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## ASSESSING DETERMINANTS OF URBANIZATION IN ETHIOPIA: TOWARDS A MULTI-METHOD RESEARCH APPROACH

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### Abstract

Ethiopia has been experiencing rapid urbanization, resulting in a considerable transformation of its urban landscape. This rapid urbanization creates both opportunities and challenges for society and many investment possibilities in the process. A more in-depth understanding is needed of what determines this urbanization trends. Thus, the purpose of this research is to investigate the determinants of urbanization in Ethiopia. This study provides new insights for Ethiopian urban studies by applying a mixed-method approach - an interdisciplinary approach combining qualitative, quantitative, and semi-systematic literature review. This study adopted a confidence level approach to characterize the degree of certainty in key findings and assess the multi-method process's conclusions. Results show that proximity to large urban centers, the administrative hierarchy of the urban centers, and urban centers' administrative location (emerging regions vs. the rest of the country) are critical determinants of rapid urbanization in Ethiopia with a very high confidence level. Besides, employment opportunities, roads and railway infrastructure, population growth, and policy framework were rated with a high confidence level as urbanization determinants. Meanwhile, manufacturing and economic growth played an average role in Ethiopian urbanization, rated with medium-level confidence. This finding indicates the weak relationship between the manufacturing industry and economic development on the one hand and urbanization on the other in the Ethiopian context.

Key words: Urbanization  
Determinants of urbanization  
Ethiopia  
Multi-method approach  
Confidence level  
Agreement level

## I. INTRODUCTION

Developing countries are recently experiencing rapid urbanization compared to developed ones with an average annual rate of change of urban population 2.34 and 0.50 percent respectively for the year 2018 (United Nations, 2018). According to the same United Nations report, by 2050, around 67 percent of the developing world and 87 percent of the developed world will be urbanized. Ethiopia, the second-most populous country in Africa next to Nigeria, had an estimated total population of 96.5 million in 2018, from which 20.8 percent live in urban areas (CSA, 2013). The country's urbanization rate is increasingly rapid, and projections indicate that it will continue to urbanize in the coming decades increasingly. In 1950, Ethiopia's estimated urban population accounted for only 4.6 percent: only an estimated 834 thousand out of 18.2 million people living in urban settlements (United Nations, 2018). In 2010, Ethiopia's estimated urban population reached 13.9 million, accounting for about 17.5 percent of its population (CSA, 2013). Ethiopia's urban population has increased by a factor of 24 from 834 thousand in 1950 to over 20 million in 2018 compared to a global urban population increase by a factor of five. It is expected to increase by another 40 percent by 2050 when 74.5 million people are projected to live in urban settlements (United Nations, 2018).

Urban Ethiopia is increasing in multiple forms: population growth, number of cities, densification of big cities, and urban land expansion (Ermias, 2019). Addis Ababa had only one city, with over 100,000 when Ethiopia conducted its first census in 1984 (CSA, 1984). Three cities joined this group in 1994: Dire Dawa, Adama, and Gondar, while Addis Ababa became 12 times greater than the next largest city, Dire Dawa (CSA, 1994). The number of secondary cities with a population more significant than 100,000 increased to 11, with four towns with a population greater than 200 thousand (ibid). In 2015, the number of cities with a community greater than 100,000 and 200,000 increased to 19 and seven, respectively. In general, urban centers in Ethiopia are characterized by a primate city of Addis Ababa, few cities with a population ranging between 100,000 to 500,000, and many small towns with a population size of fewer than 5,000 inhabitants (Arup, 2016). Addis Ababa is home to a quarter of Ethiopia's urban residents, and it is ten times bigger than the second largest city of Adama in 2015 (ibid).

Rapid urbanization can be attributed to many factors such as rural to urban migration, the formation of new cities, growth and expansion of existing cities, and the natural growth rate of urban population (Ermias, 2019; World Bank, 2015). People from the rural sector migrated to the urban sector for a livelihood because of higher employment opportunities, higher wages, better lifestyle, etc. in urban areas (World Bank, 2015). Higher productivity in urban areas, more employment opportunities, a better lifestyle, etc. attract more firms and people towards urban areas. Large scale migration from rural to urban areas increases the urban gross domestic product (GDP) and economic growth rate, which in turn helps to reduce dependency on agriculture and poverty in rural areas. Cities' contribution to GDP is significant, reaching 38 percent of GDP (UNDP Ethiopia, 2018; World Bank, 2015).

Besides, the growth rate of large and medium cities and small urban centers is increasing in size (Ermias et al., 2019) and political influence (Tesfahun, 2017). Such cities as Hawassa in the south, Dire Dawa and Harar in the east, Mekelle in the north, Bahir Dar in the northwest, and Adama in the country's central corners are not just growing faster. And these cities are deemed potential corridors for future urban Ethiopia with more substantial metropolitan areas in their respective regions (Arup, 2016; Tesfahun, 2017). The secondary cities that mainly constitute the regional administrative centers benefitted from infrastructure and related investments that followed their designation as provincial capitals (Tesfahun, 2017).

The above discussion indicates that Ethiopia is experiencing a fast pace of urbanization and a corresponding high contribution to national income from the urban segment. The economy's gradual change is undergoing a predominantly agriculturally based economy into service, and the 'industry' led an urban-centered economy. In a welcome measure, the government has initiated and implemented various urban-related policies and programs to promote Ethiopia's urbanization in recent years. However, the country needs better policies, programs, and schemes in the coming days to promote planned urbanization and to absorb the immense economic potential that urban areas can provide for higher and sustainable economic growth in Ethiopia.

