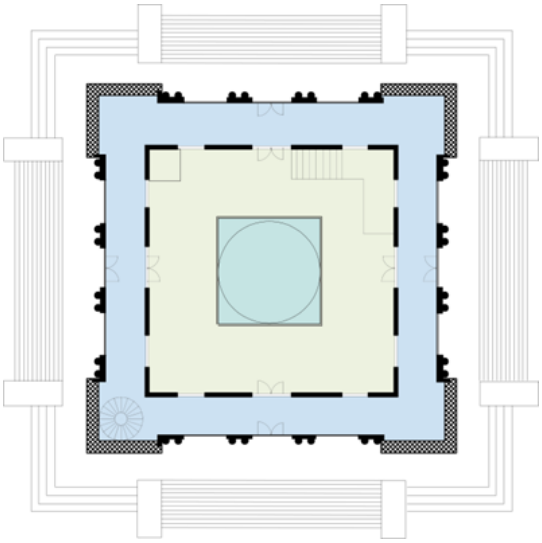
Round churches represent some of the earliest forms of EOTC architecture and are characterized by concentric circular layouts. The traditional round churches, representing early ecclesiastical architecture, consistently exhibit a concentric spatial configuration. For example, Be'alewold Church—also known historically as "Mekane Selassie"—is structured in three concentric circular layers. These layers function as ambulatories that delineate the space for congregants based on their liturgical roles and social status: the outer ambulatory is used by the general public and chanters, the middle for senior church leaders, south for ladies and north for gents, and the inner ambulatory is reserved for clergy. This circular and layered spatial organization

emphasizes the sacred center—the *mek'idesi* (sanctuary)—and reflects the theological principle of divine centrality and hierarchical access to holiness. Geometry reinforces the symbolic completeness and eternity of the divine.

In contrast, Bahita leMariam Church combines rectangular and circular typologies. Although its external form appears rectangular, the interior space integrates three circular ambulatories, maintaining the symbolic structure of divine hierarchy. This hybrid spatial organization not only represents theological continuity but also introduces new functional layers, such as a basement used as a burial chamber for monarchs, indicating the sacred-political linkage embedded in EOTC architecture. The central nave is broader than the other internal spaces and serves as the main processional and liturgical axis, enhancing the ceremonial flow and visibility of the congregation.



a)



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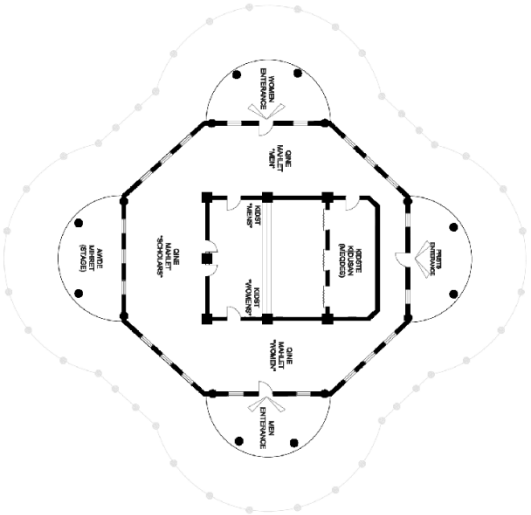

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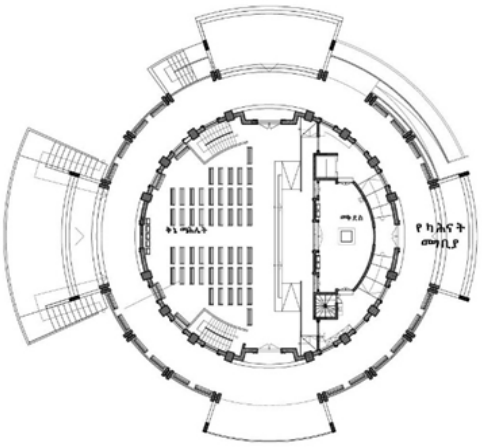


d)

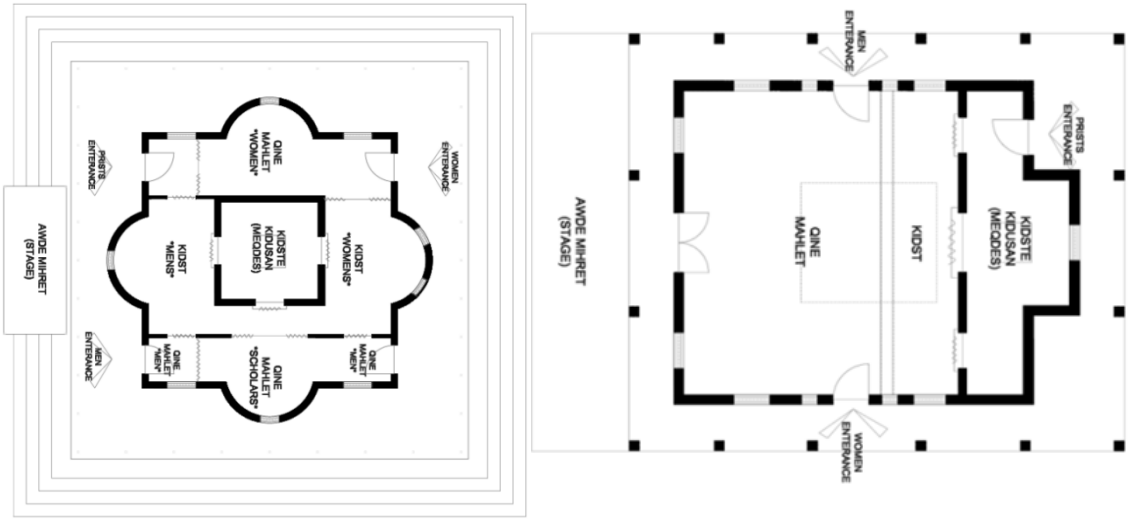
Figure 6: Round Churches sample of EOTC in Addis Ababa a) Be'ale Wold Church, b) Bahita Mariam Church, c) Genet Eyesus Church, and d) Yohannes St. Mary Church *(Source – a,b – From AAU student projects, c, d -Church Archival)*.

Another example of typological adaptation is the Genet Eyesus Church, an octagonal church that maintains the spatial logic of circular churches but shifts the *mek'idesi* slightly toward the east. This spatial adjustment allows for an expanded *k'inē mahilēti* (chanting hall), accommodating the importance of ecclesiastical music and liturgical recitation in EOTC tradition. The *mek'idesi* and *k'idisiti* (holy) spaces are directly connected and enclosed, reinforcing sacred spatial hierarchies. Notably, this church also features an additional outer spatial layer—an open-air courtyard that lies between the main building and an enclosing wall—thereby extending the sacred precinct beyond the built form and emphasizing the transitional journey from the profane to the sacred.

Modern adaptations of round churches, such as Yohanns St. Mary Church, reflect increasing functional demands and liturgical participation. The church maintains a circular external form but introduces an open-plan interior that includes a mezzanine floor accessed through the *k'inē mahilēti* space. This vertical extension significantly increases capacity for worshippers and exemplifies spatial innovation to accommodate modern congregational needs. The sanctuary itself includes vertical access via staircases and lifts, integrating technological elements into sacred architecture and extending the use of liturgical zones into the upper levels.

4.2.2. Ethiopian basilica-type churches

Churches of this typology adopt a rectangular or basilica layout while retaining traditional EOTC spatial symbolism. The Entoto Hamere Nohe Kidane Mihret Church, for instance, is organized along a rectangular axis, with liturgical functions arranged longitudinally. The spaces for clergy and congregation are separated using curtains aligned along the north and south axes. The central focus remains the sanctuary, which anchors the spiritual heart of the building. However, the spatial arrangement lacks a pronounced entrance sequence, which weakens the processional aspect that is otherwise central to EOTC worship practices.



a) b)

Figure 7: Ethiopian basilica-type sample churches in Addis Ababa a) Entoto Hamere Nohe Kidane Mihret Church and b) Kale Terara (mount) Abune Habtemariam Monastery *(Source – Author)*.

Kale Terara Abune Habtemariam Monastery exemplifies further adaptation within the basilica typology. This church merges the *k'idisiti* (middle sanctified zone) and *k'inē mahilēti* (chanting zone) spaces through elevation, separating them by a split-level floor. The entire building is enveloped by a circular veranda that allows continuous movement around the structure. This not only facilitates liturgical processions but also reinforces a layered access model reminiscent of round churches. The interplay

between linear and circular elements in this basilica typology illustrates a syncretic[5] approach to architectural design in EOTC churches.

4.2.3. Cathedral-type churches

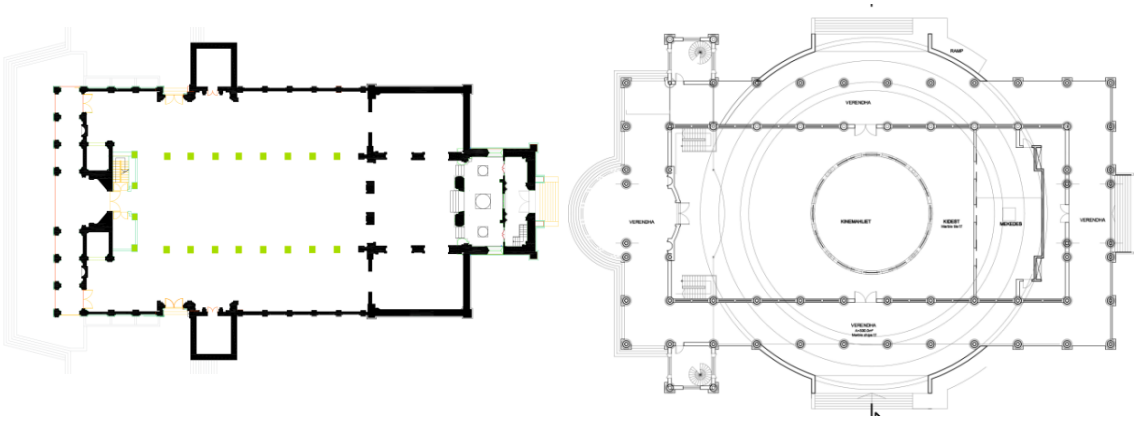
Cathedral-type churches represent a significant shift in EOTC architectural expression, influenced by foreign architectural traditions and the desire for monumentalism. The Holy Trinity Cathedral is a notable example, developed over three distinct phases. In its first phase, the church employed a symmetrical, geometric plan, featuring proportional elements and a focus on Roman architectural styles. The long rectangular nave is separated from the *k'inē mahilēti* and *k'idisiti* zones, maintaining the hierarchical structure but adapting it to a new spatial vocabulary.

In the second phase, European architects from England and France redesigned the structure to increase capacity while retaining the core *mek'idesi*. Additional features such as bell towers and expanded side spaces were introduced, reinforcing the church's civic and ceremonial functions. The spatial arrangement became more complex, supporting larger congregations while still preserving essential liturgical divisions.

The third phase, designed by Yugoslavian architects, incorporated a basilica layout with a wide nave and a dome positioned over the transept. This intervention preserved the *mek'idesi* in its original location but reshaped the surrounding spatial environment into a more open, monumental form. The dome introduced vertical emphasis, symbolizing divine transcendence, while the wide nave facilitated collective worship on a larger scale. This evolution demonstrates how cathedral churches successfully harmonized Ethiopian sacred traditions with imported monumental aesthetics.

Gerji St. Mariam Church reflects the continued transformation of cathedral typology. It features a long rectangular hall with pronounced vertical lines, high domed ceilings, and minimal internal partitions. The spatial arrangement prioritizes openness and large capacity, moving away from the traditional circular and basilica layouts. This typology shows the increasing influence of modernist principles in EOTC architecture, particularly during periods of social transformation.

[5] **Syncretic –** Merging various beliefs or practices in to the church characteristics.



b)

a)

Figure 8: Cathedral - type sample churches in Addis Ababa a) Holy Trinity Cathedral church b) Gerji St. Mariam Church *(Source – Church Archival)*.

4.2.4. Modern and complex Church forms

Kality Jate Kidane Mihret represents a contemporary and experimental approach to sacred space. The building geometry plays a dominant role in defining space, with an open central area that draws visual and spiritual focus toward the *mek'idesi*. The spatial experience is intentionally monumental and overwhelming, deviating from human-scale proportions. The vast, non - partitioned hall and exaggerated verticality create a transcendental atmosphere, evoking awe and spiritual immersion. This church illustrates how modern sacred architecture can use spatial drama and abstraction to reinforce metaphysical presence.

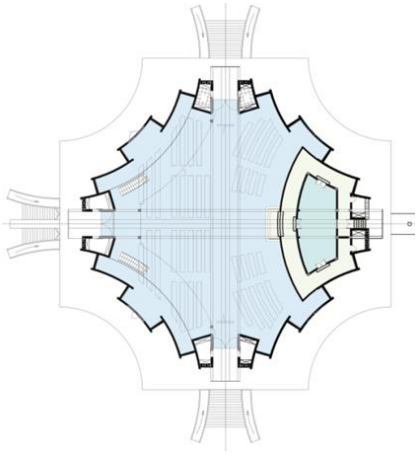


Figure 9: Kality Jate Kidane Mihret as example for modern and complex form sample churches in Addis Ababa *(Source – Church Archival)*.

Across these varied typologies, the study reveals how spatial content in EOTC is not merely functional but deeply symbolic. Patterns of enclosure, vertical layering, procession, and spatial hierarchy evolve, responding to shifts in theological emphasis, technological innovations, liturgical needs, and sociopolitical contexts. The recognition of these patterns helps illuminate how space in sacred architecture is both a cultural symbol and a medium of spiritual expression.

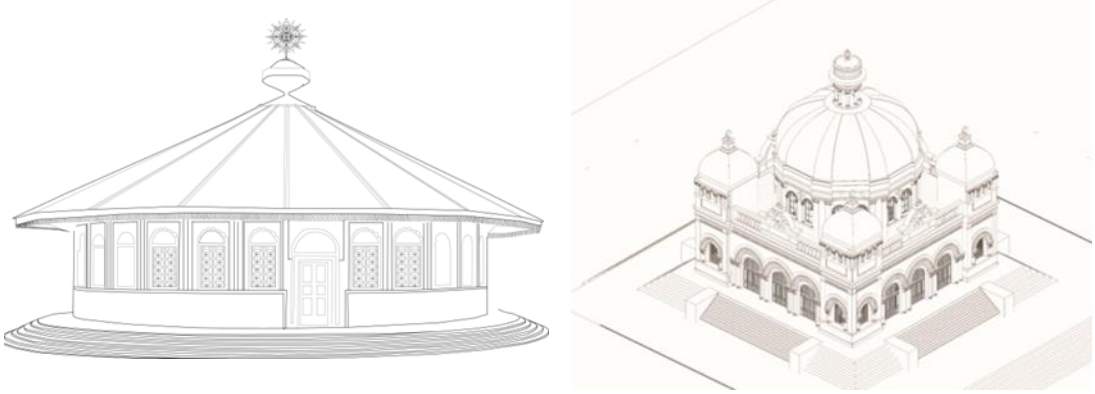
4.3. Physical form pattern recognition

This section presents the evolution of the physical form of Ethiopian Orthodox Tewahedo Church (EOTC) buildings, categorized by architectural typology. Within each type, examples are arranged chronologically to trace the transformation in spatial articulation, Building form, and symbolic representation over time.

