JIMMA UNIVERSITY
JIMMA INSTITUTE OF TECHNOLOGY
SCHOOL OF GRADUATE STUDIES
FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING
CONSTRUCTION ENGINEERING AND MANAGEMENT CHAIR

THE IMPACT OF THE RIGHT-OF-WAY PROBLEM ON ROAD CONSTRUCTION PROJECTS IN JIMMA ZONE.

A Thesis Submitted to the School of Graduate Studies, Jimma University, Jimma Institute of Technology, Faculty of Civil and Environmental Engineering in Partial Fulfillment of the Requirements for the Degree Master of Science in Construction Engineering and Management

By:

Mahfuz Mohammed Abajebal

July 2022
Jimma, Ethiopia

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DECLARATION

I declare that this research, entitled "The Impact of the Right of Way Problem on the Road Construction Projects in Jimma Zone," is my original work and has not been submitted as a requirement for the award of any degree at Jimma University or elsewhere.

Mahfuz Mohammed Abajebal _____ _____

NAME SIGNATURE DATE

As research adviser, I hereby certify that I have read and evaluated this thesis paper prepared under my guidance by Mahfuz Mohammed Abajebal, entitled “THE IMPACT OF THE RIGHT-OF-WAY PROBLEM ON ROAD CONSTRUCTION PROJECTS IN JIMMA ZONE” and recommend and would be accepted as a fulfilling requirement for the degree Master of Science in Construction Engineering and Management.

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ABSTRACT

The road construction sector is one of the most crucial segments of a nation's and society's ability to attain urban and rural development goals. However, the most common issue in the road construction industry is right-of-way problems, and it is one of the factors that contribute to project delays and cost overruns. As a result, this research was carried out to investigate the causes, effects, and solutions to right-of-way issues in Jimma zone road construction projects. The study's main objective was to assess the impact of right-of-way problems on road construction projects in the Jimma zone. To achieve its objectives, the researcher identified the factors that cause right-of-way problems, the effects of those factors on road projects, and the methods to minimize the problems related to right-of-way.

A questionnaire survey, a desk study, and site observation were carried out to achieve the research objectives and collect data. A questionnaire survey involving 30 respondents and key informant interviews were used to collect primary data. Purposive sampling techniques were used to select professional respondents from clients, consultants, and contractors. The research design used in this study was descriptive and explanatory, using quantitative and qualitative methods. Finally, the gathered data was analyzed using Statistical Package for Social Science (SPSS) and Excel, and then the result was interpreted according to the research objectives.

According to the study findings, the top three causes of right-of-way problems in road construction projects were complaints about compensation payment, property owners' refusal to leave their original parcel, and poor communication among stakeholders, with RIIs of 0.967, 0.920, and 0.893, respectively. Following that, the study identified nine impacts of right-of-way issues on road projects. Time and cost overrun are the most significant effects, with RII of 0.89 and 0.82, respectively. Finally, seventeen approaches to minimizing right-of-way problems were identified. Property valuations should be based on current market values (ranked first with RII = 0.93), and fair and adequate compensation payments for property owners (ranked second with RII = 0.92).

Keywords*:* Construction, Impact, Projects, Property, Right-of-way, Road.

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ABBREVIATIONS

AACRA	Addis Ababa City Road Authority
BTC	Budget To Complete
CSA	Central Statistical Agency
DOT	Department of Transportation
EC	Ethiopian Calander
EEPCo	Ethiopian Electric Power Corporation
EIA	Environmental Impact Assessment
ERA	Ethiopia Roads Authority
ETB	Ethiopian Birr
FAP	Factors Affecting Performance
FDRE	Federal Democratic Republic of Ethiopia
GDP	Growth Domestic Product
GIS	Geographic Information Systems
GNP	Gross National Product
GOE	Government Of Ethiopia
GTP	Growth and Transformation Plan
KII	Key Informant Interview
MUDC	Ministry of Urban Development & Construction
ORA	Oromia Road Authority
PM	Project Management
RII	Relative Importance Index
ROW	Right Of Way
RSDP	Road Sector Development Program
SCT	Schedule Completion Time
SPSS	Statistical Package for Social Science
ST	Scheduled Time

CHAPTER 1

INTRODUCTION

1.1 Background

The road construction industry is one of the key sectors that contribute to the development of an economy and society to achieve its urban and rural development goals. At the moment, developing countries all over the world are focusing on improving and connecting their road networks. Road projects are prioritized in their national budget as a good road network contributes to economic development and national growth (Ludwig Rivera et al., 2020).

According to Ethiopia's ten-year development strategic plan (2021–2030GC), Ethiopia has planned to increase the overall road coverage from the current 144,027 km to 245,942 km in 2030GC, representing an 85 percent increase over the current level.

A well-developed road transport sector in developing countries like Ethiopia is assumed to fuel the growth process through various activities related to development endeavors. Among these, the creation of market access opportunities for agricultural products is the major one (Yosef Amare, Emer T. Quezon, and Mamuye Busier, 2017).

In Ethiopia, several roads are constructed from time to time, and the number of road networks has increased over time. However, the historical data of completed road projects shows that none of the projects were completed as planned and within the estimated cost. Therefore, no considerable improvement had occurred (Shambel Gebrehiwot Tadewos, Dixit Patel, 2018).

The acquisition of rights-of-way (ROW) is a critical component of the complex process of developing a highway project. Because the acquisition process occurs immediately before the construction of the highway infrastructure, there is always a strong incentive to acquire property as soon as possible so that the project can begin. The ROW acquisition is made up of several components. Property valuation and negotiation with property owners are two of the most important. These are typically located on a project's critical path and have a significant impact on the project's schedule and cost (Carlos H. Caldas et al., 2011).

A key element in moving highway construction projects forward is promptly acquiring the Right of Way (ROW). Delay in the acquisition process due to many causes will usually lead to significant construction phase delays (Imad Aleithawe, 2010).

The client has the sole responsibility for acquiring the necessary property and rights for the project. In transportation system projects additional ROW issues should be taken care of by

the client in collaboration with relevant public institutions. Any ROW cases should be resolved as early as the preliminary design stage (Contract Administration Manual, 2020).

Securing and handing over ROWs to contractors by the employer could accelerate the road construction process. However, acquiring a ROW required the relocation of utilities. Utilities such as pipelines, electric poles, and removal of buildings within the ROW were a challenge for road contracts in the project (The World Bank document, 2018).

In Ethiopia, ROW acquisition is challenged by conflicts between public and private property ownership, hardy topography, and removal and exploration livelihood situations. One of the challenges is a lack of clear direction or policies for implementing the ROW process (Belachew Y. Alemu, 2013).

Numerous issues plagued Ethiopia's construction industry, particularly in urban areas. There are several causes for these problems, and the main ones are the existence of obstructions in the ROW limit, lack of belongingness among the stakeholders, lack of experienced professionals faced during planning, designing, implementation, and operation of road projects, and lack of proper management (Temesgen Tegabu, 2015). The study of Haimanot Chalchissa (2021) also indicates that the ROW difficulties faced by the client were the first major cause of project cost overruns and time extensions on road construction projects in Addis Ababa.

In Ethiopia, the expansion of public infrastructure, particularly in cities, necessitates the displacement of people in both the inner and outer cities. People, particularly the impoverished, have been displaced from their homes, farm fields, and business areas. Above all, people are cut off from their communities and social interaction. Furthermore, the loss of job possibilities and money sources is becoming more common. As a result, there are questions about the expropriation procedure, inspection and recording of compensable things, valuation method, compensation rate and amount, and the lack of other economic possibilities (Alemu, 2013).

ROW acquisition is a complex process made even more complicated by factors such as alignment coordination issues, various state and local laws, conflicting public policies, environmental issues, public involvement, agency staffing, appraiser qualifications, mediation processes, condemnation processes, project characteristics, parcel types, and location that can significantly affect the cost and duration of ROW acquisition (David, 2016).

Generally, the road projects in Ethiopia as well as in the Jimma zone are over-ending with additional cost and time with quality below that stipulated in the contract agreement. Therefore, this study assessed the impact of the ROW problem on the road construction projects in the Jimma Zone. The study identified the major causes of the ROW problem, the effects of those problems on road construction projects, and the methods to improve the ROW problems in road construction projects.

1.2 Statement of the Problem

Many countries and states spend more than 30% of their road transportation project budgets on ROW acquisition, which is becoming more costly, difficult, and time-consuming, as well as a barrier to project execution (Sandberg, 2013).