Previously Kleemann et al. (2017) used a 'transparent framework' to study peri-urban land use pattern and its relation to land use planning in Ghana. They combined expert interviews, a literature review, and a bi-temporal change detection analysis using GIS/RS. They also assigned confidence levels of their findings from the respective methods based on plausibility and sensitivity. Finally, they proposed a mixed-method approach for future research. Building on their premises and by differing in using a quantitative method instead of GIS/RS, this research employed a multi-method approach. Specifically, this research is different from the previous ones in that its application systematically combining qualitative, quantitative, and semi-systematic literature review.

Generally, the objective of the presented research is two-fold. The study provides new insights into a multi-method approach's suitability to compare and contrast information from the three research methods. This research collected and analyzed data and information using qualitative (key informant interviews and focus group discussions), semi-systematic literature review, and quantitative approach to identify and explore critical determinants of urbanization in Ethiopia. Secondly, the research identified and analyzed the essential determinants of urbanization in Ethiopia. The study also proved that the multi-method approach is applicable for urbanization research in Ethiopia with some challenges.

For the quantitative part, the research systematically and purposefully selected a random and representative sample of 41 urban centers in Ethiopia (see Appendix A) based on cities' population size, their administrative importance, geographic location, and political and economic importance. The qualitative method purposefully selected respondents from Addis Ababa and five other urban centers in five regions.

The specific research questions include:

- What are the determinants of urbanization in Ethiopia?
- What are the strength and limitations of a multi-method approach to analyze urbanization determinants in Ethiopia?

II. STUDY AREAS AND METHODS

2.1 Study Areas

Study areas for this research depend on the type of specific research methods. For the quantitative method, a representative sample of urban centers was drawn considering the number of urban centers in each region and city administrations, population and the city size, geographic location, economic and political importance, and other factors including consulting government experts and officials (UN-Habitat, 2016). Hence, the study areas are systematically selected in Ethiopian urban centers (cities). Based on Ethiopia's latest census of 2007, there were 972 Ethiopian cities. Out of the 972 cities, only 801 (82 percent) cities have existing and accessible city-level data. The 801 cities were then classified according to the Ministry of Urban Development and Construction's classification of cities (Ministry of Urban Development and Construction, 2012): 'small town' (2,000 to 20,000 people); 'medium town' (> 20,000 to 50,000); 'large town' (> 50,000 to 100,000); 'city' (> 100,000 to 1,000,000); and 'metropolis' (> 1,000,000).

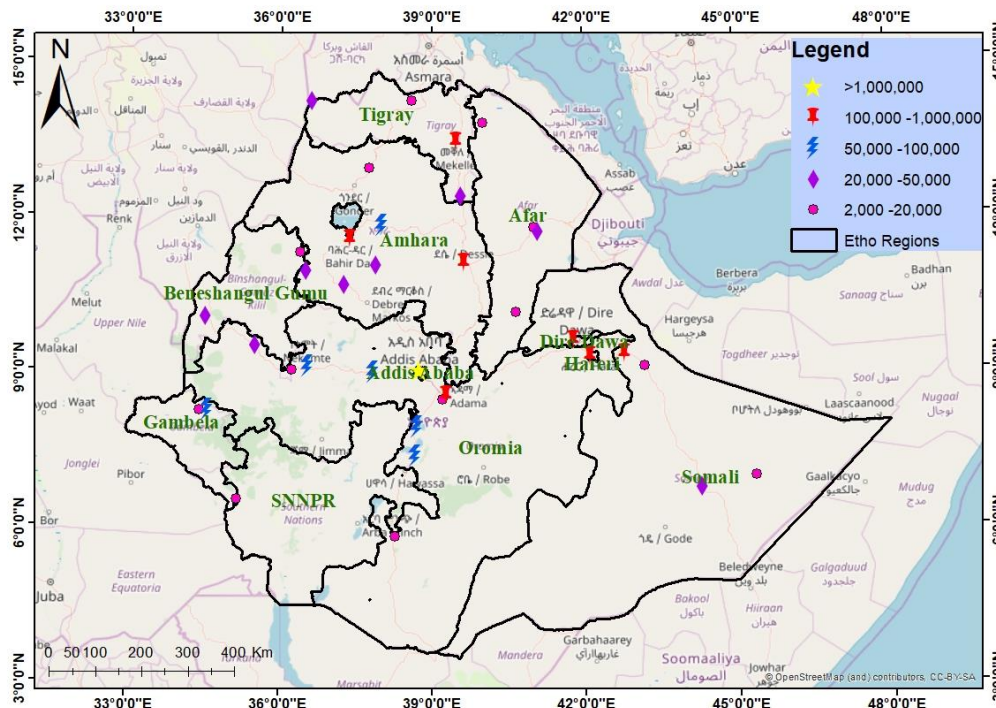


Figure 1. Sample cities

Using probability proportional to size (PPS) sampling, we selected a sample of 41 cities across the defined city size and administrative hierarchies. Proportionate stratification was done to ensure the representation of all cities (Myint, Htoon, & Shwe, 1992). Determining sample size is based on previous studies where 120 cities were selected as a global sample of cities for international urban research (Angel et al., 2011), and we increased the sample to improve reliability and validity considering that oversampling always has advantages in this study (Wu et al., 2011).