4.3.1. Round churches

Round churches represent the foundational form of EOTC architecture, emphasizing concentric geometry, sacred hierarchy, and community-centric design. The Holy Be'alewold Church, built during the time of Emperor Menelik II, embodies the classical round form with circular walls constructed of stone and mud, topped with a corrugated or thatched roof. The interior walls are adorned with rich historical paintings, reflecting both spiritual symbolism and the artisanal skill of the period.

Later, during the time of Empress Zewditu, the *Bahita Mariam Church* introduced refinements to the round form. While preserving the circular layout, the church employed squared geometry, modern stone masonry, and a dome construction system. This blend of tradition and innovation was intended to convey the monolithic and unified nature of God.



a) b)

c) d)

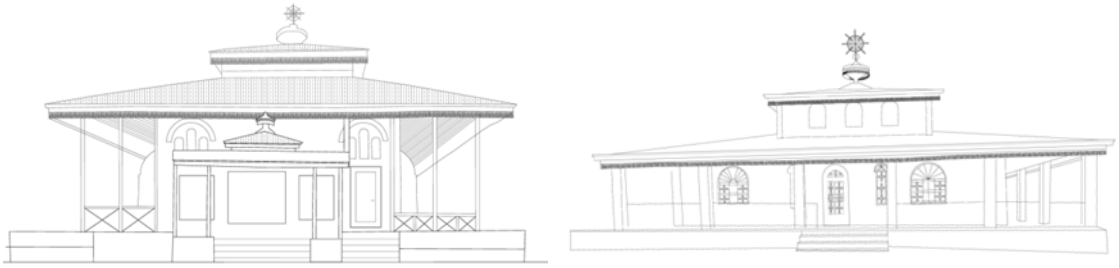
Figure 10: Physical forms of round sample churches at different period a) Be'ale Wold Church, b) Bahita Mariam Church, c) Genet Eyesus Church, and d) Yohannes St. Mary Church *(Source – a,b – From AAU student projects, c, d -Church Archival).*

The round typology continued into the Haile Selassie era with the *Genete Eyesus Church*, designed in an octagonal form. A central dome emphasized spatial hierarchy, with the dome and its base clearly differentiating sacred spaces from more profane areas. This physical articulation deepened the theological layering within the church's spatial design.

In the socialist and post-socialist periods, the round form took on a modern character. The *Yohanns St. Mary Church* introduced monolithic circular domes and minimalist aesthetics, signifying a break from ornamental tradition. Repetitive arches encircle the dome, forming both structural rhythm and a symbolic embrace. This church represents a reinterpretation of the round form within a modernist architectural language.

4.3.2. Ethiopian basilica-type churches

The basilica-type churches reflect a linear spatial organization while integrating key EOTC traditions. The *Entoto Hamere Nohe Kidane Mihret Church*, dating to the Haile Selassie era, exemplifies the Ethiopian basilica type with a rectangular plan and a tiered roofline adorned with cupolas. Small metallic ornaments called "*shakuras*" hang from the roof edges, reinforcing sacred symbolism and maintaining a connection to traditional aesthetics.



a) b)

Figure 11: The physical forms of Ethiopian basilica sample churches a) Entoto Hamere Nohe Kidane Mihret Church and b) Kale Terara (mount) Abune Habtemariam Monastery *(Source – Author)*.

During the socialist era, the *Kale Terara Abune Habtemariam Monastery* continued this basilica tradition with modern refinements. The church retained the use of cupolas and *shakuras*, but its physical form emphasized verticality and clean lines. This evolution reflects a balance between preserving liturgical tradition and embracing architectural minimalism appropriate to the era's social-political climate.

4.3.3. Cathedral-type churches

Cathedral-type churches mark a departure from vernacular forms and embrace monumental scale, symmetry, and foreign influence. The *Holy Trinity Cathedral*, constructed during the reign of Haile Selassie, is considered the first modern cathedral in Ethiopia. It features a wide rectangular nave topped by a massive dome and is adorned with stained glass windows and colorful frescoes. The façade and overall structure draw heavily from European modernist and neoclassical styles, symbolizing a new national identity rooted in both tradition and global dialogue.

a) b)

Figure 12: The Cathedral-type sample churches a) Holy Trinity Cathedral church b) Gerji St. Mariam Church *(Source – Church Archival)*.

In the post-Haile Selassie era, the *Gerji St. Mariam Church* further developed the cathedral typology. This church merges circular and rectangular spatial logic but leans toward a Western basilica plan. Its most notable features include a wide nave, monumental proportions, and newly introduced bell towers attached to arched façades. These additions reflect the church's urban function and the growing trend toward architectural hybridity in the EOTC context.

4.3.4. Modern and complex forms

Modern and complex church forms represent the most recent developments in EOTC architecture. These churches tend to prioritize dramatic geometry, symbolic abstraction, and spatial monumentality. The Kality Jate Kidane Mihret Church is a prime example, with a striking modern design language. Its most defining feature is the unique dome structure and minimalistic façade, which reflect both technological advancement and contemporary spiritual aesthetics. The church departs from the human scale, creating a sense of awe through spatial vastness and simplified structural expression.

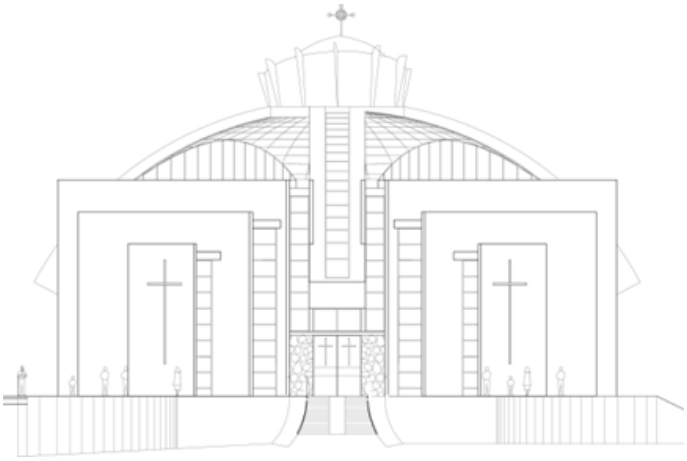


Figure 13: The physical forms of Kality Jate Kidane Mihret Church *(Source – Church Archival)*.

4.4. Synchronic comparison study of selected church morphology (Chronological order)

This section provides a comparative analysis of selected Ethiopian Orthodox Tewahedo Church (EOTC) buildings across different periods, highlighting architectural and functional transformations in a synchronic framework. Each period reflects a unique combination of spiritual traditions, material availability, cultural influences, and political contexts.

4.4.1. Pre establishment of Addis Ababa – End of Emperor Menelik II region

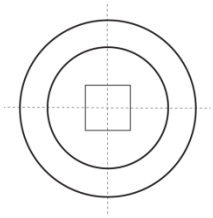
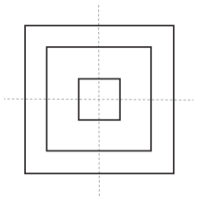
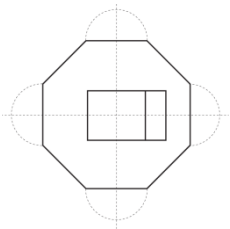
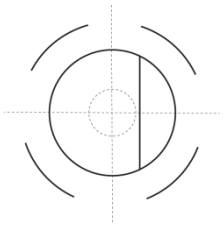
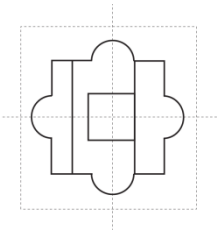
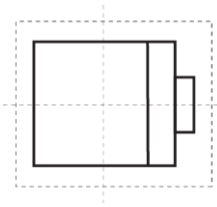
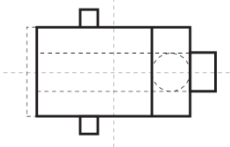
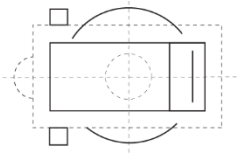
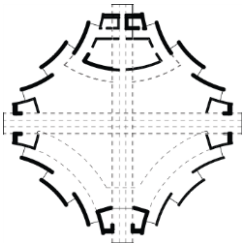
The earliest church in this period is the Holy Be'ale Wold Church, a classic round church with a circular plan, traditional pitched roof, coupola (*shakura*), and symmetrical façades on all sides. Built with stone and thatch, it embodies the vernacular spiritual architecture of the time—centralized, symbolic, and materially modest. This period reflects a pure adherence to canonical church morphology, with clear spatial hierarchies: the *mek'idesi* (Holy of Holies) at the center, encircled by *k'idisiti* and *k'inē mahilēti*. The round structure also emphasized inward focus and sacred enclosure, features that would later evolve under external influences.

4.4.2. Reign of Empress Zewditu (Octagonal church experimentation)

In the early 20th century, architectural shifts became apparent in structures such as Ta'eka Negest Bata LeMariam Church. While still honoring the central functional order of round churches, this building introduced rectilinear planning with concrete

domes—one large central dome over the *mek'idesi*, surrounded by four smaller domes. This marks a transition from organic circularity to formal geometric symbolism, indicating the influence of new materials (e.g., concrete and corrugated iron sheets) and evolving construction technologies. Although spatially experimental, the church retained traditional liturgical functions, suggesting a blending of innovation and orthodoxy at a transitional moment in EOTC architectural history.

Table 10: Comparison of churches in terms of chronological order and types of churches

Church type	**Pre and Post establishment of Addis Ababa – end of emperor Menelik**	**During empress Zewditu Menelik (Octagonal church building)**	**During the time of Haile Silassie (Cathedral type church building)**	**Socialism and Capitalism Era**
Round Church				
	Holy Be-ale wold Church	Ta'eka Negest Bata LeMariam Church	Gene't Eyesus Church	Piassa Yohannes St. Mary Church
Ethiopian Basilica	None	None		
			Entoto Hamere Nohe Kidane Mhret Church	Kale mount Abune Habte mariam church
Cathedral type	None	None		
			Holy Trinity Cathedral	Gerji St. Mariam Church
Modern and Complex	None	None	None	
				Kality Jate Kidane mihret church

4.4.3. Reign of Emperor Haile Selassie (Early modernization and state patronage)

This era ushered in wide-ranging changes across all church typologies, characterized by the emergence of dome-and-basilica hybrids and state-sponsored cathedral construction.

Genete Eyesus Church designed in an octagonal form; Genete Eyesus introduced vertical space hierarchies while modifying the traditional circular plan. The *mek'idesi* and *k'idisiti* were merged and reclosed from the *k'inē mahilēti*, emphasizing visual openness and increased congregation capacity. This church also combined CIS roofing and concrete domes, producing hybrid morphology.

The Entoto Hamere Nohe Kidane Mihret Church maintained a rectangular basilica form but modified the internal functions. Curtains and walls separated liturgical spaces, while the priest's entrance was shifted to the north rather than the east—a notable deviation from canonical layout. Decorative cupolas and shakura were retained, indicating a desire to modernize while preserving symbolic traditions.

Holy Trinity Cathedral is a landmark of imperial religious architecture. It incorporates Western neoclassical elements such as a massive central dome, symmetrical façades, stained glass, and frescoes. Internally, it merged the *k'idisiti* and *k'inē mahilēti* and introduced spatial ambiguity, shifting from traditional central sanctity to monumental expression. This period marked the beginning of form-driven function, moving away from strictly canonical order.

4.4.4. Socialist and Capitalist Era (Mid to Late 20th Century)

This era was marked by architectural experimentation and the blending of form, structure, and function in unconventional ways. Although Piassa Yohannes St. Mary Church circular in external appearance, this church radically departed from round typology inside. The dome became both structure and envelope, eliminating internal walls. The *k'idisiti* and *k'inē mahilēti* were merged, and the *mek'idesi* was modified to include an elevator and mezzanine—clear signs of western and utilitarian influence over liturgical fidelity.

Kale Mount Abune Habtemariam Church preserves the traditional basilica form with shakura and cupolas. The church altered its spatial logic by merging the *k'idisiti* and

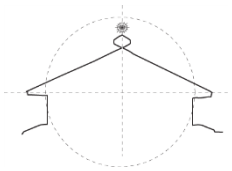
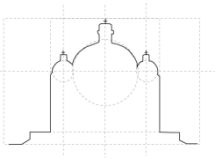
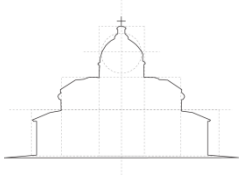
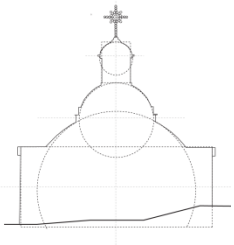
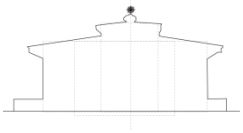
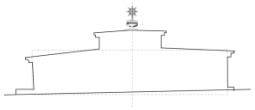
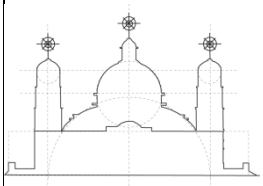
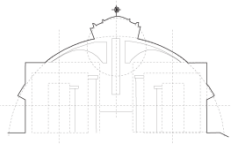
k'inē mahilēti. Though visually consistent with Ethiopian basilicas, the functional arrangement had shifted, reflecting increased flexibility in liturgical zoning.

Gerji St. Mariam Church synthesized circular and rectangular forms but leaned heavily toward a western cathedral model. It introduced a wide nave, internal bell towers (a major departure from Ethiopian tradition), and a basement used for offices and storage—functions never traditionally integrated into sacred space.

Kality Jate Kidane Mihret Church represents the most radical shift in EOTC architectural evolution. Influenced by brutalist and minimalist architecture, the dome serves simultaneously as wall and roof. Interior spaces follow the logic of the structure rather than liturgical hierarchy. The addition of a mezzanine and semi-basement floor echoes features from Gerji and Piassa Yohannes churches but pushes the boundaries further, prioritizing spatial drama over spiritual symbolism. Here, form dictates function—a reversal of the tradition where sacred function shaped form.

The findings indicate that Ethiopian Orthodox church architecture began to transition under the influence of modern materials, particularly the introduction of corrugated iron sheets (CIS). This marked a shift from traditional thatch-roofed round churches to more durable CIS-based structures. As CIS became more widely available due to increased exposure to modern building techniques, church architecture began incorporating it alongside traditional elements. Earlier round churches, such as Holy Be'ale Wold Church, retained core traditional features including a circular plan, coupola (*shakura*), and symmetrically pitched roofs. Notably, the church displayed consistent façade typologies on all four sides. However, it lacked the large concrete domes that later became prominent in churches like Ta'eka Negest Bata Lemariam, Genete Eyesus, and Piassa Yohannes St. Mary.

Table 11: The roof and form style of churches across periods and types of churches

Church type	Pre establishment of Addis Ababa – end of emperor Menelik	During empress Zewditu Menelik (Octagonal church building)	During the time of Haile Selassie (Cathedral type church building)	Socialism and Capitalism Era
Round Church				
	Holy Be-ale wold Church	Ta'eka Negest Bata LeMariam Church	Gene't Eyesus Church	Piassa Yohannes St. Mary Church
Ethiopian Basilica	None	None		
			Entoto Hamere Nohe Kidane Mhret Church	Kale mount Abune Habte mariam church
Cathedral type	None	None		
			Holy Trinity Cathedral	Gerji St. Mariam Church
Modern and Complex	None	None	None	
				Kality Jate Kidane mihret church

The Ta'eka Negest Bata Lemariam Church exemplifies this shift, boldly introducing a central concrete dome over the *mek'idesi* (Holy of Holies), flanked by four smaller domes symmetrically arranged around it. This structure showcases an architectural language where modern material expression is integrated with spiritual symbolism.