Road ROW acquisition has become a significant problem in various countries. Different countries use different mechanisms to deal with the project's complexity. In the Netherlands, for example, project teams are solely responsible for the planning and execution of a project. The main challenges in these countries, particularly in road construction projects, were mis-understandings about the project and disagreements in communication between different parts of a common ROW. According to the literature, the major causes of ROW problems are a lack of funds dedicated to the project, a lack of local availability of replacement housing facilities, funding limitations for the project, and political pressure (David, 2016).

Public infrastructure developments require the ROW to be cleared from encumbrances for work to commence. As a result, several countries, such as China, Ghana, and Kenya, are all undertaking compulsory land acquisition to supply construction sites for infrastructural development within the confines of their legal systems (S. Elong, L. Muhwezi, and J. Acai, 2019).

One of the major challenges that causes road construction projects in Ethiopia to be delayed is ROW issues. As a result, failure to meet the Second Growth and Transformation Plan (GTP-II) is viewed as a challenge by the Ethiopian Road Authority (ERA) (Commission, 2016). Many issues impede Ethiopia's construction industry's development. The presence of obstructions within the roadway limit, right-of-way (ROW) issues, and a lack of belonging among stakeholders are the primary causes of these issues (Temesgen Tegabu, 2015). According to Yenalem Fantahun (2020), ROW problems are one of the leading causes of project delays and cost overruns in road construction. According to T. Siraw Y. (2014), the main causes of time overruns in road construction are slow site clearance and ROW issues.

Most road project delays have been observed to be caused by ROW issues and inadequate guidance for property management and utility relocation within a common ROW. This could be attributed primarily to the lack of a valuation provision, a lack of reliable and up-to-date valuation data, and a lack of proper compensation assessment based on market value (Wondwosen Tesfaye, 2019).

In Oromia, the most significant factors affecting construction project delivery were delays in furnishing and delivering the site (right of way problems), financial issues, and poor planning (Abera Legesse and Fekadu Takele, 2016). According to Firdissa Yadeta (2018), the major causes of delays in Oromia road construction projects pertinent to ORA road projects are delays in delivery of the site (right of way problems), financial problems, suspension of work by the owner or contractor, and weather conditions.

Generally, time delays and cost overruns are common in Jimma zone road construction projects. It frequently takes longer than expected and encounters numerous challenges, the most significant of which is the ROW problem. As a result of this fact, the research was motivated to identify and address the major causes of the ROW problem, as well as the effects of those problems on road construction projects in the Jimma zone.

Prior research studies were only focused on the ROW conflict management system in Addis Ababa, which determined the causes of ROW conflict and established the significance of integrating ROW conflict decisions. However, the major focus of this study is to determine the impacts of ROW problems on road construction projects in the Jimma zone.

1.3 Research Questions

The study tries to address the following questions:

1) What are the factors that causes right-of-way problems in road construction projects?
2) What are the effects of those factors on road construction projects in the Jimma zone?
3) What are the possible methods to reduce the right-of-way problem in Jimma Zone road construction projects?

1.4 Objectives

1.4.1 General Objectives

The general objective of the study was to assess the impacts of the right-of-way problems on road construction projects in the Jimma zone.

1.4.2 Specific Objectives

The specific objectives of the study were:

1) To identify the factors that cause the right-of-way problems in road construction projects.
2) To assess the effects of those factors on Jimma zone road construction projects.
3) To find out possible methods to minimize the right-of-way problem in Jimma zone road construction projects.

1.5 Significance of the Study

The study is expected to provide relevant information and raise awareness of the right of way problem for all stakeholders, allowing them to make informed decisions, design appropriate mitigation, and develop solutions. Researchers who want to conduct future studies on the issues use it as a reference guide and benchmark. Furthermore, this research will assist the ROW agency or clients in identifying the root causes of right-of-way problems.

1.6 Scope of the study

The purpose of this study was to assess the impact of the right-of-way problem on the road construction projects in the Jimma zone. The study was limited to identifying the factors that causes right-of-way problems, the effects of those factors on road projects, and the methods to minimize the right-of-way problems in the Jimma zone.

1.7 Limitation of the Study

- The researcher faced following points as limitation:
- The respondents have busy work schedules and do not have time to complete the questionnaire, making it difficult to obtain their responses.
- Some respondents did not return the questionnairy.
- Due to time constraints the sample taken for the study was only 36.
- Some organization has strict control and it is another barrier to get the data.

As a result, the above limitations were mitigated by contacting, addressing the issue, and deep discussion with all key stakeholders, and successfully finish this paper with great patience and effort.

CHAPTER 2

LITERATURE REVIEW

2.1 Background

The construction of roads requires land acquisition and expropriation for the ROW, Access road construction, Campsites, Quarry sites, borrow pits, and other similar activities. Therefore, according to the reestablishment of the proclamation of ERA, it is responsible for the preparation of the Resettlement Action Plan (RAP) for road projects and to initiate land acquisition and expropriation (ERA Updated Resettlement Action Plan, 2016).

ROW management requires greater attention to the long-term performance of the road corridor. ROW management is the responsibility of the road authority, lower-level governments (woredas), and communities along the roads, which are critical stakeholders. They need to understand the importance of preserving the ROW for road corridors' safety and high performance. Unfortunately, ERA seems to have inadequate coordination between those in charge of construction projects and those in its regional offices. In addition, the ROW management activities need the participation of woredas, which do not seem to have enough incentive to proactively cooperate with an ERA in its road projects (Ethiopia-Road Sector Development Program; Document of World Bank, 2018).

Securing and handling ROWs for contractors by the employer could accelerate the road construction process. However, acquiring a ROW required the relocation of utilities. Utilities such as pipelines, electric poles, and building removal within the ROW were a challenge for road contracts in the project. Despite ERA having paid for the relocation of utilities, the agencies responsible for such relocation delayed removing them (The World Bank document, 2018).

The Government of Ethiopia identified the transport sector as a game-changer to maintain the country’s impressive economic growth trajectory, and it formed a National Transport Council that will lead the reform program in the sector. According to the government’s 10-year transport perspective plan, the country intends to invest 3.04 trillion birrs (74 billion dollars) in the sector in the next ten years, and the private sector has been identified as an engine and active participant in this development plan (Ethiopia - Roads, Railways, and Logistics report, 2021).

2.2 Right-of-way Acquisition and Land acquiring Process

Right of way (ROW) acquisition is a part of the highway and transportation project development process. ROW acquisition begins with collecting project plans, preliminary ROW, utility assessments, identifying the required properties' owners (title), and survey maps. Then appraisals are made to determine the fair market value of each property. Based on the appraisals, the agency will contact the property owners, present the estimated compensation value, and negotiate with the owners (David Jeong, 2016).

According to the Constitution of the Federal Democratic Republic of Ethiopia (FDRE), article 40.3, land is public property, and no person has the legal right to ownership. There is no private ownership of land in Ethiopia, as per FDRE constitution Article 40 (the property right) No.2, "Land is a common property of the Ethiopian Nations, Nationalities, and Peoples of Ethiopia and shall not be subject to sale or other means of exchange."

The regional State of Oromia proclaimed in 2009 that the Bureau of Land and Environmental Protection would be established. The proclamation gives authority to the Bureau regarding the management and administration of land within the region. According to the above proclamation, the Bureau is authorized to administer land resources in the region, prepare land use master plans, provide land information, and also, in collaboration with concerned organs, determine compensation payments to people whose landholdings have been expropriated for development purposes, regulate and follow up on the people to be rehabilitated.

As per proclamation No.455/2005, Article 7, the government (a Woreda or an urban administration) may expropriate private property for public purposes where it believes that it should be used for a better development project to be carried out by public entities, private investors, cooperatives, societies, or other organs with the payment of compensation (ERA Resettlement Action Plan, 2016).

Procedure of land acquiring for purpose of road construction project is a challenging task due to the subsequently presented reasons. First it starts from investigation of the route alignment which passes through the road section. The essential route of the road identify/selection based on the investment viability, the governmental recommendation for political purpose, the society appeal of the road problem.

Participation of society in determining the proposed route is critical for minimizing misinformation about the project and reducing conflict. Different countries use this method to

avoid conflict when construction activity begins. For example, in the Netherlands, all teams participate from planning to constructing the project.

Early involvement of affected property owners during investigation of the route is essential to allow the government to predict what design alignments are likely to be problematic when acquiring ROW. Finally, determined property owners' feedback is used in project design decisions, which enables more timely ROW purchases and minimal damage to properties (David, 2016).