Data was collected for the 41 sample cities at the city level (Attached is the sample cities with selection criteria - Appendix A). Data on certain variables are available for all sample cities. They include distance to a large city with a population > 100,000 in kilometers, primary road length per 1,000 people in kilometers, regional location of cities, the administrative hierarchy of cities, rainfall, and temperature.

For the qualitative approach, respondents from Addis Ababa and the three main regional cities – Bahir Dar in Amhara, Adama in Oromia, Hawassa in SNNPR, Mekele in Tigray, Jigjiga in Somali, and Gambela city from Gambela were selected using a purposive sampling method.

2.2 Methods

This research considers determinants – influencing or determining factors - of urbanization in Ethiopia. The study combined three different methodological approaches: qualitative, quantitative, and semi-systematic literature review. The study employed qualitative interviews with purposively selected key informants to assess urbanization determinants in Ethiopia. This action was followed by a quantitative analysis of variables, depending on city-level data availability, which was essential to validate these perceived drivers' reliability.

A literature review was carried out before the fieldwork to get an idea of the topic, but in a reduced way to remain unbiased for the interviews. An extensive literature review on international, national, and regional levels was complementary to the quantitative analysis to validate the findings. Based on the consistency of the three methods' results, confidence level validation was assigned (Table 3).

### 2.3 Qualitative Method

Qualitative data were generated through key informant interviews and focus group discussions. A total of 39 key informants (12 females), including 27 (7 females) in five focus groups and 12 (5 females) in key informant interviews, participated in this study. Purposive sampling was used because it is most effective when studying sectoral domain with experts within (Onwuegbuzie and Leech, 2007; Mason, 2010). Recruitment of respondents was guided by the principle of saturation (Jansen, 2000), but other factors like the scope of the research, the nature of the topic, the quality of the data, the research design, study area coverage, and the issue of "shadow data" were also considered (Morse, 2000). The selection of respondents /interviewees/was from Addis Ababa and six regional states: Oromiya, Amhara, SNNPRs, Tigray, Somali, and Gambela. In all study areas, a few but highly relevant key informants were involved. "Key informant" in this research is defined as people with considerable understanding and experience regarding urban planning and management issues in the study regions or residents who have lived there for more than 15 years (Kleemann et al., 2017). Key informants were also chosen according to their willingness and availability to participate in the research. Focus group discussion participants consisted of two groups. The first group includes urban planning/ management experts at the national and regional levels to understand issues and factors for rapid urbanization. The second group consists of representatives of organizations with legal and cultural mandates in public urban land claimant organizations. Examples are public authorities on education, health, agriculture/rural development, and urban land use planning offices at federal and regional levels.

A semi-structured questionnaire with open-ended questions was prepared to assist the interviews. The questionnaire contained two sections and was generated from the characteristics of urbanization in Ethiopia. Section 1 involved the respondents' demographic information. Section 2 assessed urbanization drivers and respondents' understanding of rapid urbanization. The questionnaire consists of open-ended questions which were flexibly used for both key informant interviews and focus group discussions. The questions were formed based on literature review and were sent to urban planning experts and qualitative researchers of three for review and comments. The questions are then finalized when a common consensus was reached. Each interview started with a general introduction about the study, and then the interviewees were requested to explain their understanding of the trend and context of urbanization in the focus areas and main factors/ drivers of urbanization. Each interview took 45–70 minutes. The questionnaire is provided in Appendix B. The study focused on individual interviews, followed by focus group discussions as it turned out to be sometimes difficult to gather all key informants at the same time (Potter, 2011). The research employed in-depth interviews to obtain comprehensive knowledge about drivers of urbanization processes and allow respondents to express their understanding of and experience with the issue under discussion (Creswell, 2006). Focus group discussions were conducted to gain a deep understanding of respondents' views and experiences at the targeted areas (Onwuegbuzie and Leech, 2007). Interviews were recorded by taking notes and analyzed in content analysis. After a first text analysis, the research employed coding to conceptually validate the research question (Hsieh and Shannon, 2005). The codes were further refined after the first reading and resulted in 13 codes, for example, determinants of urbanization, population size, road and railway infrastructure, and employment. Content analysis was essential to investigate texts without any influence or direction from any 'a Priori' theory or concepts. It was thus open to discussion regarding what was revealed from this study (Jennings, 2001).

### 2.4 Quantitative Method

The quantitative method aims to measure variables or data numerically and objectively and use the statistical techniques to analyze the underlying causal relationship between and among these variables (Patton, 2015). Further, quantitative methods deduce insights from numerically measured and statistically tested data in the hope of generalizing the findings to a larger population (Allwood, 2012). This study measured and gathered the variables from databases, which were then subjected to statistical analysis (specifically, Ordinary Least Square regression) to address the research questions.

Here, an urban agglomeration is a dependent variable measured by the size of the city population.  $X_i$ s are independent variables, i.e., distance to a large city with population > 100,000, primary road length per 1000 people in km, administration hierarchy of city centers, economic development of regions (developing and developed regions), city-wise rainfall, and temperature difference (table 1). Table 1 presents the expected sign of the independent variables used in the regression.