In the case of Genete Eyesus Church, the form emphasizes vertical spatial hierarchy, visually communicating the sacred order of liturgical spaces. While the elevation respects the traditional layered sanctity, the floor plan deviates from the canonical circular organization. This church notably combines concrete domes with CIS roofing—using concrete for the *k'idisiti* and CIS for the *mek'idesi* and *k'inē mahilēti*

—creating a hybrid structure that integrates both round and rectilinear (basilica-like) elements. The result is a unique architectural composition that blends symbolic function and structural innovation.

Piassa Yohannes St. Mary Church goes further in its departure from tradition. The dome assumes a dominant structural and symbolic role, replacing interior walls and serving as both the roof and enclosing element of the church. The spatial organization is heavily influenced by Western cathedral-basilica typologies, with canonical zones redefined or omitted, emphasizing volume and openness over traditional enclosure.

In contrast, churches like Kale Mount Abune Habte Mariam and Entoto Hamere Nohe Kidane Mihret remained faithful to the Ethiopian basilica typology. These churches preserved authentic traditional forms, including their cosmetic detailing and spatial hierarchy, although some functional adaptations were introduced.

Meanwhile, Holy Trinity Cathedral and Gerji St. Mariam Church represent a clear break from traditional Ethiopian church architecture, embracing Western Cathedral styles with monumental domes, bell towers integrated into the main structure, and less clearly defined sacred zones. These transformations likely reflect both political motives and a desire to project national modernity during the imperial period.

A final and profound departure from canonical design is seen in Jate Kidane Mihret Church, which integrates modernist and brutalist elements. The church disregards conventional EOTC architectural norms, instead allowing the form—particularly the dominant dome—to dictate both structure and function. Similar to Piassa Yohannes St. Mary, the dome serves simultaneously as roof and wall, making it the central defining element of the entire edifice. This reflects a complete inversion of traditional church design principles, where symbolic and spiritual function is once dictated by spatial form.

The synchronic comparison reveals a dynamic trajectory in EOTC church architecture. Beginning with centralized circular sanctuaries, churches evolved through material innovation, spatial expansion, and cultural integration. While early examples emphasized sacred hierarchy, spiritual containment, and vernacular material use, later forms progressively embraced openness, structural abstraction, and multi - functionality. This chronological shift reflects not only architectural trends but also

Ethiopia's socio-political transitions and growing exposure to global design paradigms.

4.5. Agent of changes in the morphological transformation of EOTC buildings

4.5.1. Introduction

This chapter explores the drivers behind the morphological transformation of EOTC buildings. It integrates both empirical survey results and qualitative insights to identify the internal and external agents shaping architectural change. The views of three respondent groups, Believers, Church scholars and Professional scholars, are analyzed to highlight contrasting and overlapping perceptions regarding tradition, function, identity, and innovation.

4.5.2. Background of respondents and perceptions of change

4.5.3. Demographic profile of respondents

The demographic profile of respondents in this study includes believers, church scholars and professional scholars, providing a balanced perspective on the morphological transformation of EOTC buildings in Addis Ababa. Most participants were male and female within the 20–34 age range. Church scholars primarily served as Sunday school teachers, Sebeka Gubae members, or part-time church servants, while professional scholars included architects and heritage professionals. Respondents came from various sub-cities and other cities in Ethiopia. Church attendance was generally higher among church scholars, with many attending daily or on weekends, while professional scholars showed more varied participation. Almost all the professional scholars identified as followers of the EOTC, although one did not. Church educational backgrounds ranged from traditional church education (e.g., Abinet School) to no formal church education, especially among professional scholars. Notably, many professional scholars reported significant involvement in church design, with several having over 10 years of experience. This demographic diversity enriches the study by integrating both lived religious experiences and professional architectural insights.

Table 12: Summary of Demographic profile of, church and professional scholars who participated in the survey (Source: own survey, 2025)

Variable	Categories/Range	Church Scholars	General Scholars
Age	20-34, 35-50, 50+	20 -34 (51.5%)	20 -34 (50.0%)
Gender	Male, Female, Other	Male (63.6%)	Male (83.3%)
Profession/Role	Religious service, Architect/Heritage, Teacher, Other	Part-time server (48.4%)	Architect (70.0%)
Location	Addis Ababa sub-cities	Another city (30.3%)	
Church Attendance	Daily, Weekly, occasionally	Weekends (54.5%)	
Church Follower	Yes, no	Yes (100%)	Yes (96.7%)
Church Education Level	Abinet, a Church follower only		Church follower only (40.0%)
Design Involvement	<10, 10-30, 30+		>10 (63.3%)

The majority of respondents from believers are young, with 69.8% falling within the 18–34 age groups. Gender representation is balanced, with approximately equal representation of males and females. In terms of religious education, Sunday school attendance was reported by 49.6% of participants. Spatially, Addis Ketema Sub city emerged as the most common area of residence for participants, comprising 21.4% of the sample. Regarding participation frequency, 52.2% of respondents reported attending church activities primarily on weekends.

4.5.4. Familiarity of believers with different architectural styles

Among the believer respondents, the level of familiarity with different architectural styles varied. The round church style was the most recognized, with 36% of participants indicating familiarity. This was followed by the Ethiopian basilica style at 29%, and the cathedral church style at 14%. Fewer respondents were familiar with modern and complex church forms (10%), while only a small share indicated awareness of rock-hewn churches (6%) and cave churches (5%). These results suggest that traditional architectural forms such as the round and basilica styles are more widely known among the faithful compared to more ancient or modern designs.

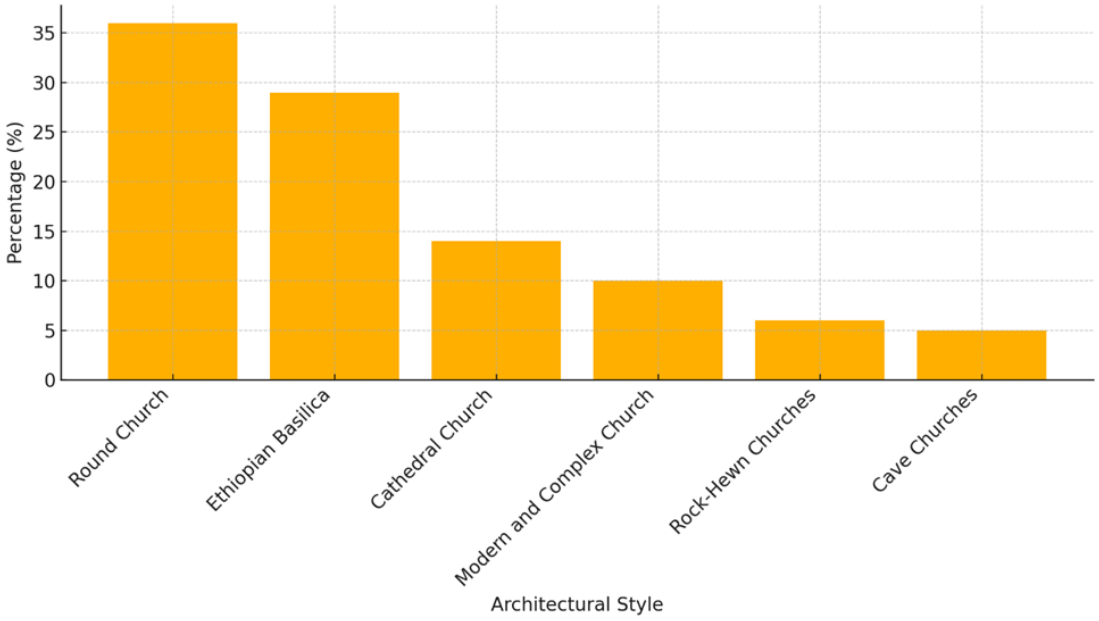


Figure 14: The level of familiarity of believers with different architectural styles

4.5.5. Perceptions of morphological change

Among church scholars, 84.8% agreed that the architectural form of EOTC buildings has changed, while 15.2% disagreed. Similarly, among professional scholars, an even higher proportion—90%—agreed with the statement, with only 10% expressing disagreement.

The vast majority of respondents from believers—80.32%—agreed that changes have occurred in church architecture, while only 19.68% disagreed. This suggests a profound collective understanding among believers of the evolving nature of church architectural forms and styles over time.

In response to the question regarding preferred church building shapes for client designs, the majority of professional scholars indicated a preference for the round church form, reflecting its deep-rooted traditional and spiritual significance within EOTC architecture. A smaller number favored the cathedral style, which often incorporates more formal, linear structures influenced by Western ecclesiastical design. Only a few respondents expressed a preference for modern and complex architectural forms, while one participant remained neutral, indicating no specific design inclination.

Responses from church scholars reveal differing perceptions of changes across key architectural features of EOTC. For arched elements, church scholars showed mixed

views—31% agreed and 24.1% strongly agreed that changes had occurred, while 13.8% strongly disagreed, highlighting both acceptance and concern over deviations from tradition. In contrast, professional scholars were more uniform in their views, with 40% agreeing and another 40% remaining neutral, reflecting awareness of change with less emotional attachment.

Regarding columns, church scholars again displayed a range of opinions: 25% strongly agreed, 25% agreed, and 14.3% strongly disagreed, indicating both appreciation and critique of structural modifications. Professional scholars showed broader support, with 46.7% agreeing and 26.7% strongly agreeing, signaling a design-oriented endorsement of these architectural shifts.

Table 13: The comparative analysis of responses from, church scholars and professional scholars across key architectural features of EOTC (Source: own survey, 2025).

Feature	Top response	Church Scholars (%)	Professional Scholars - (%)
Arched	Agree (incl. Strongly)	55.1	50
Columns	Agree (incl. Strongly)	50	73.4
Entrance gate	Agree (incl. Strongly)	71.4	50
Facade characters	Agree (incl. Strongly)	44.8	83.3
Formal layout	Agree (incl. Strongly)	42.8	86.2
Ornamentations	Agree (incl. Strongly)	41.4	76.7
Overall setup with the compound	Agree (incl. Strongly)	27.5	80
Scenic beauty	Agree (incl. Strongly)	63.3	90
Spatial layout	Agree (incl. Strongly)	75.9	69
Symbols/ Elements	Agree (incl. Strongly)	70	53.3
Windows	Neutral	32.1	50

In the case of the entrance gate, 57.1% of church scholars agreed on observable changes, and 14.3% strongly agreed, suggesting recognition of both symbolic and functional evolution. While this feature was not highlighted in professional scholars' detailed responses, similar trends were observed in their evaluations of related architectural elements.

Across other features such as scenic beauty, spatial and formal layout, windows, façade characters, symbols and elements, ornamentations, and overall compound setup, church scholars tended to offer more nuanced and critical responses. This

reflects their sensitivity to liturgical function and spiritual symbolism. In contrast, professional scholars generally expressed high levels of agreement and minimal disagreement, indicating a more consistent and pragmatic perspective rooted in architectural design and planning.

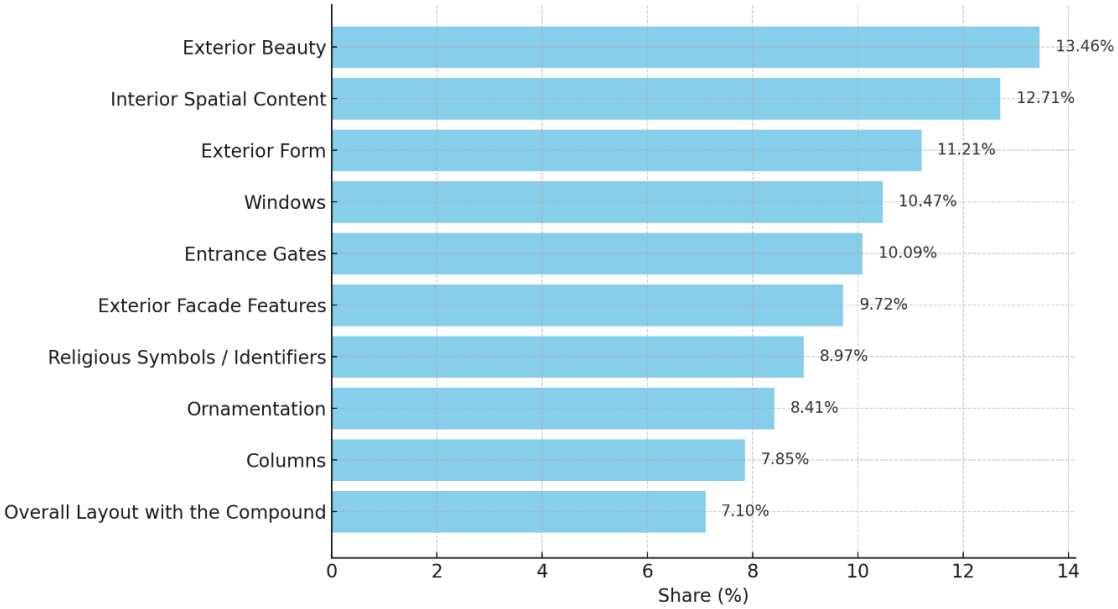


Figure 15: Believers perception of various church architectural features has changed over time (Source: own survey, 2025)

The above survey results indicate that believers perceive various church architectural features to have changed over time, with differing levels of significance. The most commonly identified area of change is exterior beauty, cited by 13.46% of respondents, followed closely by interior spatial content at 12.71% and exterior form at 11.21%. Other notable changes include windows (10.47%), entrance gates (10.09%), and exterior façade features (9.72%).

Changes in religious symbols or identifiers were noted by 8.97%, ornamentation by 8.41%, and columns by 7.85%. The overall layout within the church compound was seen as the least changed, though still significant, with 7.1% indicating alteration. These responses reflect a perception that both aesthetic and structural aspects of church architecture have undergone notable transformations over time.

4.6. Internal agents of architectural transformation

The findings, based on percentage distributions of survey responses, highlight varying degrees of agreement and disagreement concerning the drivers of architectural change,

providing insight into the differing priorities and interpretations held by the two groups.

Regarding material and construction factors, church scholars expressed greater skepticism, with 40% strongly disagreeing and 23.3% disagreeing that material and construction costs are the primary influences on church morphology. Conversely, professional scholars exhibited a more balanced distribution of responses, with 36.7% agreeing and only 10% strongly disagreeing, suggesting a more moderate view. Similarly, on the availability of materials, professional scholars reported higher levels of strong agreement (30%) compared to church scholars (13.3%), while both groups generally acknowledged the influence of new construction materials. In particular, professional scholars showed a strong consensus in support of this factor, with 46.7% strongly agreeing, indicating a greater openness to technological and material innovation.