The purpose of early notification to the community about the project is relevant and the necessity of a project in order to make the community one part of the project and minimize conflict. Moreover, in public forums, the people who are affected by the project have right to know the result of the projects and the possible effect on social and economic importance of that project. But this important information would be hidden from the community, and the result would be conflict between the property owners and the implement parties.

After detailed discussion with the community about the project's implementing ways and systems, the appraiser introduces to the community the methods of property valuation technique and the rules and regulations of the applicable system. Most of the time, conflicts arise between the appraiser and the property owners because of a misunderstanding of the property valuation system.

Land administration is a new program in Ethiopia that is required to facilitate accurate parcel boundary demarcation and registration, provide legal certification based on government regulations, and implement an appropriate taxation system. This situation is also thought to cause misunderstandings by the property owner, as well as a number of conflicts during exploration and project delays (John Pender, 2005). A number of social factors will influence the future changes that result from city growth; these social influences must be isolated and their importance determined using social planning knowledge and judgment, as well as any relevant inputs from recently conducted attitude surveys (C.A. O'Flaherty, 2006).

The FDRE recognized the ROW related problems and established the Federal Integrated Infrastructure Development Coordinating Agency (FIIDCA) under Proclamation No. 857/2014. The new office was established with the expectation of harmonizing and coordinating federal projects, from strategy to implementation. The agency's goal will be to coordinate the execution of integrated infrastructure development works in accordance with the road master plan, as well as to develop a formula for calculating compensation for

properties that will be removed and land holdings that will be expropriated as a result of integrated infrastructure development works.

The ROW acquisition process comprises five phases: planning, valuation (appraisal), negotiation, property management, and relocation (Carlos et al. 2006).

1) Planning**:** Planning is the first phase of the ROW acquisition process and mainly involves environmental assessments, location and design studies, and public involvement activities. The laws require environmental assessments during the planning phase that primarily measure the social, economic, and environmental impacts of a project's ROW acquisition and any relocation it might occasion. For instance, these assessments include determining the number of people or businesses displaced by the project, and the impacts on community services, wetlands, and wildlife habitats (David, 2016).

2) Pre-Acquisition: This step mainly involves gathering data about the titles, conducting a survey and field investigation, developing a ROW acquisition plan, and authorizing the acquisition. Environmental assessment and public involvement are also essential activities in the area acquisition stage. Investigations of the project's social, economic, and environmental impacts should be made at this stage and shared with the affected community to receive opinions (Caldas et al. 2006).

3) Appraisal (Valuation): The appraisal phase, also known as valuation, is the process of determining the certified estimate of the land or property's market value or the damage payable to the owner. Acquiring the ROW at a fair market value and a reasonable cost is essential for developing the project cost for highway and transportation projects. During this phase, appraisers perform the valuation of properties, field inspection, review recent sales of properties in the neighboring areas, prepare the valuation report, and appraisal review according to the state rules and regulations (Aleithawe 2010). The goal of the valuation is to establish the amount of just compensation for a parcel. Therefore, the primary purpose of property valuation is to estimate the value of a property. Before evaluating the property, property appraisers search and identify what type of material is available. Then, they will seek to find the material used by the property owner for the construction of his property (Alemu, 2013).

4) Acquisition: Based on the acquiring agency's appraisal results, the agency presents an initial offer to the property owner. To avoid litigation and extra costs while expediting the

acquisition process, a good faith attempt by the agency should be made to settle indirect purchase negotiation rather than eminent domain proceedings (MnDOT 2015).

5) Negotiation: The part of the process in which agencies make offers to property owners to acquire real property and improvements. Agencies also make payments for properties and notify property owners to vacate during this phase. If negotiation fails, the phase usually shifts to condemnation proceedings. The Uniform Act requires agencies to acquire real property by negotiation rather than eminent domain authority (Zhanmin et al., 2006).

6) Property Management: In the property management phase of the acquisition process, clearing of the RoW takes place. This phase can be as time-consuming as the negotiation phase and may involve extensive project schedule delays. In addition, other activities may also occur during this phase, such as assessing future use of the excess properties (e.g., expansion of RoW). Therefore, this phase is a process that requires several advanced skill sets, for example, time management, marketing, and financing (Zhanmin et al., 2006). The parcels acquired by the agency may include buildings (including houses). Not all buildings need to be demolished, and some can be sold and moved off (Caldas et al. 2006).

7) Relocation: If ROW acquisition requires the displacement of individuals, families, businesses, farms, and nonprofit organizations, the agency needs to analyze all proposed acquisitions in the relocation planning properly. The relocation payment differs by the type of property owner or resident, whether residential homeowner, residential tenant, residential occupant, qualifying business, farm, or nonprofit organization (Kara, 2006).

2.3. ROW Negotiation Procedure

Negotiation is one of the important roles in the acquisition process between individuals or teams, where an exchange of views is offered by each party to decide that all parties will feel bound. The relationship and level of trust between government and property owners were the most important factors in the ROW acquisition. Encouraging ROW staff and appraisers to meet property owners and sharing sufficient information with property owners are emphasized as the most important practices for negotiation (David, 2016).

When an existing ROW cannot accommodate the planned expansion of an existing facility or the construction of a new facility, a ROW acquisition process is used to obtain the necessary property for a transportation project (John, 2011). As a result, the requested process of ROW acquisition work involves many stakeholders to facilitate the action of reducing conflict and claims on those parties' road construction activity. Normally, the acquisition process begins at

the same time as the discussion, but this time with the gathering of property information. If acquisition negotiations are unsuccessful, the quick-take process and condemnation (or eminent domain) will typically follow (David, 2016).

One of the most important factors in successful negotiations is effective communication. A lack of effective communication between the property owner and stockholder invariably leads to misunderstandings, which may lead to conflict or disagreement between the parties. These communication issues should be well understood by the sub-cities negotiator and the property owners' representative and handled as part of the normal ROW life. Furthermore, the ability and experience of the negotiators were critical components of the acquisition practices (Thomsett, 2010).

Article 4 (1) of Proclamation No. 455/2005, Notification of Expropriation Order, states that the displaced people's offer should be notified in writing, indicating the time when the land must be vacated and the amount of compensation to be paid. According to the above regulation, the agency will notify the community about the exploration process through various methods, including calling to meet with displaced people and discussing the project and the route that passes through the area, as well as providing a representative to transfer full information about the process.

2.4. ROW Compensation

According to proclamation No 455/2005 Art. 7 (1), a landholder whose holding has been expropriated shall be entitled to compensation for his property situated on the land and for permanent improvements he has made to such land. Regulation No 135/2007 also clearly states that the amount of compensation for a building shall be determined based on the current cost per square meter or unit for constructing a comparable building.

All Project Affected Peoples (PAPs) and organizations (whether public or private) that lose houses, crops, or sources of income will be compensated or rehabilitated according to the type and amount of their losses. The cut-off date for compensation eligibility will be set once all detailed measurements have been completed. Compensation will not be paid for any structure built or crops and trees planted solely to gain additional compensation (Belachew yirsaw Alemu, 2013).

Whether in financial form or as replacement land or structures, compensation is at the heart of expropriation. To meet the needs of public services and other economic and social needs of society, the government uses expropriation (compulsory acquisition) as an alternative tool to

secure land for development. The process, however, brings tension for people who are threatened with dispossession.

Compulsory land acquisition for development purposes may ultimately benefit society, but it is disruptive to people whose property is acquired. Therefore, the property owner shall be compensated for the losses he/she suffers due to expropriation. In other words, the affected property owner/shall be in the same economic position as if the compulsory acquisition had never happened. Therefore, compensation is to repay the affected people for the losses they suffered and should be based on principles of equity and equivalence (Belachew yirsaw Alemu, 2013).

The FDRE Constitution (Article 40, No. 8) states that the government has the right to expropriate private property for public purposes by providing the appropriate compensation. The FDRE Constitution lays down the basis for property compensation in case of expropriation due to state programs or projects in rural and urban areas. People who have lost their land due to the acquisition of such land for public projects are entitled to be compensated for similar land, plus the related costs arising from relocation, such as buildings, crops, or fruit trees that are part of the land.

2.5 ROW Challenges

A ROW or road reserve is generally the space that allows the movement of vehicular traffic and non-vehicular traffic (including trains, trams, pedestrians, and cyclists, and their associated facilities and appurtenances). Thus, the ROW does not only act as a conduit for the movement of traffic but also as a means to interconnect and deliver all the necessary amenities such as water, electricity, ICT, security, and sanitation services to the residents, businesses, institutions, and the like, to make the town, city, and the entire country function (Hamidy M. M., 2020).