Table 1 Details of independent variables used

Independent variables	Explanation	Expected signs
X1	Proximity to a large city with population > 100,000	+
X2	Road distance to nearest city with population 1000	-
X3	Administration hierarchy of city centers	+
X4	Rainfall	-
X5	Temperature	-

Source: Author's compilation

Rainfall and Temperature differences come under the category of environmental effect and higher rainfall and higher temperature discourage population concentration in the large urban centers (Sridhar, 2010). Distance to large urban centers and road distance to nearest urban centers are expected to impact urban growth because large urban centers foster the growth of urban centers in their vicinity reflecting agglomeration effects (Rani and Tripathi, 2011). Large cities enjoy better economic activities than small cities; hence, if distance is more then there is a negative relationship (Ades and Glaeser, 1995). Public facilities or basic infrastructural variables like road and railway length, and education and health facilities, are essential for the entire population and hence their presence attracts more people (Sridhar, 2010). In contrast, if the condition of public facilities is good in big cities, then people will move to such cities seeking for better opportunities and living conditions. Urban centre's administrative hierarchy is also essential for urban growth as urban centers in higher administrative hierarchy (national capital and regional capitals) benefited from infrastructure and related investments as well as administrative functions (Tesfahun, 2017).

2.5 Confidence Level

Results of the study from the three methods were tested for their reliability by adopting confidence levels approach. The confidence level approach was formerly used when producing assessment reports of the Fifth Intergovernmental Panel on Climate Change (IPCC) (Mastrandrea et al., 2011; Jacobs et al., 2015). Developing a confidence table, a matrix model for the IPCC Report, was the inconsistent interpretation of the degree of certainty between the working groups (Mastrandrea et al., 2011). Part of the evidence level is its type, amount, quality, and consistency, and finally, the working groups agreed on the final confidence level (Jacobs et al., 2015). However, further specifications on measuring those parameters were not described in the report (Kleemann et al., 2017).

Kleemann et al. (2017) improved the matrix model in their study entitled "Peri-urban land use pattern and its relation to land use planning in Ghana, West Africa" by specifying the level of agreement and level of evidence as well as by defining thresholds for the respective methods (table 2). They combined three specific techniques: expert interview, literature review, and diachronic GIS/RS analysis. Building on this but differing in the methods employed, we combined qualitative, quantitative, and semi-systematic literature review approaches for national-level Ethiopia study.

Level (hierarchy) of evidence is assigned to a variable based on the number of methods that can provide information. Thus, there is robust evidence of three methods, medium evidence if two methods, and limited evidence if only one method can provide evidential information (table 3). The level of agreement is defined differently for the respective methods (table 3). There is a high agreement if all or more than 60 percent of the interviewees or more than four literature sources confirm the argument. For the quantitative method, some independent variables are not available and addressed with the other two methods: qualitative and literature review. Hence, a medium agreement is defined if 25–60 percent of the qualitative interviewees, four or more references, or quantitative data analyses confirm the argument. The low agreement is provided if less than 25 percent of the qualitative interviewees and if the number of confirmations and rejections is the same in literature. For qualitative interviews and literature, the number of confirmation is reduced by a single or more rejection. There is a low agreement for the quantitative method if the quantitative analysis does not support the argument.

The confidence levels used (table 2) were very high, high, medium, low, and very low. Very high confidence is given if there are enough data and results from all three methods, e.g., enough literature as reference (robust evidence) with a high level of accordance between quantitative data and qualitative interviews (all methods support the hypothesis).

Table.2 Table of confidence of findings from qualitative, quantitative, and literature

Level of confidence	Limited evidence	Medium evidence	Robust evidence
High agreement	Medium	High	Very High
Medium agreement	Low	Medium	High
Low agreement	Very low	Low	Medium

Source: (Mastrandrea et al., 2011; Kleemann et al., 2017)

High confidence is provided if there is medium evidence (data from two methods) and still high accordance between their results. There is also high confidence if all three methods provide enough data, but statements are slightly diverging (medium agreement), or data are limited, but results are in high agreement. Conversely, there is low confidence if there are contradictory results from only two methods, e.g., literature and qualitative interviews. Furthermore, low confidence in findings occurs if only one method on the topic is accessible with limited information to serve as evidence for the argument.

Table 3: Combinations between agreement and evidence levels for a finding. Each level is defined for the respective method (quantitative; qualitative (KIs and FGDs); literature review). For the agreement levels for literature and qualitative interviews, the number of confirmations is reduced by the fraction of rejections.

Symbol	Level of agreement	Explanation
✓✓✓	High agreement	Statement was confirmed within one method – for interviews: > 60% of interviewees confirmed – for literature: more than four or more sources confirmed – for quantitative: applicable (for 3 variables)
✓✓	Medium agreement	Statement was confirmed but limited data within one method – – for interviews: 25–60% of interviewees confirmed – for literature: one or two sources confirmed – for quantitative: applicable (for 3 variables)
✓	Low agreement	Confirmation and rejection within one method - for interviews: < 25% of interviewees confirmed - for literature: confirmation and rejection balanced - for RS: rejection
–	Level of evidence	No data or no evidence
	High evidence	All three methods provide information
	Medium evidence	Two methods provide information
	Low evidence	One method provides information

Source: (Kleemann et al., 2017)