Table 14: Internal factors influencing the morphological transformation of church buildings (Source: own survey, 2025)

	Church scholars					Professional scholars				
Internal factors	Strong disagree	Disagree	Neutral	Agree	Strong Agree	Strong Disagree	Disagree	Neutral	Agree	Strong Agree
Material and construction cost	40	23.3	10	16.7	10	10	26.7	16.7	36.7	10
Material availability	30	16.7	0	40	13.3	3.3	13.3	10	43.3	30
New material introduction	30	6.7	3.3	36.7	23.3	3.3	10	16.7	23.3	46.7
Given time for construction	26.7	26.7	3.3	30	10	20	30	16.7	26.7	6.7
Lack of skilled person	33.3	36.7	10	13.3	6.7	20	20	16.7	26.7	16.7
Built in the city	10	20	6.7	46.7	13.3	13.3	36.7	6.7	23.3	20
Exposure from other oriental churches	6.7	3.3	10	43.3	33.3	0	16.7	10	33.3	40
Increase in number of	3.3	10	13.3	36.7	36.7	3.3	20	13.3	30	33.3

users										
Space comfort for users	6.7	16.7	16.7	33.3	26.7	6.7	13.3	30	23.3	26.7
Space comfort for church services	6.7	16.7	23.3	26.7	26.7	6.7	26.7	16.7	26.7	23.3
Leaders' personal interests	6.7	3.3	23.3	33.3	30	3.3	10	13.3	40	33.3
Financial capability from followers	3.3	33.3	13.3	20	30	6.7	30	10	33.3	20
Competition between institutions	6.7	3.3	0	33.3	56.7	0	13.3	6.7	33.3	46.7
Lack of church knowledge	6.7	13.3	23.3	23.3	33.3	6.7	6.7	13.3	20	53.3
Intellectual changes	10	3.3	10	36.7	36.7	3.3	6.7	10	43.3	36.7
Lack of identity definition	13.3	3.3	20	26.7	36.7	0	6.7	23.3	26.7	43.3
Lack of monitoring department	6.7	0	20	20	50	0	6.7	6.7	26.7	60

In terms of temporal and labor constraints, both groups recognized the impact of time limitations and skilled labor shortages, though church scholars were more critical. For instance, 33.3% of church scholars strongly disagreed that the lack of skilled personnel is not a major factor, compared to 20% among professionals. Similarly, 26.7% of church scholars strongly disagreed with the influence of given construction time, while professional responses were more evenly distributed, reflecting a nuanced interpretation of these constraints.

Urbanization and exposure to external architectural influences were also examined. A larger proportion of church scholars (46.7%) agreed that churches being built in urban settings significantly shape their design, whereas only 23.3% of professional scholars shared this view, with many professionals opting for neutral or disagreeing positions. However, both groups acknowledged the influence of exposure to other Oriental

churches, with strong agreement reaching 40% among professional scholars and 33.3% among church scholars.

When it comes to functional and user-centered aspects, such as increased number of users and spatial comfort, both groups generally agreed on their relevance to architectural transformation. Church scholars showed slightly higher levels of strong agreement (36.7%) regarding user needs than professionals (33.3%). Similarly, in terms of comfort for church services, the response patterns were relatively consistent, indicating shared recognition of evolving functional demands within church spaces.

Leadership and financial factors also emerged as influential drivers. Church leaders' personal interests were regarded as important by both groups, with 30% of church scholars and 33.3% of professional scholars strongly agreeing. In relation to financial capabilities from followers, both groups reported a significant degree of agreement, though professional scholars appeared slightly more affirmative in their assessment.

Institutional and knowledge-related factors received considerable attention. Competition between church institutions was strongly acknowledged by both groups, with 56.7% of church scholars and 46.7% of professionals strongly agreeing. Notably, professional scholars emphasized the lack of church knowledge as a more critical factor, with 53.3% expressing strong agreement, compared to 33.3% of church scholars. Intellectual changes among priests and believers were also regarded as significant by both, with high levels of agreement observed.

Finally, perspectives on identity and institutional governance revealed some distinctions. The lack of a clearly defined EOTC identity was more strongly emphasized by professionals (43.3% strongly agree) than by church scholars (36.7%). Moreover, both groups acknowledged the absence of an effective monitoring department within the church structure, though professional scholars demonstrated stronger consensus, with 60% strongly agreeing compared to 50% of church scholars.

4.7. External agents of architectural transformation

The analysis of external factors influencing the morphological transformation of Ethiopian Orthodox Tewahedo Church (EOTC) buildings reveals several key insights based on survey data collected from both church scholars and professional scholars. Overall, the findings demonstrate both areas of agreement and divergence in

perceptions regarding the agents of change that have shaped the architectural evolution of church buildings over time.

Political regime change is widely recognized as a major contributing factor by both groups. Among church scholars, 45.7% strongly agreed and 25.7% agreed that political shifts have influenced architectural transformations. Similarly, 36.7% of professional scholars strongly agreed and another 36.7% agreed, suggesting a shared understanding that changes in governance and political ideology have historically shaped church construction priorities, symbolism, and spatial organization.

Table 15: External factors influencing the morphological transformation of church buildings (Source: own survey, 2025)

Group	Church scholars					Professional scholars				
Level of agreement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Political regime change	37.5	25	18.2	11.4	6.8	27.9	32.6	16.3	16.3	7
Italian Occupation Impact	43.2	29.5	13.6	9.1	4.5	37.2	32.6	11.6	11.6	7
Demographic change (population)	38.6	29.5	18.2	11.4	2.3	32.6	27.9	18.6	16.3	4.7
Social Changes	36.4	31.8	15.9	13.6	2.3	34.9	25.6	18.6	16.3	4.7
Cultural Deviation	40.9	27.3	11.4	13.6	6.8	30.2	27.9	18.6	18.6	4.7
City development exposure	45.5	27.3	15.9	6.8	4.5	37.2	27.9	16.3	11.6	7
Influenced practice of other Oriental churches	36.4	36.4	11.4	11.4	4.5	32.6	30.2	16.3	14	7
Creating scenic beauty for the city	29.6	27.3	13.6	15.9	13.6	25.6	25.6	14	18.6	16.3

The impact of the Italian occupation is also acknowledged by both groups, albeit to varying extents. Church scholars reported 34.3% strong agreement and 31.4% agreement, while professional scholars showed slightly higher recognition with 30% strongly agreeing and 43.3% agreeing. These figures reflect the influence of colonial planning principles and architectural forms introduced during the occupation, which have left a lasting imprint on the design of church structures.

Regarding demographic change, particularly population growth, professional scholars were more inclined to recognize its influence, with 36.7% strongly agreeing and 33.3% agreeing, compared to 25.7% strongly agreeing and 34.3% agreeing among church scholars. The increasing number of congregants appears to be shaping the spatial configuration and functional requirements of church buildings, prompting adaptations in layout and capacity.

Social changes were also widely considered a factor influencing architectural transformation. Among church scholars, 31.4% strongly agreed and 31.4% agreed, while among professional scholars, 36.7% strongly agreed and 33.3% agreed. These results suggest that changes in social norms, modernization, and evolving lifestyles have had an impact on architectural expression, material choices, and community expectations.

Cultural deviation, interpreted as a shift away from traditional practices, was noted by 40% of church scholars as strongly influential, with an additional 28.6% agreeing. Professional scholars also recognized this trend, with 30% strongly agreeing and 43.3% agreeing. This suggests a shared view that the dilution of traditional customs and religious symbolism has implications for the continuity of heritage-based architecture.

City development and exposure to modern urban planning also emerged as significant drivers of change. Church scholars indicated 42.9% strong agreement and 25.7% agreement, while professional scholars reported 36.7% strong agreement and 36.7% agreement. These results point to the influence of urban growth, infrastructure development, and regulatory planning frameworks on the location, form, and visual integration of church buildings within the city landscape.

The influence of other Oriental churches on architectural practice was moderately recognized. Church scholars reported 31.4% strongly agreeing and 34.3% agreeing, while professional scholars reflected similar perceptions with 33.3% strongly agreeing and 36.7% agreeing. This reflects the increasing exposure to and inspiration from church designs within the broader Oriental Orthodox tradition, potentially affecting design decisions in local contexts.

Finally, the role of churches in contributing to the scenic beauty of cities generated mixed responses. Among church scholars, 22.9% strongly agreed and 28.6% agreed, while professional scholars expressed higher recognition with 23.3% strongly agreeing and 40% agreeing. This difference may reflect professional scholars' heightened sensitivity to urban aesthetics, architectural harmony, and landscape integration.

In conclusion, while both church scholars and professional scholars acknowledge the importance of multiple external factors, professional scholars appear to place greater emphasis on planning, aesthetic, and demographic dimensions. Church scholars, on the other hand, show slightly more critical or diverse views on cultural and population-related changes. These insights collectively underscore the complex interplay between political, cultural, social, and urban dynamics in shaping the evolving morphology of EOTC architecture.

4.8. Evaluation of church type in practice

4.8.1. Visual comfort across services

The table presents a comparative analysis of which church building types are perceived to provide visual comfort for various Ethiopian Orthodox Church services, based on responses from both Church Scholars and Professional Scholars.

For Liturgy (*k'idasē*), 22.2% of church scholars preferred the Cathedral type, followed by 15.9% for the Ethiopian Basilica, and 6.3% for Modern and Complex forms. Among professional scholars, 27.0% favored the Cathedral, while 9.5% preferred Round churches and 7.9% selected both round churches and Ethiopian Basilica, indicating a strong but slightly more varied preference for traditional forms.

Table 16: Perceived responses from believers, church scholars and professional scholars to provide visual comfort for various Ethiopian Orthodox Church services

Group	Church Scholars				Professional Scholars			
Preferred Church Type	Cathedral	Ethiopian-basilica	Modren and complex	Round church	Cathedral	Ethiopian basilica	Modern and complex	Round
Service Type								
Litergy/ k'idasē	22.2	15.9	6.3	7.9	27	7.9	3.2	9.5
Mahilēti	21	14.5	6.5	9.7	24.2	6.5	6.5	11.3
Siri'ate	15	13.3	3.3	18.3	16.7	6.7	8.3	18.3

k'uribani								
Se'ātati	21.3	13.1	3.3	13.1	21.3	6.6	3.3	18
Sibket wengel	21	14.5	8.1	8.1	24.2	9.7	4.8	9.7
Taboti nigisi	21	12.9	4.8	12.9	17.7	9.7	3.2	17.7
Mahit'eniti	20	10	5	15	23.3	8.3	5	13.3
Siri'ate gabicha	20	11.7	5	13.3	30	10	3.3	6.7

In the case of *mahilēti* services, the pattern remains similar. 21.0% of church scholars selected the Cathedral type, while 14.5% preferred Ethiopian Basilica. Professional scholars showed 24.2% preference for Cathedral, followed by 11.3% for Round, and 9.7% for Round church, revealing a more diversified appreciation of spatial types. For *mahilēti*, professional scholars showed the highest preference for Round churches (18.3%) and Round church (18.3%), suggesting that circular spatial arrangements enhance visibility and interaction during this service. In contrast, church scholars still leaned toward Cathedral (15.0%) and Ethiopian Basilica (13.3%), though at a reduced proportion.

With regard to *se'ātati*, 21.3% of church scholars and 21.3% of professional scholars aligned in selecting Cathedral. However, professional scholars also showed significant support for Round (18.0%) and Round church (13.1%), indicating greater acceptance of non-linear spatial configurations.

For *Sibket Wengel*, 21.0% of church scholars preferred Cathedral, followed by 14.5% for Ethiopian Basilica, and 8.1% for Modern and Complex. Professional scholars also favored Cathedral (24.2%) but demonstrated a more distributed preference across types, including Ethiopian Basilica (9.7%) and Round church (9.7%).

The results reveal clear preferences among believers regarding which church architectural styles provide the most effective visual comfort during different types of church services. Across all services, Cathedral-style churches stand out as the most favored, particularly during the *Taboti nigisi* (60%) and *Siri'ate Kuribani* (50%) rituals, where visual and spatial arrangements are especially significant for sacred processions and liturgical practices. This suggests that the grandeur and structure of cathedral architecture may enhance visibility, orientation, and sacred ambiance.

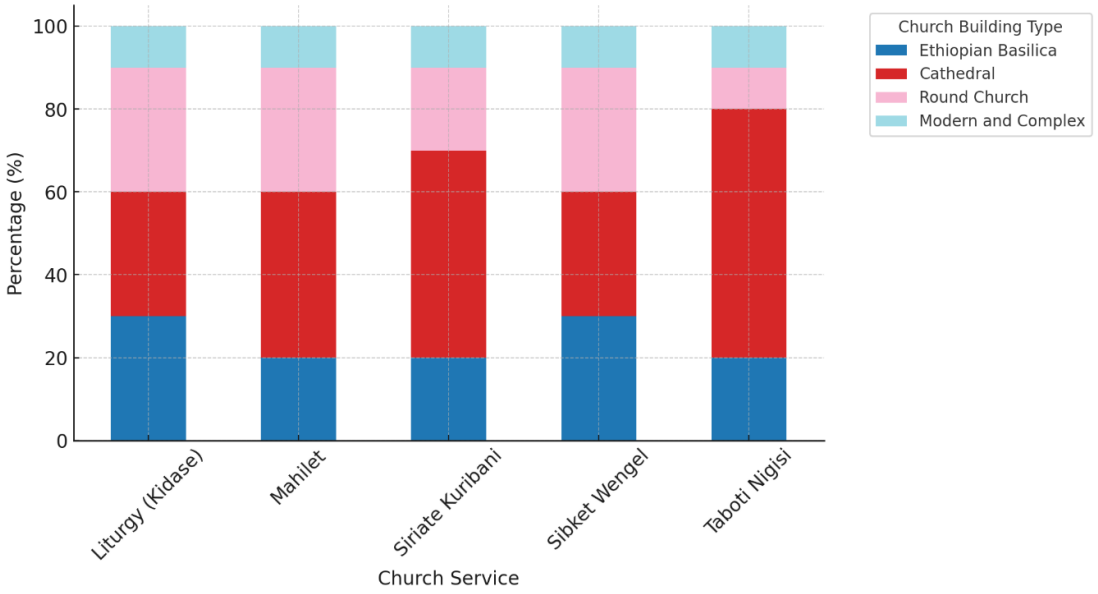


Figure 16: Believers' perceptions of visual comfort across different church building types during various church services.

Round churches and Ethiopian basilicas received moderate levels of preference, typically around 20–30%, indicating they are still appreciated, but perhaps not as visually effective for all liturgical needs. For instance, the round church design was consistently preferred by about 30% of respondents during services like *k'idasē* (Liturgy) and *sibket wengel*, reflecting its traditional relevance.

On the other hand, modern and complex church buildings were the least preferred across all services, scoring a consistent 10% in every case. This suggests that contemporary architectural innovations may not yet align well with believers' expectations for spiritual visibility and comfort, possibly due to unfamiliar layouts, lighting issues, or the lack of symbolic architectural features.

Overall, the data reflect a strong visual and spiritual attachment to traditional ecclesiastical designs—especially the cathedral form—which believers perceive as more conducive to meaningful and comfortable worship experiences.

4.8.2. Capacity to accommodate worshippers

Survey responses from church scholars and professional scholars reveal distinct perspectives on which church building types are most effective in accommodating large numbers of attendees across key religious services.

For Liturgy (*k'idasē*), both groups exhibit a strong preference for Cathedral-type church buildings. Professional scholars assign a slightly higher preference (46.7%) compared to church scholars (42.4%). Church scholars also show a significant inclination toward the Ethiopian-basilica (30.3%), whereas professional scholars favor the Round church as the second most suitable type (26.7%), with less emphasis on the basilica (16.7%). Perceived responses from believers, church scholars and professional scholars are most effective in accommodating large numbers of attendees

Table 17: Perceived responses from believers, church scholars and professional scholars

Group	Church scholars				Professional scholars			
Preferred Church Type	Cathedral	Ethiopian-basilica	Round	Modern and complex	Cathedral	Round	Ethiopian basilica	Modern and complex
Service Type								
Litergy/ k'idasē	42.4	30.3	15.2	12.1	46.7	26.7	16.7	10
Mahilēti	40.6	28.1	18.8	12.5	43.3	36.7	13.3	6.7
Siri'ate k'uribani	40	20	30	10	50	20	20	10
Se'ātati	41.9	25.8	25.8	6.5	60	13.3	20	6.7
Sibket wengel	40.6	28.1	15.6	15.6	33.3	36.7	13.3	16.7
Taboti nigisi	40	23.3	26.7	10	36.7	36.7	20	6.7
Mahit'eniti	30	26.7	36.7	6.7	50	20	13.3	16.7
Siri'ate gabicha	40.6	25	25	9.4	0	0	0	0

In the case of *mahilēti*, church scholars predominantly favor Cathedral structures (40.6%) followed by Ethiopian-basilica forms (28.1%). In contrast, professional scholars exhibit a more balanced distribution, selecting Cathedral (43.3%) and Round churches (36.7%) as most effective, while placing less emphasis on the basilica (13.3%).