In the context of Jimma zone road construction projects, the ROW problem is related to land acquisition issues by the community for infrastructure development and relocation of utility facilities. The land required for these projects includes the land to be used for the construction of the road, which includes appropriate ROW according to the requirements of the standards, and other parts of the land which the contractors will use as local material sources such as quarry site, spoil area, and temporary land for material stockpiling, pre-casting yards, warehouse, workshops, parking lots.

ROW obstructions are one of the prevailing risks hindering the progress of road construction in urban areas unless intensive intervention measures are adopted (Tigabu. T, 2015). ROW acquisition and utility adjustment are almost always on the critical path of an infrastructure project. It is important to identify and focus on all parcels within the ROW, especially those that might cause delay, such as those requiring eminent domain acquisition or having other inherent problems. Utilities with a history of slow response in making adjustments should be aggressively managed. It should be noted that ROW and utility adjustment issues may be of concern even in cases where a separate public entity owns the parcel or utility. A strategy must be developed to address these problematic parcels and utility adjustments (Bingham, E., 2010).

2.6 Factors Affecting ROW Acquisition

ROW acquisition is a complex process in which many participants and stakeholders are involved. Each phase of ROW acquisition is affected by diverse factors, including related laws and regulations, project characteristics, the agency's organizational issues and the capabilities of ROW staff, relationships with the property owners, and parcel characteristics. The cost and duration of ROW acquisition is also influenced by the aforementioned factors (David Jeong, 2016).

Certain issues may complicate right-of-way acquisition. These issues must be identified for the proposed parcels, and their impact assessed (Tiendung Le, 2009). Land use impacts, socioeconomic impacts, cultural issues, unique use properties (e.g., government use, cemeteries, pet cemeteries), beautification and signage are all factors to consider. Economic growth/speculation, Federal real estate, The number of partial takings and parcel splitting.

Many studies have identified the major factors that affect the cost of ROW acquisition. Most of the recent studies completed in this domain (Change-Albitres et al. 2014, Heiner and Kockelman 2005, Le 2009, Sohn et al. 2009). These factors include project type, project location, parcel type, ownership type, acquisition method, etc. There have also been qualitative research efforts to understand the nature of ROW acquisition and explore the critical components of ROW acquisition projects using surveys, interviews, and reviews of best practices (Aleithawe 2010, Caldas et al. 2006, Cambridge Systematics 2006). David Jeong (2016) identified 22 barriers in his study using a literature review, a questionnaire survey, and case studies and classified them into five groups: (1) project delivery, (2) agency internal capability, (3) relationship with the public, (4) appraisal and acquisition, and (5) legislative and other issues.

To improve the ROW acquisition process, significant factors influencing the cost and duration of ROW acquisition must be identified. Because ROW acquisition for highway projects involves many stakeholders (Le 2009), interaction and communication between the parties is critical for successful ROW acquisition—not only between the agency and the property owners, but also between different divisions within the agency and between the parties and utilities. The management capability of the agency to deal with the ROW acquisition process and parcel characteristics is also important for ROW acquisition.

A thorough review of previous research revealed that the pre-acquisition, appraisal, and acquisition phases are more sensitive and vulnerable to ROW cost increases and schedule delays than other phases. The estimation of the property's market value or damage payable, particularly during the appraisal phase, was found to contribute to time extensions. The acquisition phase has a significant impact on ROW cost and schedule, particularly because of the acquisition type, which is determined by negotiation and communication with property owners. Furthermore, despite the fact that the property management phase may contribute to earning sales income and saving the agency's investment, the literature does not adequately address this phase.

2.7 Barriers to ROW Acquisition

Four fundamental factors were identified by David Jeong (2016) and categorized into external and internal causes that may contribute to the barriers. Internal Causes: uncooperative work environment between different divisions. This category includes ROW plan changes and revision, lack of coordination and sequential hand-off environment among project teams, lack of appraiser's knowledge, skills, and experience, lack of ROW staff's experience, and an insufficient number of ROW staff or appraisers. Secondly, the lack of tools and methods to promote communication and negotiation is another internal cause to explain the occurrence of the following barriers. External Causes are Distrust of property owners and poor communication, and adverse effects of the eminent domain law.

Table 2. 1: Barriers to ROW acquisition

No.	Category	Barriers
1	Project delivery	✓ ROW plan changes and revisions ✓ Lack of coordination among project teams ✓ Tight schedule for ROW acquisition tasks

2	Agency's internal capability	➢ Lack of appraisers' knowledge, skills, and experience ➢ Lack of ROW staff experience ➢ Insufficient number of ROW staff or appraisers
3	Relationship with the public	➢ Property owners' distrust of agency and appraisal ➢ Less communication between the agency and the public & property owners ➢ Limited information provision to the public (price disclosure) ➢ Absence of motivation for property owners to settle early ➢ Property owner's fatigue due to repeated permission requests
4	Appraisal & acquisition	✓ Delays in the appraisal report delivery ✓ Late disclosure of the owner's appraisal ✓ Limited access to the property due to resistance of owners ✓ Repeated appraisal of the property owners
5	Legislative and other issues	➢ Excessive attorneys' fees/Absence of the upper limit of the attorney fees ➢ Absence of a time limit for the condemnation action ➢ Appointment of the commissioners for the hearing ➢ The requirement of mortgage releases for low-value takes ➢ Limited authority of field-level ROW personnel

Source: (Daved Jeong, 2016).

To optimize the ROW acquisition process, it is critical to identify key factors that influence ROW acquisition costs and time. Many stakeholders are involved in the acquisition of ROW for highway projects (Tiendung Le, 2009). Effective communication and interaction between the parties is critical for the success of the ROW acquisition. Communication and interaction between the agency and property owners, between divisions, and between parties and utilities are examples of these. The ability of the agency's administration to deal with the ROW acquisition process, as well as the characteristics of parcels, are important factors in ROW acquisition (David Jeong, 2016).

Pre-Acquisition: ROW activities cannot be performed in parallel in an isolated and sequential handoff environment, and the overall process may be delayed. Furthermore, open communication and collaboration among different divisions within an agency can help to reduce design changes, revisions, and plan errors (Cambridge Systematics, 2006).

Finally, early public involvement allows an agency to anticipate which design alignments will be problematic when acquiring ROW, reducing the risk of future litigation. As a result, property owners must be encouraged to participate in the process. Appraisal: Because the

appraisal phase is frequently in the project's critical path, it significantly impacts the ROW acquisition schedule and cost (Caldas et al. 2006, Hakimi and Kockelman, 2005). Acquisition: The acquisition phase includes negotiations with property owners, administrative settlements, or condemnation-related activities. Therefore, how a parcel is acquired and negotiated with owners is crucial to prevent an increase in the cost and duration of ROW acquisition.

2.8 The Effects of ROW issues

In the road construction project, there was ROW conflict, not only with the property owner but also with other stakeholders who work in the same ROW. According to AACRA ROW data, the stakeholder who participates in working in a common ROW accounts for approximately 30% of the project's delay. The stakeholders' disagreement is about budget allocation, having different schedules, a lack of tangible guidance, and communication issues (Wondwesen Tesfaye, 2019).

Coordination between all responsible sector offices is critical to completing the project within the allocated budget and time frame. Problems with internal and external coordination among stakeholders result in resource waste and project delays. Furthermore, external coordination activities with participants such as land owners, tribal authorities, acquiring and maintaining activities, utilities, railroads, land management, and local public agencies are required during project development (FLH, 2018).

It was critical to develop clear guidelines to control the activities of all stakeholders. particularly in the activities of ROW. Most of the time, conflict rises during the relocation and installation of utilities along the roadside, which was scheduled and budgeted differently among the stakeholders. According to the guide for accommodating utilities within highway rights-of the following general consideration guidance. This basic consideration is specified based on the major criteria, which were safety, design, location preservation and restoration, and visual quality (Design, 2005).