III. RESULTS

Proximity to large urban centers (with 100,000 or more population) as drivers of urban development were rated with a very high confidence level. All three datasets confirmed the result (table 4). A large urban center encourages other urban centers to grow with a particular vicinity or cluster area. More than 60 percent of the key informants and more than four literature sources confirmed that small urban centers and peri-urban areas were formed because of their proximity to big urban centers. A variety of livable examples could be mentioned here where inter-urban linkages are deepening, and urban clusters emerge as a result. Examples of these clusters include proximity to the main cities (Adama and Bishoftu), proximity to several large cities (Dire Dawa-Harar-Jijiga tripolis; Gondar-Bahir Dar bipoles); and, proximity to medium-sized cities (Dessie-Kombolcha) (GoE, 2016). This finding is consistent with a previous study by Rani and Tripathi (2011) that shows that large urban centers reinforce urban centers' growth in their locality by becoming primary attractions of economic activities. Urban centers' proximity to large urban centers also impacts urban development because large urban centers foster urban centers' growth, reflecting agglomeration effects. Large cities enjoy better economic activities than small urban centers; hence, there is a negative relationship if the distance is more (Ades and Glaeser, 1995).

All the three data sets and subsequent analyses show at a high confidence level that the administrative hierarchy of urban centers - whether an urban center becomes woreda or regional or zonal capital, or a chartered city – is a crucial determinant of urbanization in Ethiopia (Table 4). In addition to the statistical result, both qualitative and literature review (confirmed by > 60 percent of the experts and more than four literature sources) indicated that Ethiopia's decentralized administration to the regions, woredas, and urban centers encouraged more urban growth across the country. The methods confirmed that regional city proclamations had given urban centers broader responsibilities for service delivery, including administrative and municipal functions. Addis Ababa has dominated the present urban system, although its primacy appears to be declining (Ermias et al., 2019). As the national capital, Addis Ababa remains the economic, political, and administrative center of Ethiopia. For the last 50 years, the city has gained international significance as the headquarter of the African Union (AU), UN Economic Commission for Africa (UN-ECA), and a regional office for several international organizations including UNDP, UNESCO, and the European Economic Commission (EEC) (Wubneh, 2013). The 1995 federal constitution devolves greater power to the regions (FDRE, 1994). Following that, various regional states subsequently issued city proclamations in different periods. The Amhara National Regional State was the first to enact such legislation in 2000 (Proc. No 43/2000), followed by the SNNPRs (Proc. No. 51/2002), Oromia (Proclamation No. 65/2003), and Tigray (Proc. No. 65/2003) regional states FDRE (2008). These four regional proclamations were later amended by proclamations issued by the regional governments of Amhara, SNNP, Oromia, and Tigray in 2003 (Proc. No. 91/2003), 2006 (Proc. No. 103/2006), 2006 (Proc. No. 116/2003) and 2006 (Proc. No. 107/2006), respectively. The regional states of Afar, Benishangul-Gumuz, Gambela, and Somali and Harari issued their proclamations in 2007. The City Proclamations issued by the various regional governments are relatively similar in structure and content. Further, the proclamations provide substantial autonomy for cities to set their standards, policies, plans, budgets, and other administrative functions. The issuance of regional level legislation defining the status, roles, and relationships of urban administrations also meant the evolution of different forms of urban local government entities.

Using GoE (2016) as a starting point, out of the 973 settlements recognized as urban centers by the CSA during the 2007 census, 122 cities obtained city administration status based on regional state laws. Some city administrations have special zone status; many others have Woreda (district) status, while others are part of Woreda level administrations with rural and urban constituencies. Smaller towns generally come under Woreda administrations (Ethiopian Civil Service University, 2015). Regional capitals take on many of the urban functions that Addis Ababa formerly held. Regional cities deliver political and administrative functions, and industrial and service activities are found in these cities. They have also been experiencing rapid urbanization in the last two to three decades and operating relatively independently of each other. However, cities have limited specialization performing similar functions (World Bank, 2015).

Table 4: Confidence of findings of determinants of urbanization in Ethiopia. References from literature review in Appendix C; for quantitative analysis Appendix D; references of semi-systematic interviews in Appendix E. For methodology see Chapter 2. ✓✓✓= high agreement; ✓✓= Medium agreement; ✓= low agreement; - = no data or no evidence.

Analyzed topic	Key words	Qualitative	Quantitative	Literature	Confidence
Drivers of urbanization	Proximity to large urban centers	✓✓✓	✓✓✓	✓✓✓	Very High
	Administrative hierarchy	✓✓✓	✓✓✓	✓✓✓	High
	Road length per 1000 population	✓		✓	Low
	Roads and railway length	✓✓✓	-	✓✓✓	High
	Manufacturing industry	✓✓✓	-	✓✓✓	Medium
	Employment growth	✓✓✓	-	✓✓✓	High
	Education and health facilities	✓✓✓	-	✓✓✓	Medium
	Policy and investment emphasis	✓✓✓	-	✓✓✓	High
	Education facilities	✓	-	✓	Low
	Economic growth	✓✓	-	✓✓	High
	Urban center administrative location	✓✓✓	✓✓✓	✓✓✓	Very High
	Tourism assets	✓	-	✓	Low
	Rainfall	✓	-	✓	Low
	Temperature	✓	-	✓	Low
Population growth	✓✓✓	-	✓✓✓	High	