For *siri'ate k'uribani*, professional scholars strongly favor Cathedrals (50%), while church scholars are divided between Cathedrals (40%) and Round churches (30%). Both groups assign equal value (20%) to Ethiopian-basilica designs for this service, indicating a shared recognition of its liturgical significance.

With respect to *se'ātati*, the highest preference is observed for Cathedrals among professional scholars (60%), reflecting their perceived suitability for this service type. Church scholars also support Cathedrals (41.9%), though their responses show greater distribution across other types. Notably, both groups assign similar importance to Round churches and Ethiopian-basilicas, indicating a degree of alignment in these cases. For *Sibket wengel*, church scholars prioritize Cathedral (40.6%) and Ethiopian-basilica (28.1%) forms, while professional scholars diverge, ranking the Round church highest (36.7%) followed by Cathedral (33.3%). This suggests differing views on spatial adaptability and symbolic expression for this particular service.

In summary, while Cathedral buildings remain the most consistently preferred typology across all services, professional scholars demonstrate broader acceptance of Round church formats—especially in more interactive or spatially fluid services. Church scholars, on the other hand, exhibit a more traditionalist orientation, maintaining higher regard for Ethiopian-basilica forms, which reflect longstanding liturgical and symbolic values within Ethiopian Orthodox ecclesiastical architecture.

The analysis of perceived responses from believers reveals that Cathedral churches are consistently viewed as the most effective type of building for accommodating large numbers of attendees across all major religious services. Specifically, they received the highest ratings in all categories, with the strongest support observed during *siri'ate k'uribani* (50%), followed by *Litergy/ k'idasē* and *mahilēti* (both at 44.4%). *Sibket Wengel* and *taboti nigisi* also saw Cathedral churches leading, though with slightly lower support at 44.4% and 38.9% respectively.

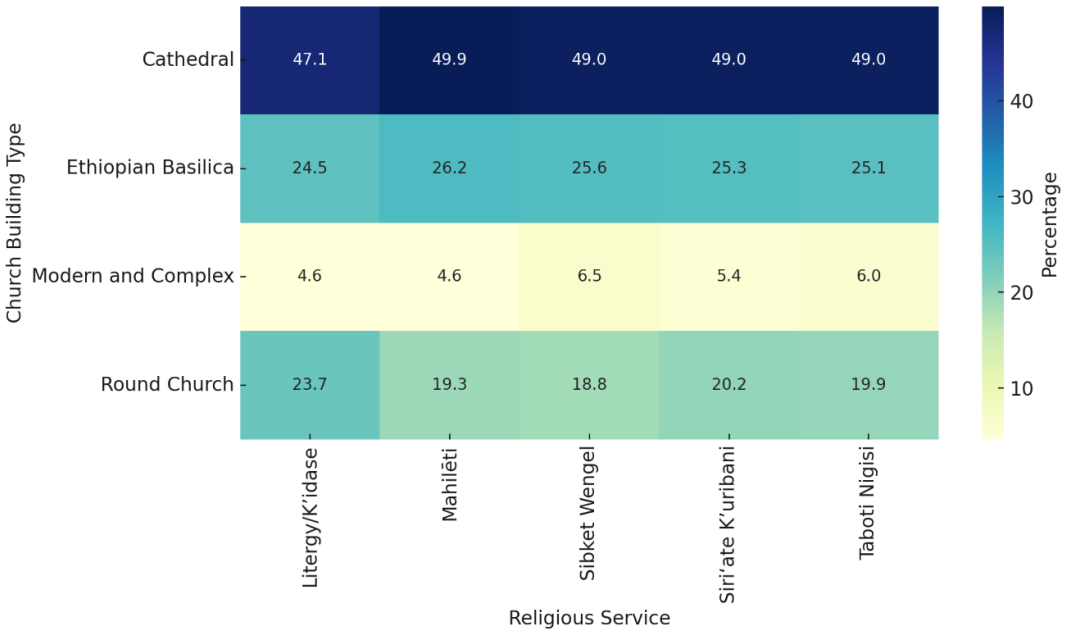


Figure 17: Perceived responses from believers on which church building types are most effective in accommodating large numbers of attendees across the religious services

Ethiopian Basilica churches come second in perceived effectiveness, particularly during *Litergy/ k'idasē* (38.9%) and *mahilēti* (33.3%). However, their support declines slightly across other services. Round churches show a modest yet increasing preference, with their highest score (22.2%) during *taboti nigisi*, indicating a perception that they may be suitable for more specific or ritualistic services. Meanwhile, Modern and Complex churches are generally perceived as the least effective, although they show relatively higher support (11.1%) during *mahilēti*, *sibket wengel*, and *taboti nigisi*, suggesting some believer's value modern infrastructure for these service types.

4.9. Positive impacts and critical reflections on morphological change

The analysis of the survey responses from church scholars and professional scholars regarding the positive impacts of various factors on church architectural morphology reveals distinct perspectives across both groups. The responses were categorized into five levels of agreement: *Strongly Agree*, *Agree*, *Neutral*, *Disagree*, and *Strongly Disagree*, and the results are presented in percentage terms.

Among church scholars, the factors that received the highest proportion of *Strongly Agree* responses include *Visual Accessibility to the Internal Services* (15.2%) and

Scenic Beauty for the City (15.2%). However, many factors such as *Cultural/Religious Identity* (28.3%), *Affordability* (30.4%), and *Appropriate Space Usage* (30.4%) also received high levels of *Strongly Disagree* responses, suggesting divided opinions or potential concerns regarding their influence on architectural outcomes. The responses indicate a general trend of ambivalence or polarization, with considerable percentages across both agreement and disagreement categories, reflecting diverse interpretations of architectural priorities within religious contexts.

Table 18: Responses from church scholars and professional scholars regarding the impacts of various factors on church architecture morphology

Impacts	Church scholars					Professional scholars				
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Strong Disagree	Disagree	Neutral	Agreed	Strong Agreed
Church services	10.9	28.3	13	21.7	26.1	10	30	30	26.7	3.3
Cultural/religious identity	8.7	21.7	13	28.3	28.3	30	30	13.3	26.7	0
Affordability	6.5	28.3	13	21.7	30.4	6.7	30	16.7	30	16.7
Durability	10.9	21.7	19.6	23.9	23.9	10	33.3	23.3	23.3	10
Visual Accessibility to the Internal Services	15.2	28.3	13	17.4	26.1	13.3	3.3	16.7	43.3	23.3
Scenic Beauty for the City	15.2	23.9	15.2	21.7	23.9	10	13.3	26.7	30	20
Keeping the Tradition (Ornamentation, Special Techniques)	10.9	17.4	19.6	23.9	28.3	36.7	23.3	16.7	16.7	3.3
Appropriate space usage	13	19.6	13	23.9	30.4	20	13.3	16.7	36.7	13.3
The Interaction with Other Buildings in the Church Compound and Outside	13.3	22.2	13.3	22.2	28.9	13.3	26.7	23.3	23.3	13.3

Among church scholars, the factors that received the highest proportion of *Strongly Agree* responses include *Visual Accessibility to the Internal Services* (15.2%) and *Scenic Beauty for the City* (15.2%). However, many factors such as *Cultural/Religious Identity* (28.3%), *Affordability* (30.4%), and *Appropriate Space Usage* (30.4%) also received high levels of *Strongly Disagree* responses, suggesting divided opinions or potential concerns regarding their influence on architectural

outcomes. The responses indicate a general trend of ambivalence or polarization, with considerable percentages across both agreement and disagreement categories, reflecting diverse interpretations of architectural priorities within religious contexts.

In contrast, professional scholars exhibited a more favorable and consolidated outlook. For example, Visual Accessibility to the Internal Services recorded the highest Agree (43.3%) and Strongly Agree (23.3%) combined score (66.6%), suggesting strong consensus on its importance. Church Services and Affordability also received substantial agreement (56.7% and 60%, respectively). Notably, Keeping the Tradition received the highest Strongly Disagree response (36.7%) among all factors, indicating a potential divergence in valuing traditional architectural elements.

The analysis of believers' responses regarding factors influencing church architecture morphology reveals several key insights. Visual accessibility to internal services (49%) and scenic beauty for the city (44.7%) received the highest agreement (combined "Strongly Agree" and "Agree") from participants, indicating their perceived importance in modern church architecture. Affordability (37.8%) and durability (36.7%) also ranked relatively high, suggesting that practical and economic considerations significantly affect architectural decisions.

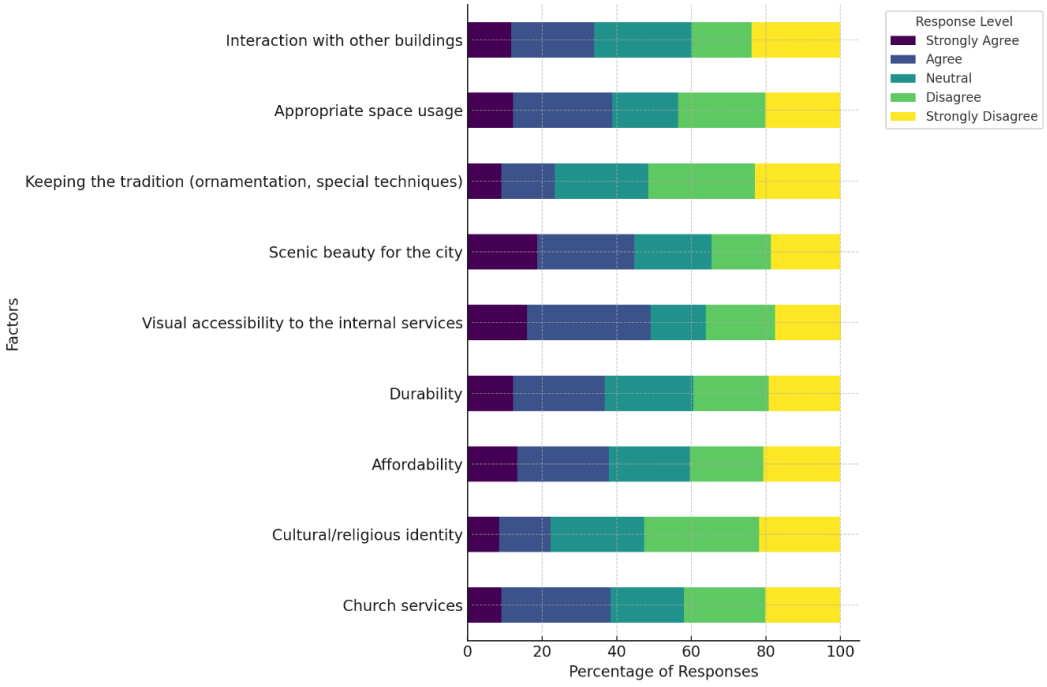


Figure 18: Responses of believers regarding the impacts of various factors on church architecture morphology

Conversely, cultural and religious identity (22.3%) and maintaining traditional features such as ornamentation and specialized techniques (23.4%) had the lowest agreement, with over 50% of respondents disagreeing or strongly disagreeing on their influence. This reflects a potential shift toward more functional or modern preferences rather than preserving traditional styles. Likewise, space utilization and the interaction with surrounding buildings received mixed views, with no strong consensus, highlighting the complexity of architectural planning in balancing aesthetics, tradition, and functionality.

4.10. Perceptions on the emergence of new traditions

Among church scholars, the responses are predominantly on the critical side. Approximately 35% of the respondents *strongly disagreed*, with an additional 20% expressing *disagreement*. Neutral responses accounted for around 20%, while only about 15% indicated *agreement*, and less than 10% expressed *strong agreement*. This distribution suggests a general skepticism among church scholars regarding the EOTC's role in innovating or introducing new architectural traditions. Their perspective may stem from a deeper alignment with liturgical consistency, theological continuity, and concern over preserving established spiritual symbolism in ecclesiastical architecture.

In contrast, professional scholars present a more divided and nuanced viewpoint, while around 23% of them *strongly agreed* and 30% *agreed* with the statement, there is also a significant portion who *disagreed* (20%) or remained *neutral* (17%). Only a small portion *strongly disagreed* (10%). This relatively balanced distribution reflects that while many professional scholars recognize or perceive signs of new architectural experimentation or localized adaptation within the EOTC, there remains uncertainty or disagreement, likely due to varying interpretations of what constitutes "new traditions."

CHAPTER FIVE – DISCUSSIONS, CONCLUSION, & RECOMMENDATIONS

5.1. Typological transformation of EOTC in global and local contexts

The typological evolution of Ethiopian Orthodox Tewahedo Church (EOTC) buildings in Addis Ababa demonstrates a dynamic interplay between sacred tradition and architectural innovation. This transformation aligns with broader global patterns in church architecture, where evolving liturgical functions, material technologies, and socio-political contexts shape the form and spatial organization of sacred spaces.

Early EOTC round churches, such as the Holy Be'alewold Church, reflect a traditional, concentric layout with a strong emphasis on sacred hierarchy and centralized sanctity. These forms are parallel on early Christian and Orthodox architecture, which also favored central-plan layouts to symbolize divine perfection and cosmic order (St. Sophia Cathedral, Constantinople). This typology persists in many Orthodox traditions across Armenia, Greece, and Russia, emphasizing the theological and cosmological symbolism of circular plans (Kilde, 2008).

Later developments during the reigns of Empress Zewditu and Emperor Haile Selassie introduced octagonal and rectangular basilica forms, evident in churches like Ta'eka Negest, Bata LeMariam, and Entoto Hamere Nohe Kidane Mihret. These forms signified an architectural transition that preserved core liturgical elements while incorporating new materials such as concrete and corrugated iron sheets. The octagonal Genet Eyesus Church represents a hybrid model integrating vertical emphasis and spatial layering, comparable to neo-Byzantine churches in Europe where domes and spatial transitions became dominant features

The emergence of cathedral-type churches such as Holy Trinity Cathedral and Gerji St. Mariam marked a significant shift toward monumental expression influenced by European neoclassical and modernist design principles. These churches exhibit features such as domes, stained-glass windows, and bell towers, resonating with Western cathedral models like the Sacré-Cœur in Paris and St. Paul's Cathedral in London. These structures embody a symbolic fusion of national identity and ecclesiastical prestige during the imperial period (Lindsay, 2010).

Contemporary developments, such as Kality Jate Kidane Mihret Church, illustrate a radical departure from canonical forms, emphasizing spatial monumentality, abstraction, and structural innovation. The integration of brutalist and minimalist aesthetics mirrors similar global trends in church architecture, such as the Church of Saint-Pierre in Firminy, France, by Le Corbusier, where the form itself becomes the vessel of spiritual experience (Jencks, 1987). The prioritization of form over liturgical function—observed in the open-plan design and vertical extensions—is echoed in contemporary church designs worldwide that seek to accommodate large congregations while evoking transcendence through dramatic geometries (Allplan, 2024).