Table 2. 2: Factors affecting ROW acquisition

Factor	Description	Major Impact
Location	The area that a parcel is located in (e.g., urban or rural)	Cost/Duration
Ownership	Ownership of the parcel (e.g., business entity, individual, or more than one person)	Cost/Duration
Accessibility	Access characteristics of a parcel	Cost

Land use type	Land use type such as apartment,large/medium/small office, hotel, home, etc.	Cost
Title issue	Any problems with the title of the land that may affect the acquisition	Duration
Mapping / survey issue	Whether the parcel involves any issue with mapping or surveying (e.g., incorrect Drwing)	Duration
Improvement	Likelihood of future improvements being made on the parcel before acquisition	Cost/Duration
Dedication of funds	The agency's dedication of funds to the project (ROW and construction)	Duration
Political pressure	Level of political pressure	Duration
Revision of plans	Number of design changes	Duration
Available replacement house	Level of local availability of replacement housing facilities	Duration
Number of parcels	The number of parcels per project	Cost/Duration
Damage issue	Change of parcel shape, reduction of frontage length, etc.	Cost

2.9 Implications for Successful ROW Acquisition

Many studies and reviews of best practices emphasized the importance of the team approach. A poorly coordinated project team frequently plans and executes ROW acquisition activities in a dispersed fashion rather than in a hand-off environment. Such an environment for a project team could be a significant impediment to ROW acquisition success. As a result, in the early stages of a project, it is necessary to organize a collaborative project team comprised of representatives from all related divisions and document the associated activities, roles, and responsibilities to encourage close interaction and coordination.

According to Daved (2016) research study reports, it was discovered that intensive and continuous communication with the public and property owners can have a significant impact on ROW acquisition in a review of US and EuropeanROW best practices. Involving the public early in the design stage, allowing property owners to accompany the appraiser during the appraisal process, and using an improved mediation method have all contributed to the acquisition being completed faster and fewer condemnation cases being filed.

Furthermore, the FHWA pilot test results demonstrated that several innovative methods, such as raising the appraisal waiver limit, using incentive payments, and using design-build contracts, contributed to significant cost savings and schedule reductions for state agencies. These findings imply that federal agencies like FHWA and AASHTO recommend revising

laws that limit the use of innovative methods like pursuing design-build contracts and offering incentive payments.

Although the implications of European best practices were similar to those of US best practices, European agencies put a greater emphasis on early public involvement and continuous communication with the public. Another notable distinction between US and European agencies is the systematic and rigorous training program in place for ROW staff in European agencies. Certified education and training for ROW staff ensures smooth operation of ROW activities and improved project cost and duration performance, particularly for new employees and less experienced staff.

To control the activities of all stakeholders, clear guidance, particularly on ROW activity, was required. The majority of the time, conflict arose during the relocation and installation of utilities along the roadside, owing to schedule and budgetary differences among the stakeholders. According to a Guide for Accommodating Utilities within Highway Right-of-Way, blameless ROW management must follow the general consideration guidance below. This fundamental consideration was established based on the major criteria of safety, design, location preservation and restoration, and visual quality (Design, 2005).

Definitions of Key Terms

The definitions of concepts and terms shown below allow readers and researchers to understand their use in the study.

Right of Way (ROW): The total land area acquired to construct the roadway is the right of way. Its width should be enough to accommodate all the elements of the roadway cross-section, any future widening of the road, and any public utility facilities that will be installed along the roadway. In addition, it includes the area of the road acquired for carriageways, other necessities, and future extensions along its alignment (Haseeb Jamal, 2019).

Land acquisition: refers to the process by which land is acquired for some public purpose, especially development, like the construction of roads, canals, dams, bridges, buildings, and railway lines. Thus, the acquired land indirectly helps develop society and the nation (Bhandari N et al., 2019).

The acquisition is the process by which the State obtains legal possession or control of real property, or interests therein, required for some aspect of public transportation infrastructure construction or improvement (Highway Design Manual, 2014).

A parcel (s) is a piece of land that the government needs to acquire for a public project.

Expropriation: The term "expropriation," which is also termed "eminent domain" or "compulsory acquisition" in the standard law legal systems, has been defined as: "the sovereign power inherent in the states to take private property without the owner's consent for public use upon making just compensation thereof" (Girma, K. Kumsa, 2011).

Compensation is defined as “payment to be given in cash or in-kind or in both to a person for his property situated on his expropriated landholding” in FDRE legislation Proclamation No.455/2005 Art 2 (11).

Appraisal, also known as valuation, is the process of determining the certified estimate of the land or property's market value or the damage payable to the owner (or the process used to determine property value). For example, this process might include all or some of the following, meeting with the property owner, an inspection of the property, checking recent sales of properties in the neighboring areas, and preparing a property valuation report (Imad Aleithawe, 2010).

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Study Area

The research was conducted in the Jimma zone. Jimma is the largest city in Ethiopia's southwestern Oromia Region. It has a population of 3,415,011 and is located at 7° 40′ N and 36° 50′ E. Furthermore, the Jimma zone covers 19,506.24 km2 (CSA, 2015). According to a World Bank memorandum, 9% of the inhabitants of Jimma have access to electricity, this zone has a road density of 77.0 kilometers per 1000 square kilometers (compared to the national average of 30 kilometers). The Figure 3.1 below illustrates a map of the study area.

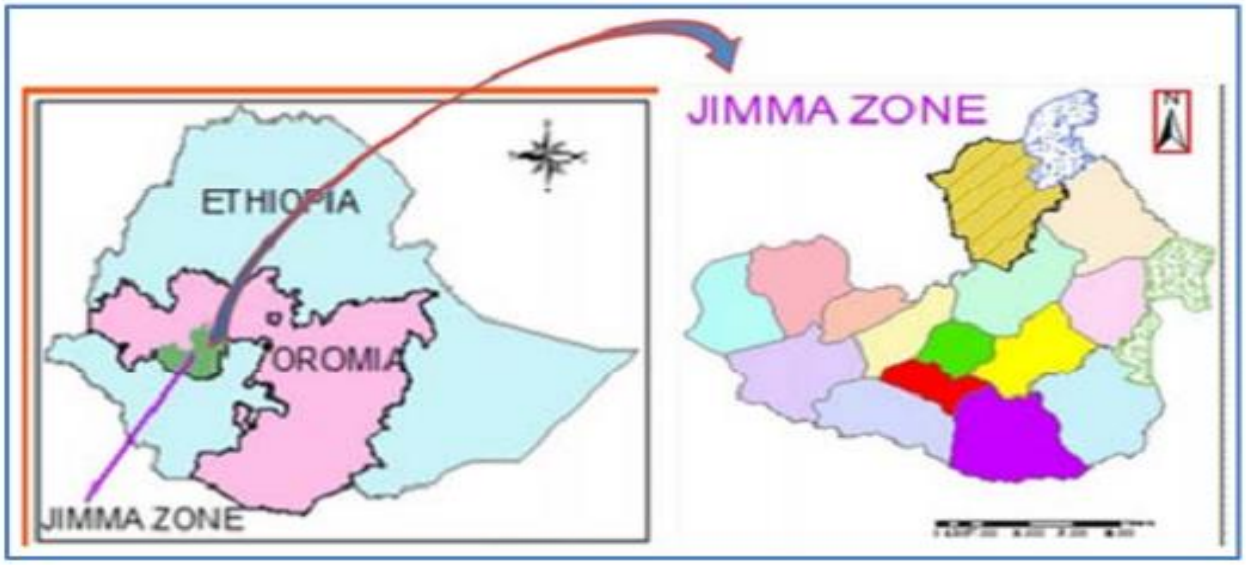

Figure 3. 1: Location map of the study area (Source: Google map, 2021)

3.2 Study Period

The research time was from January 2022 to June 2022 GC.

3.3 Research Design

To conduct research, various methods can be used, which can be quantitative, qualitative, or a combination of both (mixed methods). To accomplish its objectives, this study used a combination of methods. According to Leedy and Ormrod (2010), quantitative research is a systematic, objective investigation of phenomena and their relationships based on positivist theory. Qualitative research, on the other hand, is based on interpretive theory, involves in-depth understanding, and is distinguished by rich, complete, and detailed descriptions.

This study used descriptive and explanatory research methods, which refer to the type of research question, design, and data analysis used on a given issue. A descriptive research design examines the factors that contribute to ROW issues as well as the impact of ROW issues on road construction projects. According to Kothari (2008), the descriptive design allows the researcher to describe, record, analyze, and report on conditions that exist or have existed.