Source: Author's analysis

The three data sets show that urban centers' administrative location was identified as a critical determinant of urbanization with a high confidence level. Hence, urban centers in the rest of the country experienced a significantly rapid growth than in emerging regions' urban centers (table 4). Regression results indicate that regions' economic development has a significant (at 10% and 5% level of significant) effect on urban population size. The average predicted about 12.36 points increase in population size for urban centers in advanced regions compared to emerging regions after controlling other variables. More than 60% of key informants and more than four literature sources confirmed this fact and offered various statements with a high agreement. The four emerging regions lie on the country's two extreme ends: the east (Somali and Afar) and the west (Benishangul-Gumuz and Gambela), with pastoral communities in the former and agro-pastoral communities in the latter. Since 1995, these emerging regions, including their urban centers, have been given particular budget and capacity-building support from the federal government as part of affirmative action. Emerging regions have improved in terms of urban growth and expansion but significantly lag compared to urban centers in the rest of the country. This result is similar to the empirical finding by Gebre-egziabher (2018), which confirmed that emerging regions in general lag behind in infrastructural development, poverty reduction, and private investment.

The manufacturing industry was rated as one of the determinants of urbanization with a medium confidence level. More than 60 percent of key informants and more than four literature sources indicated that the manufacturing industry's economic base function was limited to a few big cities like Addis Ababa and some regional capitals. Further findings showed that urbanization was driven mainly by public investment and private consumption on the demand side and by services and agriculture on the supply side. Respondents from the regions added that urban industrial activities were dominated by micro and small-scale enterprises contributing to temporary job growth, and the greatest hope, in this regard, is on the productivity and functioning of new industrial parks.

Employment opportunity was identified as a strong determinant of urbanization with a high confidence level. Key informants and literature review indicated that urban centers have been growing due to employment opportunities created in micro and small scale enterprises, factories, public and private institutions, and wage employment (confirmed by >60 percent of the respondents and more than four literature sources). An increasing number of households in urban areas demanded settlement areas for urban employees and workers.

The finding confirmed at a high confidence level that policy and investment emphasis was a driving force of urbanization in Ethiopia (Table 4). More than 60 percent of the respondents and more than four literature sources confirmed this fact and provided many statements with a high agreement. Government policy interventions; for example, Sustainable Development and Poverty Reduction Plan, Plan for Accelerated and Sustained Development to End Poverty and Growth and Transformation Plan, and a favorable international context for direct foreign investment played essential roles in the country's economic growth and urbanization. The country's economic growth was driven by direct foreign investment and the domestic mobilization of resources and consumption, which is associated with the government's investment in capital projects such as road, electricity, housing, education, and health (GoE, 2016).

Road and railway infrastructure as drivers of rapid urbanization were rated with a high confidence level. More than 60 percent of interviewees and more than four sources of the literature confirmed this element and provided explanations with a high agreement. Specifically, respondents from Adama, Mekele, Jigjiga, and Bahir Dar reported that roads played a significant role in the formation and expansion of most urban centers in Ethiopia, including in their respective cities. They unanimously added that one of the most important issues for rapid urban development is making urban and rural areas accessible through an interconnected network of efficient transport systems covering large parts of the country and beyond. Drawing on GoE (2016), easy access to services is dependent on accessibility to the main towns and cities. Map 5.4 shows the accessibility to regional capital cities and urban centers of more than 20,000 inhabitants. As to Emily and Kedir (2015), investment in connective infrastructure like roads has reduced distance to economic density (i.e., urban centers). Improving and restoring primary road infrastructure reinforces secondary and primary market interactions. Maintaining and constructing rural roads that connect agricultural surplus areas with small towns and urban centers also strengthened inclusive geographic supply and demand networks—this movement of goods and people to places that demand specific products and labor, thereby boosting urbanization. However, road length per 1,000 population does not significantly impact urbanization, as indicated in the three datasets. Both literature and interviewees' sources further revealed that electricity, health facilities, education facilities, and water provision encourages urbanization in small urban centers but not correlated with big cities' urban development.

Population densities and density of transportation affected diverse regions in different manners. Ethiopia's central and pastoral areas represent two distinct economic, geographic, and demographic landscapes (Schmidt and Kedir, 2009). Firstly, the main central regions (Amhara, Oromia, SNNPR, and Tigray) experienced higher population densities and a relatively more integrated road network, which is characteristic of the economic landscape. Second, in the peripheral regions, limited road access and dispersed settlements create more enormous challenges for linking remote populations to the benefits of agglomeration economies. Existing transportation infrastructure along main access roads benefited those already in densely populated areas resulting in the growth and expansion of existing urban centers. Specifically, several urban centers were established and often founded around transport infrastructure, particularly along with the Addis Ababa–Djibouti railway line (Koehn 1979) and the relatively most industrialized region of Ethiopia railway line.

Economic growth as a determinant of urbanization was rated with a medium level for Ethiopian urban centers. Both literature and respondents identified that economic growth played a role in the growth and expansion of Ethiopian urban centers and urbanization. Previous studies indicated that urbanization in Ethiopia had been associated with high economic growth levels, averaging 10.4 percent between 2003 and 2013. Cities contribute to 38 percent of gross domestic product (GDP), with only 15 percent of the total workforce (UNDP Ethiopia, 2018; World Bank, 2015). However, an expert in regional urban institute argued that urbanization primarily occurred in peri-urban areas and was mainly residential rather than production-based and was driven by domestic investment. Qualitative interviews and literature confirmed that the Ethiopian government planned to transform more than 1,700 rural Kebeles into urban centers in the next couple of years, driven by political and administrative decisions rather than critically analyzing the potential economic base. Another respondent stated that urbanization occurred in Ethiopia because of economic growth and political and administrative decisions. This argument was like a previous study (Briggs and Yeboah, 2001), a sub-Saharan Africa phenomenon.