Synchronic comparison of Addis Ababa's churches further reveals how material innovations, particularly the use of CIS roofing and reinforced concrete, enabled greater architectural experimentation. Similar innovations can be seen in post-Vatican II Catholic churches, where liturgical reforms prompted spatial reconfigurations to enhance participation and visibility (Roth, 2016). Moreover, churches such as Piassa Yohannes St. Mary and Gerji St. Mariam integrate mezzanine floors and multifunctional spaces, reflecting global efforts to optimize sacred spaces for evolving religious and civic needs.

Local continuities are evident in churches like Kale Mount Abune Habte Mariam, which retain the traditional Ethiopian basilica form, complete with shakura and cupolas. These designs echo the enduring symbolism of sacred enclosure and liturgical procession, aligning with EOTC theological principles even amid broader transformations.

In sum, the typological transformation of EOTC buildings in Addis Ababa reflects both local theological continuity and global architectural convergence. These changes underscore the fluidity of sacred architecture, where tradition is not abandoned but reinterpreted through new spatial vocabularies and materials. As in many global religious traditions, the EOTC's architectural evolution represents a negotiation between preserving spiritual meaning and responding to contemporary societal and functional demands.

5.2. Agents of change in the morphological transformation of EOTC buildings

The typological transformation of Ethiopian Orthodox Tewahedo Church (EOTC) buildings in Addis Ababa reflects a dynamic convergence of historical, political, theological, technological, and socio-cultural forces. These agents of change, both internal and external, have guided shifts in architectural form, spatial organization, and symbolic meaning, producing a diverse range of ecclesiastical typologies that span from traditional round churches to modernist monumental structures. Drawing on survey responses from both church scholars and professional scholars, this discussion highlights how divergent perspectives and broader global parallels inform and contest the changing identity of sacred space in Ethiopia.

5.2.1. Political patronage and regime influence

Throughout Ethiopian history, political regimes have served as powerful catalysts of architectural change. During the reign of Emperor Menelik II, church construction emphasized traditional round and concentric forms, as seen in the Holy Be'ale Wold Church. These forms underscored canonical spatial hierarchies rooted in theological orthodoxy. However, successive political regimes introduced new architectural vocabularies: Empress Zewditu's reign ushered in octagonal hybrids such as Ta'eka Negest Bata LeMariam Church, while Emperor Haile Selassie's era prioritized modernization and monumentality, exemplified by Holy Trinity Cathedral, which adopted European neoclassical features.

Such transformations are not unique to Ethiopia. In post-colonial Africa, monumental churches became tools for statecraft, symbolizing national renewal and sovereignty (Gifford, 1998). Likewise, in the Soviet Union and post-revolutionary Russia, sacred architecture often reflected state ideologies—modernist secularism replacing ecclesiastical tradition (Cunningham, 2011). In the EOTC context, these shifts signaled both theological endurance and political adaptation, as churches like Gerji St. Mariam or Kality Jate Kidane Mihret increasingly embodied state-sponsored abstraction and scale.

5.2.2. Theological function and liturgical innovation

Theological continuity has remained a critical thread in EOTC architecture, particularly in maintaining the tripartite spatial hierarchy: *mek'idesi* (sanctuary), *k'idisiti* (holy), and *k'inē mahilēti* (chanting hall). However, liturgical adaptation has

prompted morphological adjustments. Round churches such as Genet Eyesus and Piassa Yohannes St. Mary innovated by extending Qine Mahlet areas and modifying sanctuary access, enabling more inclusive worship and acoustic performance spaces. This reconfiguration aligns with modern liturgical needs, such as enhanced congregational visibility and sound projection.

Church scholars expressed strong reservations about such shifts, fearing the dilution of canonical sanctity. Their survey responses highlighted concerns about vertical expansions (e.g., mezzanines, lifts) that disrupt liturgical flow and spatial symbolism. Professional scholars, by contrast, viewed these innovations as adaptive responses to growing urban populations and evolving worship styles. They praised the functional improvements in space capacity and accessibility, noting parallels in global liturgical reform where tradition is merged with contextual flexibility (Lin & Lee, 2016).

5.2.3. Technological and material innovations

Material innovation, particularly the adoption of corrugated iron sheets (CIS), concrete domes, and prefabricated components, has significantly altered EOTC church morphology. Buildings such as Genet Eyesus and Kality Jate Kidane Mihret illustrate how new materials facilitated structural experimentation—ranging from hybrid dome constructions to open-plan layouts. This transition from vernacular stone and thatch to modern materials marks a broader architectural shift observed in sacred spaces worldwide, including tensile fabric structures in Southeast Asia and steel-frame basilicas in Latin America (Lin & Lee, 2016; de Souza, 2015).

However, the survey responses show a divide in material perception. Church scholars emphasized the symbolic integrity of traditional materials, associating them with liturgical purity and spiritual resonance. Professional scholars, on the other hand, advocated for technological integration, arguing that innovation does not negate sacredness but rather enables functional evolution. This tension reflects broader global debates on whether architectural form should serve tradition or utility (Strange & Whitney, 2003).

5.2.4. Socio-cultural adaptation and urbanization

As Addis Ababa urbanized rapidly, the role of churches expanded beyond spiritual centers to multifunctional urban institutions. Churches like Kality Jate Kidane Mihret and Gerji St. Mariam illustrate this evolution, incorporating open halls, mezzanines,

and utility basements. Their monumental scale accommodates large urban congregations, ceremonial events, and sometimes administrative functions—blurring the line between sacred and civic space.

This trend mirrors similar developments globally. In Nairobi and Accra, modern churches integrate health clinics, schools, and auditoriums within sacred compounds (Mbiti, 2010). In Latin America, churches often function as hubs of social capital and civic activity (de Souza, 2015). These adaptations reinforce the evolving social role of sacred spaces, especially in dense urban environments where the church's reach extends into public life.

5.2.5. Divergence in perception

The divergence between church scholars and professional scholars underscores the ideological friction between preservation and innovation. Church scholars, who prioritize spiritual continuity and symbolic coherence, expressed strong disagreement with the integration of elevators, abstract domes, and the breakdown of liturgical zoning. Their concern is rooted in a fear of losing theological identity amidst architectural experimentation.

Conversely, professional scholars viewed these transformations as necessary and inevitable, driven by demographic pressures, urban complexity, and technological opportunity. They saw innovation not as erasure but as reinterpretation—a way to reimagine sacredness within a changing world. This dialectic between conservation and adaptation defines much of the ongoing discourse surrounding sacred architecture in Ethiopia and beyond.

5.3. Implications and ways forward for conserving the architecture tradition

The typological transformation of Ethiopian Orthodox Tewahedo Church (EOTC) buildings in Addis Ababa reflects a complex interaction of political, social, theological, and technological influences. These transformations pose both challenges and opportunities for the conservation of the architectural traditions. As sacred spaces undergo shifts in spatial organization, material use, and architectural expression, heritage conservation efforts must respond with approaches that are adaptive, inclusive, and contextually grounded. The findings of this study highlight several implications and offer strategic directions for future conservation interventions.

5.3.1. Balancing continuity with change

A key implication of the ongoing architectural transformation is the need to reconcile the preservation of traditional ecclesiastical typologies with contemporary demands for functionality and urban integration. The divergence of views between church scholars—who advocate for the maintenance of liturgical and symbolic continuity—and professional scholars—who emphasize design innovation—underscores the importance of heritage frameworks that accommodate both stability and evolution. An integrated conservation approach should be adopted, one that respects essential theological spatial elements such as the *mek'idesi* (sanctuary) and *k'idisiti* (holy area), while allowing flexibility in other aspects of architectural form and function. Such an approach should encourage creative reinterpretations that remain faithful to the spiritual and cultural identity of EOTC architecture.

5.3.2. Safeguarding intangible heritage

The liturgical practices of the EOTC—such as processions, chanting, and ritual movement—are intrinsically linked to spatial configurations. The risk posed by architectural transformations is the erosion of these intangible elements, which constitute a vital dimension of heritage. Conservation efforts should extend beyond the physical structure to include the documentation, transmission, and revitalization of intangible heritage. This can be achieved through digital recording of rituals, participatory mapping of sacred spaces, and the integration of intangible cultural heritage considerations into architectural planning and design.

5.3.3. Enhancing participatory and inclusive conservation

The contrast in perspectives between ecclesiastical authorities and professional practitioners highlights the necessity of multi-stakeholder engagement in heritage decision-making. A lack of inclusive dialogue can lead to outcomes that are either excessively conservative or disconnected from the lived realities of communities. Participatory mechanisms should be institutionalized in the design and conservation process. Clergy, architects, heritage experts, community members, and local authorities should be involved in co-design workshops and planning consultations. This will ensure that conservation practices reflect a shared vision and collective stewardship.

5.3.4. Aligning heritage conservation with urban development

Rapid urban expansion in Addis Ababa has intensified pressure on heritage sites, often resulting in uncoordinated development or the neglect of sacred spaces. Current planning frameworks seldom prioritize heritage considerations in urban policy and land-use planning. Heritage conservation must be mainstreamed into urban planning systems. This includes the delineation of heritage zones, the integration of conservation principles into master plans, and the enforcement of regulatory protections for historically and culturally significant churches. Policy alignment will promote sustainable urban development that honors historical continuity.

5.3.5. Drawing lessons from global heritage practices

Typological transformation of sacred architecture is not unique to Ethiopia. Across Europe, Asia, and Africa, religious buildings have undergone modifications to accommodate contemporary societal needs. These international experiences provide valuable insights for managing change without compromising heritage values. Ethiopia should foster knowledge exchange and collaboration with international heritage organizations such as UNESCO, ICCROM, and ICOMOS. Case studies from countries grappling with similar challenges can inform local practices, while regional workshops and training can build technical capacity among conservation professionals.

5.3.6. Establishing heritage impact assessment frameworks

The lack of standardized tools to assess the implications of architectural transformation on heritage value presents a significant gap in current practice. The development and institutionalization of a contextualized Heritage Impact Assessment (HIA) tool is recommended. Such a framework should evaluate interventions based on criteria including liturgical integrity, material authenticity, spatial symbolism, and community relevance. The adoption of this tool would ensure that all construction and renovation projects undergo rigorous heritage evaluation prior to approval.

The transformation of EOTC buildings in Addis Ababa presents a microcosm of the broader dynamics shaping religious urban heritage in rapidly developing cities. Effective conservation must move beyond static preservation models to embrace a more dynamic, inclusive, and context-sensitive approach. By balancing reverence for theological traditions with responsiveness to contemporary realities, heritage

conservation can contribute meaningfully to urban identity, social cohesion, and spiritual continuity. This study advocates for an adaptive conservation paradigm—one that is capable of honoring the past while innovatively shaping the future.

5.4. Conclusion

The study of the morphological transformation of Ethiopian Orthodox Tewahedo Church (EOTC) buildings in Addis Ababa reveals a complex interaction between tradition and modernity. Through transformations in spatial organization, construction techniques, and architectural symbolism, the evolution of church buildings reflects both theological continuity and adaptation to political, technological, cultural, and urban pressures. The architectural progression—from traditional concentric round churches to modern monumental forms—demonstrates the dual imperative of preserving sacred heritage while responding to changing urban realities.

Survey responses, including from believers and scholars, affirm this duality. A strong majority of believers recognized architectural changes over time, with particular emphasis on elements such as exterior beauty, spatial layout, and symbolic features. Traditional styles like the round church and Ethiopian basilica remain dominant in terms of familiarity and visual comfort, particularly during liturgical practices. Conversely, modern church styles were perceived as less spiritually and visually resonant.

Tensions also emerged between church scholars and professional architects: the former prioritize maintaining symbolic and liturgical integrity, while the latter emphasize functionality and adaptability to modern urban congregations. This divergence underscores the broader debate over the future direction of EOTC architecture and the need to build a bridge between past traditions and future interventions to ensure architectural continuity.

5.5. Recommendations

Taking measures to solve the existing problems with regard to the already established and newly strong policy framework make are mandatory. It would be sound to consider some of the following recommendations to minimize the existing problems of changing church architecture traditions and create bridge to connect the past architecture tradition of EOTC building Architecture with the future intervention and holding them together to create continuity. Generally the researcher forwards the

following recommendation to Architects and Designers, Addis Ababa Diocese and concerned organization, Cultural and tourism Bureau and Researchers and Scholars should do multiple researches on the local architecture.

1. Architects, clergy, congregants, cultural institutions, and community members should be engaged in the planning and approval of new church buildings through mechanisms such as co-design forums and review panels. This participatory approach will balance innovation with cultural and spiritual continuity.

2. Architects and designers should be encouraged to study local architectural traditions and sacred texts when developing designs. Local case studies should serve as references in academic and professional training to instill a deeper appreciation of indigenous ecclesiastical architecture.

3. Culture and Tourism Bureau need to have conservative policies to re practice the local Church architecture Promotion works should be conducted to create awareness among the community, professionals and other stake holders about the local Church Architecture.
4. Church authorities, especially the Addis Ababa Diocese, collaboration with Association of Ethiopian Architects of should produce codes and standards and establish comprehensive design rules for church buildings that integrate liturgical requirements, traditional symbolism, and spatial hierarchy. These guidelines must draw from the Bible, theological teachings, and historical local case studies to ensure spiritual coherence.

5. Finally, future researchers should focus on important risk factors that affect building shape of EOTC has changed through time that would provide better insights for both management and regulatory bodies.

REFERENCE

Alex, B., 2018. *Introduction To Historic Building Preservation*. [Online] Make Buildings Last. Available at: <https://makebuildingslast.com/preservation/> [Accessed 23 June 2020].

Alfred D. & Foster H. 1907. *The Text Book of History Of Architecture*. 7th ed. New York: J.J. Little & Co., p.xxii.

Allplan. (2024). *Modern Church Architecture Trends*. Retrieved from https://www.allplan.com/blog/modern-church-architecture

Angelil, M. and Hebel, D., 2010. *Cities of Change Addis Ababa*. 1st ed. Basel: Birkhäuser, p.151.

Anthony, C., 1971. Traditional Versus Contemporary Elements in Architecture. *N.p*, [online] p.9. Available at: <https://digitalrepository.unm.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1737&context=nma> [Accessed 26 September 2020].

Ashworth, G. J., & Tunbridge, J. E. (1990). The tourist-historic city. John Wiley & Sons Ltd.

Ayala Levin (2016), "Haole Selassie's Imperial Modernity: Expatriate Architects and the Shaping of Addis Ababa" *Journal of the Society of Architectural Historians*, Vol. 75, No. 4 pp 447-468.

Batistoni, M. and Chiari, G., 2004. *Old Tracks in the New Flower*. 1st ed. ADDIS ABABA: Arada Books, pp.12-16

Bender, S. T. (2010). The Handbook of Social Work Research Methods. In 2nd (Ed.), Descriptive Studies (p. 120). Los Angeles. London. New Dehli. Singapor. Washengoton DC: SAGE Publication.

Bental, M. A., & Bental, F. R. (1990). Religious: Churches, General. In J. C. De Chiara (Ed.), *Time-Saver Standards for Building Types* (3rd ed., pp. 631-637). Singapore: McGraw- Hill International Editions.

Blundell Jones, P. (2000). *Architecture and Movement: The Dynamic Experience of Buildings*. Routledge, 4(1), 37-42.

Buragohain, D., Meng, Y., Deng, C., Li, Q., & Chaudhary, S. (2024). Digitalizing cultural heritage through metaverse applications: Challenges,

opportunities, and strategies. *Heritage Science, 12*(1), 1-16. https://doi.org/10.1186/s40494-024-01403-1

Buxton, D. (1970). *The Abyssinians*. London: Praeger Publishers.

Ching, F. D. K. (2007). Architecture: Form, Space, and Order. John Wiley & Sons.