Data for the study was gathered from both primary and secondary sources. A questionnaire survey and key informant interviews with professionals in the study area were used to collect primary data. According to Krysik and Finn (2010), questionnaire surveys are a common data collection method in social work research. It is a systematic method of collecting data from a large number of respondents that relies on questioning. According to them, a survey can be used to determine what respondents know, believe, or feel, as well as how they claim to behave. Secondary data was gathered by reviewing relevant documents, desk studies, and literature reviews. It was used to raise awareness of the issue and as criteria for developing and analyzing primary data. The theoretical background was established based on the literature review, and the questionnaire to be distributed to respondents was developed. The questionnaire included key term definitions, which briefly defined the various terms used in the study. This section was included as optional reading for any interested respondents who may have difficulty remembering the technical terms used in the research.

3.4 Population and Sampling Method

The population involved in this study were clients, consultants, and contractors involved in road construction projects in the Jimm zone.

Sampling Method

Sampling is the process of selecting respondents from a population to represent that population. This procedure can be carried out using either probability or non-probability methods (Leedy P.D. & Ormrod J.E, 2010).

Purposive sampling was used to select respondents for the study. Road projects have three different parties involved: the client, the contractor, and the consultant. The respondents from each party were chosen using purposive sampling methods. The questionnaire survey will be distributed to a total of 36 respondents and 30 were returned, from clients, contractors, and consultants, to get the data.

3.5 Study Variables

Dependent Variable

The dependent variable, which is the output and its result, depends on the independent variables, which are directly related to the general objectives.

- Impacts of the ROW problems on road construction projects

Independent Variable

These independent variables are more correlated with specific objectives, but each specific objective affects one another.

- Uncooperative work environment
- Lack of tools and methods to promote communication and negotiation
- Distrust of property owners
- Poor communication
- Lack of coordination among stakeholders, clients, and utility companies (ELPA, Ethio telecom).

3.6 Data Analysis Methods

The Statistical Package for Social Sciences (SPSS) is software that is used to analyze data using Descriptive statistics method. To carry out the data analysis in this research, the collected data from the questionnaire survey will be analyzed using SPSS. The analysis included ranking the factors in terms of their influences, their significance, and degree of impacts.

3.6.1 Descriptive Statistics

The descriptive statistic method is the most basic type of analysis. This method provides a broad overview of the results and will either analyze the responses in percentages or include actual numbers (Naoum, 2007). This descriptive statistics method was used to analyze Section One (background information) in this study.

3.6.2 The Relative Importance Index (RII)

Relative Importance Index (RII): used to determine the relative importance of the various causes and effects of ROW issues using five-point Likert scale. The higher value of the relative important index (RII) represents the important cause or effect of ROW problems and vise verse. The data from Sections II, III, and IV of the questionnaire survey was analyzed using the RII. The responses to the questionnaire were based on a five-point

Likert scale ranging from 1 (stronglydisagree) to 5 (strongly agree). was adopted and transformed into relative importance indices (RII) for each factor as follows:

$$RII = \frac{\sum W}{A * N} \quad \text{……Equestion-1}$$

Where W is the weighting given to each factor by respondents (ranging from 1 to 5), A is the highest weight (i.e., 5 in this case), and N is the total number of respondents (i.e., 30 in this case). The RII value had a range from 0 to 1 (0 not inclusive). The higher the value of RII, the more important the factors. The RII was used to rank (R) the different causes and effects of ROW problems. These rankings made it possible to cross-compare the relative importance of the factors as perceived by the respondents (i.e., clients, consultants, and contractors). The causes of ROW problems perceived by all respondents were used to assess the general and overall rankings to give an overall picture of the causes of ROW problems in Jimma zone road construction projects. The same procedure was adopted for ranking the effects and methods to minimize the ROW problems. The indices (RII) were then used to determine the rank of each item. These rankings made it possible to cross-compare the relative importance of the items as perceived by the three groups of respondents. The weighted average for each item for the three groups of respondents was determined and ranks (R) were assigned to each item, representing the perception of the three groups.

Table 3. 1: Values assigned to the Likert scale in the questionnaire

Scale	1	2	3	4	5
Section II & III	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
For Section IV	Not Significant	Less Significant	Significant	High Significant	Extremely Significant

3.6.3 Cronbach's Alpha Coefficient

A reliability test is used to determine how well each item on a scale correlates with the total of the remaining items. It assesses the consistency and dependability of individual variables on a scale. The Cronbach's alpha coefficient is used to determine the reliability of internal consistency. Cronbach's alpha is greater or equal to 0.700, indicating that the strength data is normally distributed and should be accepted.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

The results and discussion were divided into three sections to correlate with the research objectives and questionnaire sections. These divisions can help with addressing one objective at a time. The results of the questions posed to determine the causes of the ROW problem in Jimma zone road construction projects are presented in the first section. In the second part of the results and discussion, the findings on the questions targeted at detecting the effects of the factors that cause ROW problems on road construction projects are reviewed. The last section of the results and discussion section focuses on ways to reduce ROW challenges. The research included both qualitative and quantitative components.

The purpose of this chapter is to interpret, analyze, and summarize the results of the research based on the results obtained from survey questionnaires. A total of 30 out of 36 questionnaires were returned for this research. In other words, 83.3% response rate. The main objective of the questionnaire is to obtain data from clients, consultants, and contractors working on road projects in the Jimma Zone regarding the causes and impacts of ROW problems and the methods to minimize ROW problems in road construction projects.

The analysis was carried out based on the 30 returned questionnaires that had been collected, and discussions based on the results were held. Before being analyzed, all returned questionnaires were checked for reliability and found to be eligible for data analysis with a 100% response validity rate.

Table 4. 1 Questionnaire survey response rate

Company/ Organizations	Questionnaires distributed	Questionnaires Returned	Response rate (%)	Valid response	Response Validity rate (%)
Client	12	10	83.3 %	10	100 %
Consultant	12	8	80%	8	100 %
Contractor	12	12	100 %	12	100 %
Total	**36**	**30**	**83.3** %	**30**	**100** %

4.2. Basic Information on Respondents

This section is to assess the respondent's information, which includes the type of their organization, their experience in the construction industry, their role in the organization, their profession, and their educational status or occupation.

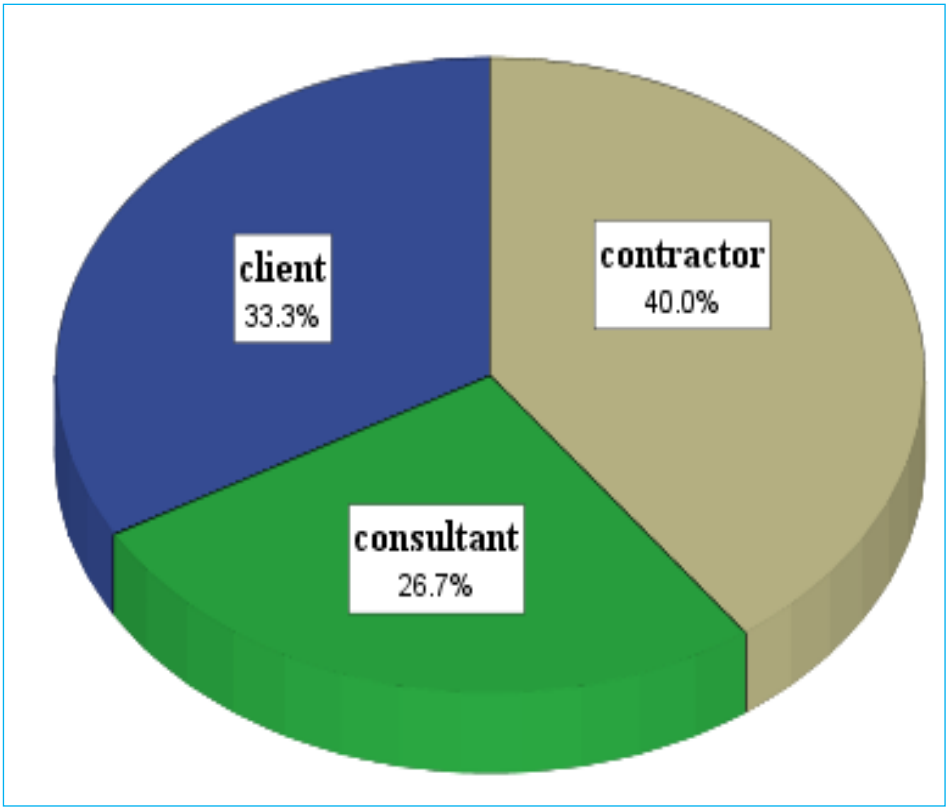

Figure 4. 1: Type of Organization

As illustrated in the pie chart above, the 30 sets of returned questionnaires are divided into three categories: contractor, client, and consultant. According to the findings, contractor firms accounted for 40% (12 out of 30) of the respondents, while client firms accounted for 33.3 % (10 out of 30). Last but not least, consultant firms account for 26.7 % (8 out of 30).