Although population growth was a dependent variable for the quantitative method, key informants frequently cited it as the critical determinant of urbanization. The data sets, qualitative and literature review, confirmed this at a high confidence level (Table 4). More than 60 percent of key informants and more than four literature sources confirmed this fact and provided many statements with a high agreement. Both qualitative and literature analyses indicated that urban population growth is attributed to natural growth, migration to existing urban centers and project sites, and growth due to upgrading of rural settlements to towns and formal expansion of existing urban areas. It is noteworthy that migration from rural to urban areas and urban to urban areas has historically played an essential role in the rapid growth of urban centers and rural localities' transformation into urban centers. All three datasets indicated that rainfall and temperature did not have any significant effect on urbanization in Ethiopia.

More than 60 percent of interviewees and more than four literature sources confirmed that moderate rainfall and temperature positively affect urbanization.

However, statements from key informants and literature were diverse. Still, different factors determine Ethiopia's urbanization, and each element has its contribution to rapid urbanization at different levels. Whether urbanization in Ethiopia is an outcome of economic growth or other factors, its results can boost socio-economic growth, innovation, and structural transformation if effectively managed. Incorporating urban centers into an economic development engine is a more efficient way to eradicate poverty or achieve the Sustainable Development Goals.

## IV. DISCUSSION

### 4.1 Discussion of Findings

The determinants of urbanization in Ethiopia are diverse but complementary, having a lot to do with the country's socio-economic and political changes. Proximity to large urban centers, the administrative hierarchy of urban centers, and urban centers' administrative location are the primary determinants of urbanization. While natural increase played its role in urban population growth impacting urbanization, migration played its transformative effects on individuals' and groups' well-being and its role as the primary determinant of urbanization and accelerated urban growth. Proximity to large urban centers causes adjoining urban centers to be larger, reflecting the agglomeration effect.

Ethiopian urban centers are categorized with administrative hierarchy. According to administrative hierarchy and government structure, Ethiopia's urban centers can be divided into seven levels, including metropolis, chartered cities, the regional capital, administrative zones capital, city administrations (urban local governments), municipalities, and sub-cities. There are some overlaps: for example, a metropolitan city - Addis Ababa can also fall under chartered cities. As the analysis results confirmed, rapid urbanization coincides with urban centers' administrative hierarchy, and urban centers at higher ranks tend to expand more rapidly than those with lower administrative hierarchy. This finding has something to do with the administration center bias of governmental resource allocation because urban centers with different administrative hierarchies make diverse administrative power, resource allocation, and institutional arrangement. Similarly, the finding of (Li et al., 2014) stated that administration center bias significantly benefited high-rank cities. Such bias favored metropolis, which would eventually lead to overexpansion of cities with higher administrative hierarchy.

The manufacturing industry had a moderate role as a driver of urbanization, even though the general trend for industrial expansion has been increasing. In Ethiopia, the statement might be true because there is a weak relationship between industrialization and urbanization. Although the manufacturing sector remained low with an average share of around 4 percent during 2004/5-12/13, it increased with a high growth rate at 11.5 percent per year (World Bank, 2015). Establishing a relationship between urbanization and industrialization through urban plans, infrastructure development, and regional service centers to strengthen rural-urban linkages have remained a wishful think hovering over existing industrial parks and the government's implementation capacity (Gebre-egziabher et al., 2019).

It is important to indicate here, however, that about 12 industrial parks for export processing are found across the country based on proximity to market outlets, infrastructure, economic potential, and regional balance in development (UNDP, 2018). The parks are dedicated to specific sectors such as textile & apparel, leather & leather products, pharmaceuticals, agro-processing. Examples of the operational ones include the Hawassa Industrial Park, Eastern Industrial Zone (Dukem, Bole Lemi Industrial Park, Ayka Addis, Hujian Industrial Zone, and George shoe. The Hawassa Industrial Park is a leading Eco-industrial park with a zero liquid discharge (ZLD) facility and located approximately 275 kilometers south of Addis Ababa. In terms of production, 100 percent of production within Industrial Parks is for export, with the United States, Asia, and Europe being major destinations (ibid.).

Roads and railway infrastructure were another important determinant of urbanization. Population densities and density of road and railway lines affected diverse regions in different manners. Ethiopia's central and pastoral regions represent two distinct economic, geographic, and demographic landscapes. The main central regions (Amhara, Oromia, SNNPR, and Tigray) experienced higher population densities and a relatively more integrated road network is characteristic of the economic landscape, whereas, in the peripheral regions, limited road access and dispersed settlements creates larger challenges for linking remote populations to the benefits of agglomeration economies. Existing transportation infrastructure along main access roads benefited those already in densely populated areas resulting in the growth and expansion of urban centers. Specifically, several urban centers were established and often founded around transport infrastructure, along with the Addis Ababa - Djibouti railway line (Koehn 1979), and the most industrialized region of Ethiopia is established along the railway line. Road and rail highway created employment opportunities and boosted trade in urban centers. Railroads supplied urban centers with food, fuel, building materials, consumer items, and market access. The simple presence of railroads could bring cities economic growth. Thereby railroads helped shape urban centers' physical growth, as railroads facilitated growth along lines and made suburban living feasible.