Chojnacki, S. (2000). *The Ark of the Covenant and Ethiopian Art: A Cultural Study*. Addis Ababa University Press.

Chojnacki, S. (2000). *The Ark of the Covenant and Ethiopian Art: A Cultural Study*. Addis Ababa University Press.

Cordingley, R. and Fletcher, B., 1961. *A History of Architecture on the Comparative Method*. London: Athlone Press, pp.178-191.

Cunningham, M. (2011). *Faith and power: Religion and politics in world history*. Palgrave Macmillan.

David, W., 2009. *Ancient Churches Of Ethiopia 4Th - 14Th Centuries*. 1st ed. China: Yale University press - New haven and London, pp.25 - 200.

de Souza, M. (2015). *Sacred space and social capital: Religious architecture and urban planning in Latin America*. Routledge.

Dereje Tufa., 2008. Historical Development of Addis Ababa. *Journal of Ethiopian studies*, [online] 41(.1/2), .27-59. Available at: <https://www.jstor.org/stable/41967609> [Accessed 2 October 2024].

Encyclopaedia Britanica (Vol. 5). (n.d.). William Benton Publisher

Encyclopaedia, B., 2019. *Addis Ababa | History, Population, & Facts*. [online] Encyclopedia Britannica. Available at: <https://www.britannica.com/place/Addis-Ababa> [Accessed 3 October 2020].

Encyclopedia, (n.d.) *Illustrated Dictionary of Architecture*. [Online] Available at: <https://encyclopedia2.thefreedictionary.com/Traditional+architecture> [Accessed 26 September 2020].

Finneran, N. (2007). *The Archaeology of Ethiopia*. Routledge.

Fletcher, B. (1996). *A History of Architecture on the Comparative Method*. Butterworth-Heinemann, Athlon Press.

Friedlander, m., 2015. *Hidden treasures of Ethiopia*. 2nd ed. [s.l.]: Bloomsbury academic, p.4.

Getachew Tamene, 1998. Features of the Ethiopian Orthodox church and clergy. *Asian and African studies*, [online] 7(1), pp.87-104. Available at: <https://www.researchgate.net/publication/216685017_THE_FEATURE_OF_ETHIOPIAN_ORTHODOX_CHURCH_AND_THE_CLERGY> [Accessed 13 October 2020].

Getnet, T. (1998). FEATURES OF THE ETHIOPIAN ORTHODOX CHURCH AND THE CLERGY. *ASIAN AND AFRICAN STUDIES*, *7*, 87-104.

Gifford, P. (1998). *African Christianity: Its public role*. Indiana University Press.

Girma, T., 2014. *Methodology and Writing up Research*. 1st ed. Addis Ababa: Mega Publishing, pp.30-31.

Gomes, C. D. (2003). *Characteristics and regional influences on the genesis of church architecture in Bangladesh.* Unpublished M.Arch. thesis, Bangladesh University of Engineering and Technology (BUET), Architecture, Dhaka.

Gorgorios, 2014. *የኢትዮጵያ ኦርቶዶክስ ተዋህዶ ቤተ ክርስቲያን ታሪክ*. 2nd ed. Addis Ababa, p.26.

Hamlin, A., 1907. *A Text Book Of History Of Architecture*. 7th ed. London: Longmas, Green, and Co., pp.110-120.

Haussmann, A. D., Odrasil, O. L., Wiloth, S., Hinz, E., Kerl, P., Mylius, J., & Ackermann, K. (2024). Tradition and Transformation: Spirituality in Church-Related Caring Communities in a Pluralistic Society. *Religions*, *15*(3), 363. https://doi.org/10.3390/rel15030363

Heathcote, E. (1997). *Church Builders*. Academy Editions.

Heldman, M. E. (1992). *African Zion: The Sacred Art of Ethiopia*. Yale University Art Gallery.

Heldman, M.E. (1992) 'Architectural symbolism, sacred geography and the Ethiopian Church', *Journal of Religion in Africa*, 22(3), p. 222. doi:10.2307/1580918.

Henri Lefebvre, "The Urban Revolution,"in *The Global Cities Reader*,ed. Neil Brenner and Roger Keil (New York: Routledge, 2006), 409.

Jencks, C. (1987). *Postmodernism and the Sacred*. Academy Editions.

Jenkins, P. (2012). *Architecture, Participation and Society*. Routledge.

Kefyalew Marāḥi, 2009. *Christianity In Ethiopia II*. 1st ed. Addis Ababa, Ethiopia: Commercial publishers, pp.78-124.

Kefyalew Merahi, 1999. *The Contribution of the Orthodox Tewahdo Church*. 2nd ed. Addis Ababa: Commercial P.E., pp.5-11.

Kilde, J. H. (2008). *Sacred Power, Sacred Space: An Introduction to Christian Architecture and Worship*. Oxford University Press.

Kostof, S. (1995). *A History of Architecture: Settings and Rituals*. Oxford University Press.

Kribus, B. (2024). A re-examination of the sources of inspiration of Ethiopian Christian architecture. *Religions*, 15(6), 657. https://www.mdpi.com/2077-1444/15/6/657

Lentz, C. (2018). *Constructing Architecture in Africa: Between Coloniality and Urban Modernity*. Springer.

Liliya R. Akhmetova, E. U. (2016). Semiotics and Symbolism in the Orthodox Church Architecture. *International journal of humanities*, 2-4.

Lin, C., & Lee, M. (2016). Lightweight architecture in Southeast Asia: Faith, form and flexibility. *Journal of Architecture and Urbanism*, *40*(3), 186–198. https://doi.org/10.3846/20297955.2016.1210045

Lindahl, B., 1970. *Architectural History of Ethiopia in pictures*. 1st ed. Addis Ababa: Unlisted, p.63.

Lindsay, I. (2010). *Globalization and Church Architecture: Ethiopia and the West*. In *Journal of Religious Architecture*, 12(3), 24–31.

Mango, C. (1986). *Byzantine Architecture*. Electa/Rizzoli.

Mbiti, J. S. (2010). *African religions and philosophy* (2nd ed.). Heinemann.

McDonough, J. and McDonough, S., (1997). *Research Methods for English Language Teachers*. London: Arnold.

McNamara, D. R. (2011). *How to read churches: A crash course in Christian architecture*. London: Ivy Press Limited.

Mebratu Kiros Gebru, (2012). *Liturgical cosmology: the theological and sacramental dimensions.* Toronto: University of St. Michael's College.

Mercier, J. (1997). *Art That Heals: The Image as Medicine in Ethiopia*. Prestel.

Merriam-Webster (2017). "Merriam-Webster websites, services, and applications" Springfield, Massachusetts.

Moudon, A. V. (1997). "Urban Morphology as an Emerging Interdisciplinary Field." *Urban Morphology*, 1(1), 3–10.

n.d.,(2019). "*Church History*" EOTC Holy Trinity Cathedral: Available at: <Church History – Holy Trinity Cathedral> [Accessed 3 October 2020].

Naigzy Gebremedhin, (1976). *Traditional Houses In Ethiopia*. 1st ed. Stockholm: Institutet for byggdokumentation press, p.109.

Naigzy Gebremedhin. (1976). *Architectural Symbolism in Ethiopian Churches*. Institute of Ethiopian Studies.

Oliveira, V. (2020). *Urban Morphology: An Introduction to the Study of the Physical Form of Cities*. Springer.

Oliver, P. (2003). *Dwellings: The Vernacular House Worldwide*. Phaidon Press.

Oxford, 2020. *Identification Noun - Oxford Advanced Learner's Dictionary At Oxfordlearnersdictionaries.Com*. [online] Oxfordlearnersdictionaries.com. Available at: <https://www.oxfordlearnersdictionaries.com/definition/english/identification?q=Identification> [Accessed 27 September 2024].

Pankhurst, R. (1982). *History of Ethiopian Towns: From the Middle Ages to the Early Nineteenth Century*. Franz Steiner Verlag.

Pankhurst, R. (1998). *The Ethiopian Millennium: A Historical Guide to Ethiopian Civilization*. Red Sea Press.

Pankhurst, R., 1961. Menelik and the Foundation of Addis Ababa. *The Journal of African History*, [online] 2(1), pp.103-117. Available at: <https://www.jstor.org/stable/179586> [Accessed 2 October 2024].

Parker, J. (2023) What is morphology in architecture? - architecture, Design your world - Explore Architecture. Available at: http://www.architecturemaker.com/what-is-morphology-in-architecture/ (Accessed: 09 October 2025).

Parul Jain, 2011. *Church | Architecture*. [online] Encyclopedia Britannica. Available at: <https://www.britannica.com/topic/church-architecture> [Accessed 16 April 2020].

Phillipson, D. W. (2009). *Ancient Churches of Ethiopia: Fourth–Fourteenth Centuries*. Yale University Press

Roth, L. M. (2016). *Understanding Architecture: Its Elements, History, and Meaning*. Westview Press.

Scully, V. (1994). *Architecture: The Natural and the Manmade*. St. Martin's Press.

Scully, V. (1994). The Earth, the Temple, and the Tower: Reflections on the Meaning of Architecture. *In Architectural Record*, 182(9), 45-52.

Sergew Hable Selassie. (1972). *Ancient and Medieval Ethiopian History to 1270*. Haile Selassie I University Press.

Sidorenko, M. Yu. (2018). Influence of traditions and innovation on church architecture. IOP Conference Series: Materials Science and Engineering, 451, 012136. https://doi.org/10.1088/1757-899X/451/1/012136.

Strange, I., & Whitney, D. (2003). The changing use of churches in the UK. *Planning Practice and Research, 18*(2–3), 249–264. https://doi.org/10.1080/0269745032000137806

Toon, P. (1984). *Protestants and Catholics.* Michigan: Servant Books.

Tsegaye Abebey, 2016. *ውቁራት አብያተ ክርስትያናት፤ በሸደሆ መቄት*. [*Wukrat Abiyate Kristiyanat: Beshedeho Meket*]. (1st ed.). Addis Ababa: በኢትዮጵያ ኦርቶዶክስ ተዋህዶ ቤተ ክርስትያን በሰንበት ት/ቤቶች ማደራጃ መምሪያ ማህበረ ቅዱሳን [Ethiopian Orthodox Tewahedo Church Sunday School Department of the Holy Synod], p.31.

Ullendorff, Edward. (1957) "Hebraic-Jewish Elements in Abyssinian (Monophysite) Christianity." *Journal of Semitic Studies*, 1 216-256.

Vale, B., & Vale, R. (1991). Architecture, Nature, and the Urban Environment.

Villa, M. (2017). *Frumentius in the Ethiopic sources* (discussion of the historical traditions). *Journal* (JSTOR). https://www.jstor.org/stable/45137006

መጽሐፈ ቅዳሴ (1988) '*መጽሐፈ ቅዳሴ ታሪክ* ', in *መጽሐፈ ቅዳሴ*. አዲስ አበባ: ትንሳኤ ማተሚያ ድርጅት , pp. 1–10.

ANNEX I: PUBLISHABLE MANUSCRIPT

The morphological transformation of Ethiopian Orthodox Tewahdo Church of buildings over times: The case of Addis Ababa

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September 2025

Abstract: *Church architecture reflects religious devotion, cultural identity, and historical continuity. The Ethiopian Orthodox Tewahedo Church (EOTC) embodies a unique ecclesiastical tradition, yet its architecture—especially in rapidly urbanizing Addis Ababa—has undergone significant transformation. This study explores the Morphological transformation of EOTC churches: political shifts, liturgical developments, technological advances, socio-cultural dynamics, and urban growth. Through case studies and surveys of clergy, scholars, and congregants, the research reveals a shift from traditional round and basilica forms to modern monumental and abstract structures. While church scholars stress preserving spiritual symbolism, professionals emphasize functional and aesthetic innovation—highlighting tensions between tradition and modernity. Despite these changes, core theological values persist. The study calls for contextual design guidelines, participatory conservation, and heritage impact tools to balance tradition with contemporary needs.*

Keywords: Morphological transformation, EOTC, typological change, heritage conservation, sacred architecture, Addis Ababa

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ADDIS ABABA UNIVERSITY
SINCE 1950

ANNEX I –SITE OBSERVATION CHECKLIST

Check List for field visit (Church's)

This checklist is prepared for academic purposes at Addis Ababa University – School of Built Enviroment for the fulfillment of the MSc Thesis in the Conservation of Urban and Architectural Heritage. The objective is to study research on "**THE MORPHOLOGICAL TRANSFORMATION OF ETHIOPIAN ORTHODOX CHURCH BUILDINGS TROUGH TIME; THE CASE OF ADDIS ABABA**". I would like to say thank you in advance for your cooperation.

Chapter I. Background Information

1. Name of church _____
2. Location _____
3. Building characteristics and shape _____
4. Year of Church building construction _____
5. About the construction _____
6. The average number of user's at a time _____
7. Average numbers of believers in the church _____
8. Numbers of Sebeka gubaie representatives _____
9. Numbers of Sunday school students _____
10. Number of Sibkete wengel servants _____
11. Building construction committee _____

Chapter 2. Observation data and drawings

1. **Picture data: -** All Side Elevations, Details (Façade, Openings, Ornamentation, Inside reflected celling and domes)

2. Drawing with major Dimension, Plan, elevation, section (If necessary)

3. Other relevant data's

_____
_____
_____

ANNEX II – SURVAY QUESTIONNAIRE

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Survey questions for EOTC Believers

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Chapter 1. Demographic and General Information

1. **Age**
   - ○ Below 18
   - ○ 18 – 34
   - ○ 35 – 50
   - ○ 51 – 64
   - ○ 65 and Above
2. **Gender**
   - ○ Male
   - ○ Female
3. **Church Education Level**
   - ○ Ordinary believers
   - ○ Sunday school attended
   - ○ Theological Collage attended
   - ○ Abnet School attended
4. **Which Sub city are you live in?**
   - ○ Kolfe Sub city - Addis Ketema Sub city - Nifas Silk Lafto Sub city -- Gulele Sub city - Yeka Sub city
   - ○ Bole Sub city - Lemikura Subcity - Kirkos Subcity - Akaki Kality Sub city - Arada Sub city
   - ○ Lideta Sub city - Other City
5. **How often do you attend a church Program?**
   - ○ Daily
   - ○ Weekend time
   - ○ Monthly
   - ○ Holidays

Chapter 2: Perception Questions

The following questions are designed to understand your views related with transformation Factors and impact of EOTC building Morphology through time. Please respond to each statement based on your level of agreement, using the Likert scale. There is no right or wrong answers.

1. **What type of Church shape do you know**

No	Types of church shape	I know	I don't know
1.	Round Church: Circular and the inner part is divided into 3 physical circular boundaries	○	○
2.	Ethiopian Basilica Church : rectangular and the inner part is divided into 3 physical boundaries	○	○
3.	Cathedral Church's : (copied from Western Catholic)	○	○
4.	Modern & Complex Church's	○	○
5.	Rock Hewn Church's	○	○
6.	Cave Church's	○	○

2. Which shape of church building do you prefer for your spiritual experience?

No	Types of church shape	I choose it	Neutral	I don't choose
1.	Round Church: Circular and the inner part is divided into 3 physical circular boundaries	○	○	○
2.	Ethiopian Basilica Church : rectangular and the inner part is divided into 3 physical boundaries	○	○	○
3.	Cathedral Church's : (copied from Western Catholic)	○	○	○
4.	Modern & Complex Church's	○	○	○

3. Do you think that the building shape of EOTC has changed through time?

- ○ Disagree
- ○ Agree

4. Which part of the local church architecture characters has changed through time? For each factor, select the response that best represents your agreement:

Characteristics of church building	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Scenic beauty	○	○	○	○	○
Spatial contents	○	○	○	○	○
Formal layout	○	○	○	○	○
Windows	○	○	○	○	○
Entrance gate	○	○	○	○	○
Façade characters	○	○	○	○	○
Symbols/ Elements	○	○	○	○	○
Ornamentations	○	○	○	○	○
Columns	○	○	○	○	○
Overall setup with the compound	○	○	○	○	○

5. Which Church building type creates Visual comfort for the listed church service type?

No	Church Services type	Church building type			
		Round Church	Ethiopian Basilica	Cathedral	Modern and complex
a.	*Litergy/ k'idasē*	○	○	○	○
b.	*mahilēti*	○	○	○	○
c.	*siri'ate k'uribani*	○	○	○	○
d.	*Sibket wengel*	○	○	○	○
e.	*taboti nigisi*	○	○	○	○

6. Which types of church building accommodates the largest number of parishioners to attend the listed types of church services?