4.2.1. Respondent Working Experience

Based on the results of 30 completed surveys, the majority of respondents (13 out of 30) or 43.3% have less than four years of working experience. On the other hand, 26.67 % (8 out of 30) between 4 and 8 years of experience. Furthermore, 23.3 % (7 out of 30) of respondents have work experience between 8 to 12 years, and 6.67% (2 out of 30) have a work experience above 12 years.

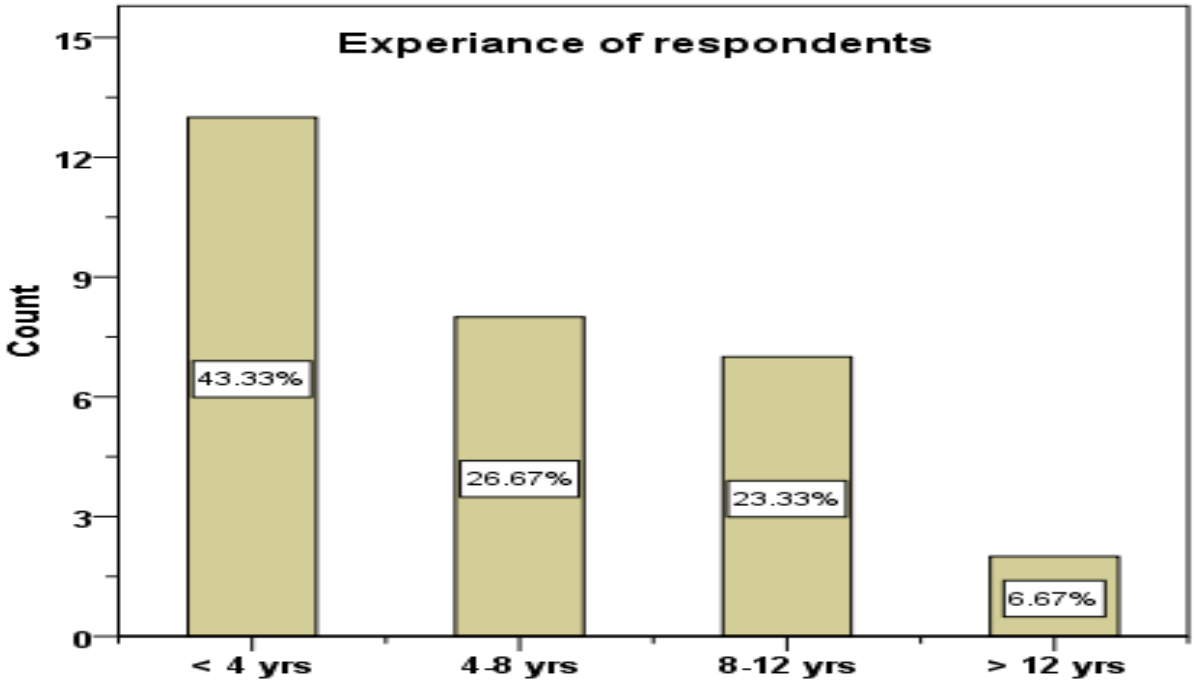

Figure 4. 2: Years of Working Experience

4.2.2 Position of Respondents in the company

The respondents included 6.7 % top managers, 13.3% project managers, 10% project coordinators, 50% site engineers, and 26.6% office engineers (see table 4.2 below), indicating that the questionnaires were completed by professionals, ensuring the credibility and reliability of the findings.

Table 4. 2: Respondent work position in the company

Job Description	Frequency	Percent (%)	Cumulative (%)
Director/Top manager	2	6.7%	6.7%
Project manager	4	13.3%	20%
Project Coordinator	3	10.0%	30%
Site engineer	15	50.0%	80%
Office engineer	6	20.0%	100%
Total	30	100	

4.2.3 Educational Status of the Respondents

Among respondents, 73.3% have a degree, 20% have a diploma, and the remaining (6.7 %) have MSc, but there are no Ph.D. or higher participants.

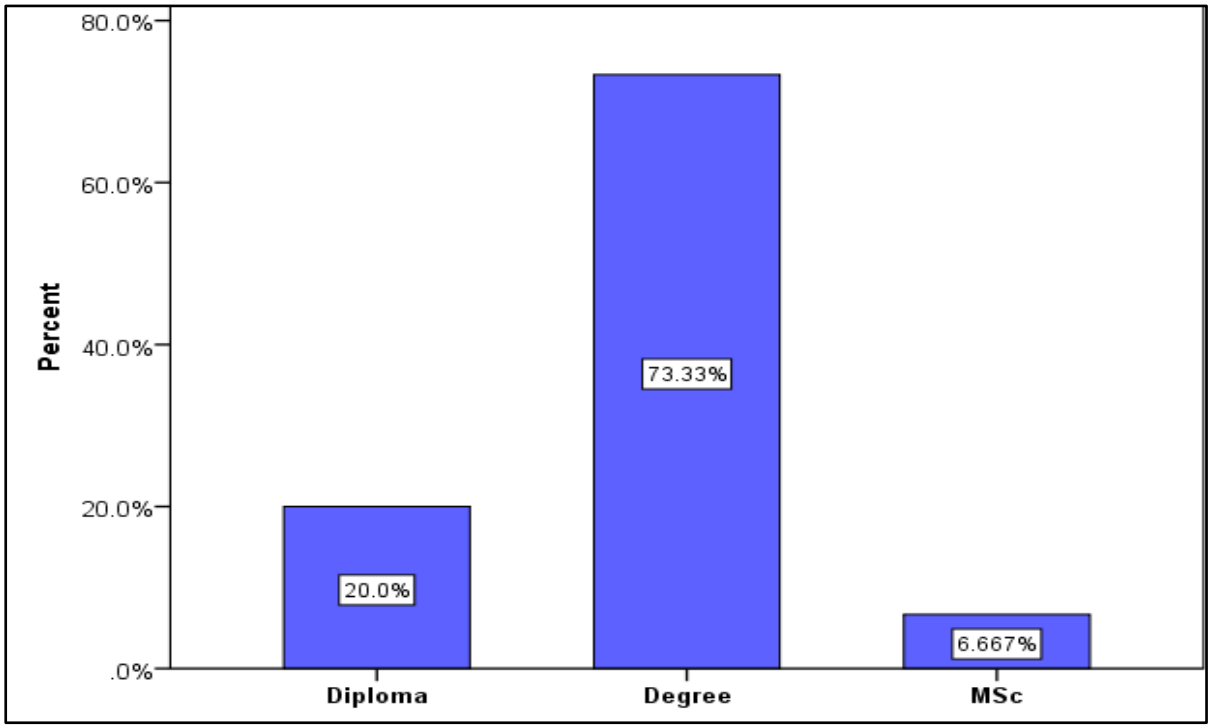

Figure 4. 3: Educational Levels of the respondents

4.2.4 Respondents' occupations

The following were the respondents' professional occupations: engineering-related professionals 73.3%, project management 16.7%, construction management professionals 6.7%, and other professions 3.3 percent.

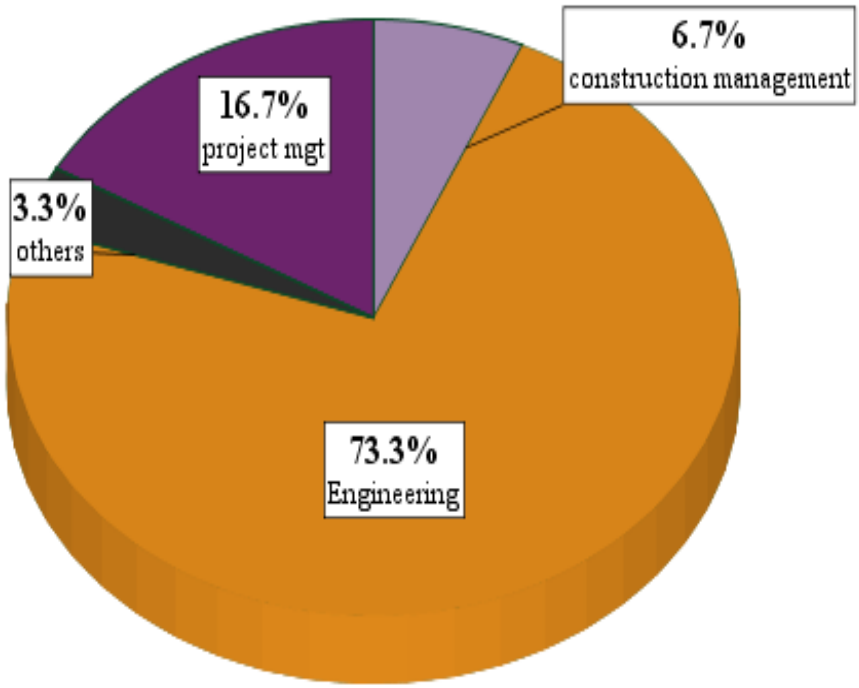

Figure 4. 4: Occupations of the respondents

4.3. Causes of ROW problem in Jimma zone Road Projects

The primary data collected from section II of the questionnaire were analyzed from the perspective of clients, consultants, and contractors. Each cause's RII perceived by all respondents was computed for overall analysis as shown in Table 4.3 below. The relative importance index (RII) was computed for each cause to identify the most significant causes. The causes were ranked based on Mean score and RII values.