Employment opportunity was one of the most important determinants of urbanization. Employment opportunity varies considerably across sectors, and sometimes employment opportunity can be considered as a 'crosscutting determinant.' Industry and services in urban areas increased their share in formal employment while the micro and small enterprise subsector; the household-based sub-sector (unpaid work by household members); and the independent service sub-sector (domestic helpers, street vendors, cleaners) largely made up of women play a significant role in the informal economy (Brown and McGranahan, 2016).

Policy and investment were given a high degree of importance as a determinant of urbanization. Having viable policies and strategies is vital to maintain economic development and improve the quality of life for both urban and rural populations.

#### 4.2 Discussion of the Multi-method Approach

By combining the three different methods, this study characterizes the determinants of urbanization in Ethiopia. To ensure the degree of certainty of findings, a comparison was made on the information provided with the three methods and confidence levels. Two of the most common qualitative methods, namely, in-depth interviews and focus group discussions, were used. The former was conducted with individuals who have a deeper understanding and well informed about urban planning and urbanization issues. Focus group discussions were conducted to gain a deep understanding of the envisioned target group's views and experiences as well as with key actors on urban planning and management. Furthermore, a quantitative method was used to support decision making in identifying key determinants of urbanization whenever consistent data were available. The semi-systematic literature review provided important sources of information to estimate the level of confidence.

However, data and analysis provided for the quantitative approach have some shortcomings. The critical challenge is the absence of city-level data for some variables like industry, employment, roads and railway infrastructure, and economy (GDP). This shortage of data was complemented and consistently revisited during the analysis. The analyses of both qualitative and quantitative data produce a good understanding of the phenomenon in qualitative data.

The literature search was based on the keywords 'determinants or urbanization in Ethiopia' in the very beginning and later, other keywords that are identified when analyzing the interviews (Table 4). This might have thematically helped the selection of literature. Furthermore, peer-reviewed literature was small for the national level study as there are a limited number of peer-reviewed papers on Ethiopian urban studies. Therefore, grey literature and unpublished reports were also used, but the quality was assessed through triangulation with other sources. Most importantly, the strength of a single method approach with a lot of data and certainty was complemented with data accessed through multiple methods. Hence, a multi-method approach allows this research to get a clearer picture of uncertain issues.

This research adopted the confidence level approach of Kleemann et al. (2017) to assess findings from a multi-method approach. The confidence level refers to the degree of certainty and validity of results from all three methods. Very high confidence is given if we have enough data and results from all three methods; high confidence if we have medium evidence (data from two methods); medium confidence if the statement was confirmed but limited data within one method; and low confidence if we have no or contradictory results from two or three methods. Like previous studies, the aim is to increase transparency through defined thresholds for the agreement levels as evidence levels and the number of methods that provided information. This research is different from previous research for two reasons. The first is its application of the quantitative method, which was not the case in previous studies (Kleemann et al., 2017). Second, we increased the quality by using multiple literature sources and improving confidence levels.

## V. CONCLUSION

The study aims to understand the context and status of urbanization in Ethiopia. If Ethiopia wants planned and sustainable urbanization, it starts with a critical understanding of the question 'what are key determinants of Ethiopian urbanization?'

Ethiopia is witnessing urbanization, with or without city-level economic growth. Rapid urbanization in regional capitals, other secondary cities, and small cities play an important role in the country's urbanization process. This research identified that determinants of urbanization in Ethiopia are varied but complementary, having a lot to do with the country's socio-economic development.

The three data sets show at a very high confidence level that proximity to large urban centers, the administrative hierarchy of the urban centers, and urban centers' administrative location (emerging regions vs. the rest of the country) are key determinants of urbanization in Ethiopia. In addition to confirmation from the quantitative method, more than 60 percent of key informants and more than four sources of the literature confirmed this fact and provided strong supportive statements. Besides, employment, roads and railway, and policy were rated with a high confidence level as determinants of urbanization. Both literature and respondents confirmed these results. Economic growth and manufacturing industry played an important role in the growth and expansion of Ethiopian urban centers and urbanization but rated with medium level confidence, supported by literature review and key informants. This indicates the weak relationship between the economic growth and manufacturing industry on the one hand and urbanization, which was confirmed based on the expert interviews (> 60% confirmed). Although population growth was a dependent variable for the quantitative method, key informants frequently cited it as the key determinant of urbanization. The two data sets confirmed this at a high confidence level (Table 4). More than 60 percent of key informants and more than four sources of the literature confirmed this fact and provided many statements with a high agreement.

A key finding is a conclusion of the research process that confidence level analysis presents a promising approach to improve interdisciplinary research through what we call a multi-method approach. Evaluating evidence and agreement provide the basis for any key results it develops and the foundation for determining the degree of certainty in those results. The confidence level analysis provides a qualitative synthesis of the researcher's judgment on a finding's validity. A low confidence level illustrates either data gaps or

contradictory statements from the research findings. It thus helps to detect needs for advanced research and data analyses before giving recommendations for acting.

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