No	Church Services type	Church building type			
		Round Church	Ethiopian Basilica	Cathedral	Modern and complex
a.	*Litergy/ k'idasē*	○	○	○	○
b.	*mahilēti*	○	○	○	○
c.	*siri'ate k'uribani*	○	○	○	○
d.	*Sibket wengel*	○	○	○	○
e.	*taboti nigisi*	○	○	○	○

7. Do you think the following has positively impacted the morphological transformation of EOTC building?

For each impact, select the response that best represents your agreement:

Impacts	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Church Services	○	○	○	○	○
Cultural/ Religious Identity	○	○	○	○	○
Affordability	○	○	○	○	○
Durability	○	○	○	○	○
Visual accessibility to the internal services	○	○	○	○	○
Scenic beauty for the city	○	○	○	○	○
Keeping the tradition (ornamentation, Special techniques)	○	○	○	○	○
Appropriate space usage	○	○	○	○	○
The interaction with other buildings in the church compound and outside the church	○	○	○	○	○

Survey questions for Theologians, Abnet Scholars, Priests, Sunday school representatives, and Sebeka Gubaie Committee Members

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Chapter 1. Demographic and General Information

1. **Age**
   - Below 18
   - 18 – 34
   - 35 – 50
   - 51 – 64
   - 65 and Above
2. **Gender**
   - Male
   - Female
3. **Role / Activity**
   - Sebeka Gubaie's Committee Member
   - Sunday school
   - Theologian / Sibkete wengel
   - Abnet School Scholar
   - Mahiberat
   - Priests/ High priest
   - Volunteer
4. **Which Sub city are you live in?**
   - Kolfe Sub city - Addis Ketema Sub city - Nifas Silk Lafto Sub city -- Gulele Sub city - Yeka Sub city - Bole Sub city - Lemikura Subcity - Kirkos Subcity - Akaki Kality Sub city - Arada Sub city Lideta Sub city - Other City
5. **How often are you attached to the Church Service?**
   - Daily
   - Weekend time
   - Monthly
   - Holiday

Chapter 2: Perception Questions

The following questions are designed to understand your views related with transformation Factors and impact of EOTC building Morphology through time. Please respond to each statement based on your level of agreement, using the Likert scale: 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree. There is no right or wrong answers.

1. **Which types of Church building shape you prefer for your spiritual experience?**

No	Types of church shape	I choose it	Neutral	I don't choose
1.	Round Church: Circular and the inner part is divided into 3 physical circular boundaries	○	○	○
2.	Ethiopian Basilica Church : rectangular and the inner part is divided into 3 physical boundaries	○	○	○
3.	Cathedral Church's : (copied from Western Catholic)	○	○	○
4.	Modern & Complex Church's	○	○	○

2. **Do you think there is a change of EOTC building shape through time?**
   - Disagree
   - Agree

3. **Which part of the local church architecture characters has changed through time?** For each factor, select the response that best represents your agreement:

Characteristics of church building	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
Scenic beauty	○	○	○	○	○
Spatial contents	○	○	○	○	○
Formal layout	○	○	○	○	○
Windows	○	○	○	○	○
Entrance gate	○	○	○	○	○
Façade characters	○	○	○	○	○
Symbols/ Elements	○	○	○	○	○
Ornamentations	○	○	○	○	○
Arched	○	○	○	○	○
Columns	○	○	○	○	○
Overall setup with the compound	○	○	○	○	○

4. **Do you think the following are internal agents of changes (Internal factors) in the church building morphology through time?**

For each factor, select the response that best represents your agreement:

Internal Factors	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Material and construction cost	○	○	○	○	○
Material Availability	○	○	○	○	○
New material introduction	○	○	○	○	○
Given time for construction	○	○	○	○	○
Lack of skilled person	○	○	○	○	○
The church was built in the city	○	○	○	○	○
Exposure from other oriental Church's	○	○	○	○	○
Increase the number of users	○	○	○	○	○
Space comfort for the users	○	○	○	○	○
Space comfort for the Church services	○	○	○	○	○
Church Leaders personal Interests	○	○	○	○	○
Financial Capability from the follows	○	○	○	○	○
Competition between church institutions	○	○	○	○	○
Lack of church knowledge	○	○	○	○	○
Intellectual changes of priests, followers	○	○	○	○	○
Lack of defining the EOTC identity	○	○	○	○	○
Lack of monitoring department from the high church organization	○	○	○	○	○

5. **Do you think the following are external agents of change (External factors) in the church building's morphology through time?**

For each factor, select the response that best represents your agreement:

External Factors	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Political regime change (Imperialism> Socialism> Capitalism)	○	○	○	○	○
Italian Occupation Impact	○	○	○	○	○
Demographic change (population)	○	○	○	○	○
Social Changes	○	○	○	○	○
Cultural Deviation	○	○	○	○	○
City development exposure	○	○	○	○	○
influenced practice of other Oriental churches	○	○	○	○	○
Creating scenic beauty for the city	○	○	○	○	○

6. Which type of church space content creates visual comfort to serve the listed types of church services?

For each factor, select the response that best represents your agreement:

No	Church Services type	Church building type			
		Round Church	Ethiopian Basilica	Cathedral	Modern and complex
1.	*Litergy/ k'idasē*	○	○	○	○
2.	*mahilēti*	○	○	○	○
3.	*siri'ate k'uribani*	○	○	○	○
4.	*se'ātati*	○	○	○	○
5.	*Sibket wengel*	○	○	○	○
6.	*taboti nigisi*	○	○	○	○
7.	*mahit'eniti*	○	○	○	○
8.	*siri'ate gabicha*	○	○	○	○

7. Which church building type accommodates large number of parishioners to attend the listed types of church service? For each factor, select the response that best represents your agreement:

No	Church Services type	Church building type			
		Round Church	Ethiopian Basilica	Cathedral	Modern and complex
1.	*Litergy/ k'idasē*	○	○	○	○
2.	*mahilēti*	○	○	○	○
3.	*siri'ate k'uribani*	○	○	○	○
4.	*se'ātati*	○	○	○	○
5.	*Sibket wengel*	○	○	○	○
6.	*taboti nigisi*	○	○	○	○
7.	*mahit'eniti*	○	○	○	○
8.	*siri'ate gabicha*	○	○	○	○

8. Do you think the following have positive impacts on the EOTC architecture morphology trough time?

For each factor, select the response that best represents your agreement:

Impacts	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
Church Services	○	○	○	○	○
Cultural/ Religious Identity	○	○	○	○	○
Affordability	○	○	○	○	○
Durability	○	○	○	○	○
Visual accessibility to the internal services	○	○	○	○	○
Scenic beauty for the city	○	○	○	○	○
Keeping the tradition (ornamentation, Special techniques)	○	○	○	○	○
Appropriate space usage	○	○	○	○	○
The interaction with other buildings in church compound and outside the church	○	○	○	○	○

9. Do you think the EOTC is currently introducing new Local Church architecture traditions?

- ○ 1 = Strongly Disagree
- ○ 2 = Disagree
- ○ 3 = Neutral
- ○ 4 = Agree
- ○ 5 = Strongly Agree

10. Open ended Question.

1. What architectural traditions are specific to the EOTC? If so, what are their characteristics?
2. How did you choose church building Physical forms and spaces? Why?
3. What spatial and formal elements do you see embedded in the changed church architecture? Why do you think that is?
4. What spatial and formal contents are included additionally in the changed church buildings? Why?

Survey questions for Architects, Builders

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Chapter 1. Demographic and General Information

1. **Age**
   - 18 – 34
   - 35 – 50
   - 51 – 64
   - 65 and Above
2. **Gender**
   - Male
   - Female
   - Priest
3. **Are you an Orthodox Tewahdo religion believer?**
   - Yes
   - No
4. **Role/ Profession**
   - Architect Practitioner
   - Architect and Heritage Conservator
   - Engineer / Church building contractor
5. **Church Education Level**
   - Ordinary believer
   - Sunday school attended
   - Theological Collage attended
   - Abnet School attended and Above
   - None
6. **How many EOTC Buildings have you designed / constructed?**
   - >10 Churches
   - 10 – 20 churches
   - 30 and Above churches
7. **How often are you attached to the Church program / service?**
   - Daily
   - Weekend time
   - Monthly
   - Holiday
   - Never

Chapter 2: Perception Questions

The following questions are designed to understand your views related with transformation Factors and impact of EOTC building Morphology through time. Please respond to each statement based on your level of agreement, using the Likert scale: 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree. There is no right or wrong answers.

1. **Which types of Church building shape do you prefer to design for your clients?**

No	Types of church shape	I highly choose it	I choose it	Neutral	I don't choose	I highly don't choose
1.	Round Church: Circular and the inner part is divided into 3 physical circular boundaries	○	○	○	○	○
2.	Ethiopian Basilica Church : rectangular and the inner part is divided into 3 physical boundaries	○	○	○	○	○
3.	Cathedral Church's : (copied from Western Catholic)	○	○	○	○	○
4.	Modern & Complex Church's	○	○	○	○	○

2. **Do you think there is a change of EOTC building shape through time?**

   a. Disagree B. Agree

3. Which part of the local church architecture characters has changed through time?

For each factor, select the response that best represents your agreement:

Characteristics of church building	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
Scenic beauty	○	○	○	○	○
Spatial contents	○	○	○	○	○
Formal layout	○	○	○	○	○
Windows	○	○	○	○	○
Entrance gate	○	○	○	○	○
Façade characters	○	○	○	○	○
Symbols/ Elements	○	○	○	○	○
Ornamentations	○	○	○	○	○
Arched	○	○	○	○	○
Columns	○	○	○	○	○
Overall setup with the compound	○	○	○	○	○

4. Do you think the following are internal agents of changes (Internal factors) in the church building morphology through time?

For each factor, select the response that best represents your agreement:

Internal Factors	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Material and construction cost	○	○	○	○	○
Material Availability	○	○	○	○	○
New material introduction	○	○	○	○	○
Given time for construction	○	○	○	○	○
Lack of skilled person	○	○	○	○	○
The church was built in the city	○	○	○	○	○
Exposure from other oriental Church's	○	○	○	○	○
Increase the number of users	○	○	○	○	○
Space comfort for the users	○	○	○	○	○
Space comfort for the Church services	○	○	○	○	○
Church Leaders personal Interests	○	○	○	○	○
Financial Capability from the follows	○	○	○	○	○
Competition between church institutions	○	○	○	○	○
Lack of church knowledge	○	○	○	○	○
Intellectual changes of priests, followers	○	○	○	○	○
Lack of defining the EOTC identity	○	○	○	○	○
Lack of monitoring department from the high church organization	○	○	○	○	○

5. Do you think the following are external agents of change (External factors) in the church building's morphology through time?

For each factor, select the response that best represents your agreement:

External Factors	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Political regime change (Imperialism> Socialism> Capitalism)	○	○	○	○	○
Italian Occupation Impact	○	○	○	○	○
Demographic change (population)	○	○	○	○	○
Social Changes	○	○	○	○	○
Cultural Deviation	○	○	○	○	○
City development exposure	○	○	○	○	○
influenced practice of other Oriental churches	○	○	○	○	○
Creating scenic beauty for the city	○	○	○	○	○

6. Which type of church space content creates visual comfort to serve the listed types of church services?

For each factor, select the response that best represents your agreement:

No	Church Services type	Church building type			
		Round Church	Ethiopian Basilica	Cathedral	Modern and complex
1.	*Litergy/ k'idasē*	○	○	○	○
2.	*mahilēti*	○	○	○	○
3.	*siri'ate k'uribani*	○	○	○	○
4.	*se'ātati*	○	○	○	○
5.	*Sibket wengel*	○	○	○	○
6.	*taboti nigisi*	○	○	○	○
7.	*mahit'eniti*	○	○	○	○
8.	*siri'ate gabicha*	○	○	○	○

7. Which church building type accommodates large number of parishioners to attend the listed types of church service?

For each factor, select the response that best represents your agreement:

No	Church Services type	Church building type			
		Round Church	**Ethiopian Basilica**	**Cathedral**	**Modern and complex**
1.	*Litergy/ k'idasē*	○	○	○	○
2.	*mahilēti*	○	○	○	○
3.	*siri'ate k'uribani*	○	○	○	○
4.	*se'ātati*	○	○	○	○
5.	*Sibket wengel*	○	○	○	○
6.	*taboti nigisi*	○	○	○	○
7.	*mahit'eniti*	○	○	○	○
8.	*siri'ate gabicha*	○	○	○	○

8. Do you think the following have positive impacts on the EOTC architecture morphology trough time?

For each factor, select the response that best represents your agreement:

Impacts	1 Strongly disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
Church Services	○	○	○	○	○
Cultural/ Religious Identity	○	○	○	○	○
Affordability	○	○	○	○	○
Durability	○	○	○	○	○
Visual accessibility to the internal services	○	○	○	○	○
Scenic beauty for the city	○	○	○	○	○
Keeping the tradition (ornamentation, Special techniques)	○	○	○	○	○
Appropriate space usage	○	○	○	○	○
The interaction with other buildings in church compound and outside the church	○	○	○	○	○

9. Do you think the EOTC is currently introducing new Local Church architecture traditions?

a. 1 = Strongly Disagree
b. 2 = Disagree
c. 3 = Neutral
d. 4 = Agree
e. 5 = Strongly Agree

10. Open ended Question.

Please respond to each statement with short and precise answers

i. What architectural traditions are specific to the EOTC? If so, what are their characteristics?
ii. How did you choose church building Physical forms and spaces? Why?
iii. What spatial and formal elements do you see embedded in the changed church architecture? Why do you think that is?
iv. What spatial and formal contents are included additionally in the changed church buildings? Why?

ANNEX II – EOTC PARISHES LIST IN ADDIS ABABA

GLOSSARY

Arched – An architectural feature in a building a series of evenly spaced columns supporting roof or slab, often creating a shaded walkway or passage.

Architecture tradition – refers to the established design principles, styles, and cultural values that are passed down and adapted across generations with in a particular region or society.

Basilica – it is a large, rectangular church building originally from ancient roman architecture, typically separated by rows of columns, and often with an apse at one or both ends.

Cupola – it is a small, dome – like structure on top of a church building little metal bells hang around it from the edges, its often used for identify it is an EOTC.

Morphology – It is define the study of form, structure, and spatial organization in the built environment.

Shakura - little metal bells hang from the church roof edges

Tabot – It is holiest object in an EOTC and sacred replica of the Ark of the Covenant

Transformation – refers to the process of changing or evolving a design, form, space, or structure to achieve a new function, meaning, aesthetic, or spatial quality.