Table 4. 3: Ranking the Causes of ROW problems

No.	Item Statistics	Mean	RII	Rank
1	Complaints about inadequate compensation payments for property owners	4.83	0.967	**1**
2	Poor communication and coordination between stakeholders	4.47	0.893	**3**
3	Lack of a common schedule and guidance to work on ROW activities	4.37	0.873	**6**
4	Property owners refuse to leave their original parcel	4.60	0.920	**2**
5	Disagreements between appraisal reports	4.20	0.840	**8**
6	Delays in delivery of appraisal report & compensation payment	4.40	0.880	**5**
7	Unfair valuation systems or estimations are not based on current market value.	4.03	0.807	**12**
8	Repeated ROW plan changes and revisions	4.43	0.887	**4**
9	Challenge/difficulty in the relocation of property owners	4.13	0.827	**10**
10	Lack of stakeholder involvement early in the project development process	4.17	0.833	**9**
11	Insufficient number of ROW staff or appraisers	3.60	0.720	**16**
12	Poor relationship between the Appraisers & property owners	3.50	0.700	**18**
13	lack of experienced ROW personnel, unqualified fee appraisers	4.07	0.813	**11**
14	Slow obstructions clearance & utility relocation along the right-of-way	4.23	0.847	**7**
15	Property owners distrust the agency and/or disagree with appraised values	3.63	0.727	**15**
16	Limited information provision to the public (e.g. price disclosure)	3.33	0.667	**19**
17	lack of public awareness and too many complaints about compensation activities	3.77	0.753	**13**
18	Conflicts of interests among the parties involved in RoW	3.10	0.620	**20**
19	The courts restrict the ROW works due to claims from property owners	3.57	0.713	**17**
20	The political environment of the country and Corruption	3.67	0.733	**14**

Based on the ranking, the five most important causes of ROW issues as perceived by clients, contractors, and consultants were: (1) complaints about inadequate compensation payments for property owners (RII = 0.967); (2) property owners' refusal to leave their original parcel (RII = 0.920); (3) poor communication and coordination between stakeholders (RII = 0.893); (4) repeated ROW plan changes and revisions (RII = 0.887); and (5) delays in delivery of appraisal report and delay in compensation payment (RII = 0.880).

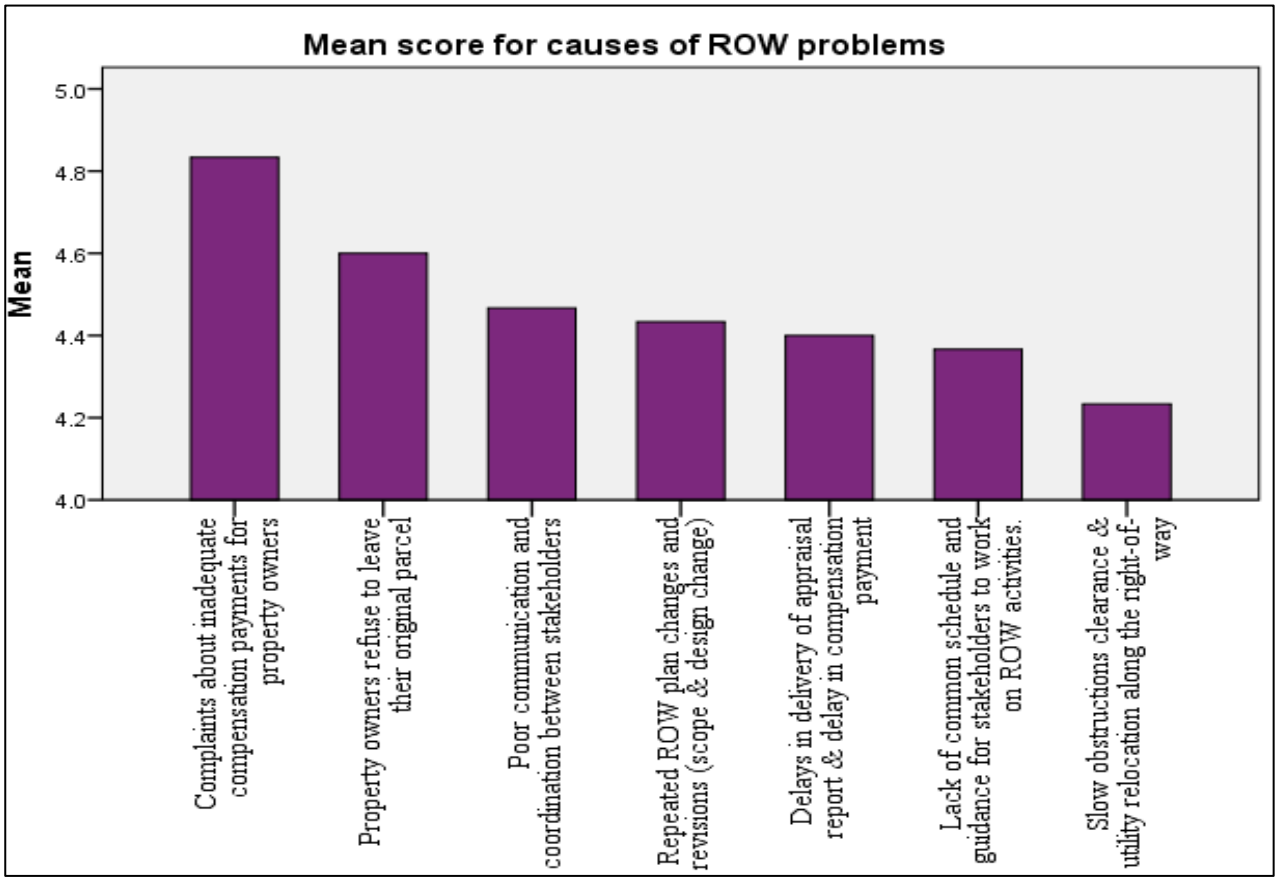

Figure 4. 5: Mean score for causes of ROW problems

4.3.1. Complaints about inadequate compensation payments for property owners

It was determined to be the most common cause of ROW problems. The bar chart's MS = 4.83 and RII = 0.967 indicate that property owners' complaints about low payments were one of the most common causes of ROW problems. When the compensation payment amount fell short of their assumptions and expectations, the property owner complained. Property owners typically expect a large compensation payment and complain about a small compensation payment. The fair market value was an assessment based on an estimate of what a buyer would pay a seller for any piece of property. On the other hand, this unbalanced property compensation payment resulted from inflation and an inappropriate valuation method used for carrying out the estimation of the property. For example, if the property owner used

material that would not be the item listed by the authority, the appraiser would use that material to estimate similar material that is itemized by the authority so that unbalanced compensation is paid to the owners.

Many experienced individuals working in the ERA, ORA, municipality, and construction offices stated during interviews that the value for property compensation is insufficient based on current market value. This is why the responsible body repaired it with a low-cost material value. For example, because of the practice of relocating people from the inner city to new resettlement areas, property compensation payments could not be used to rebuild the lost house or business, making recovery difficult.

4.3.2. Property owners refuse to leave their original parcel

The MS = 4.6 and RII = 0.92 values in Table 4.3 and Graph 4.5 indicate that people would not be interested in leaving their original parcel, which was the respondent's second root cause of the ROW problem. This was because, as we all know, a social collaboration between communities was strong, and society did not want to lose social relationships and social associations like Ekub, Eider, and others.

Society, on the other hand, was fearful of the government providing a stable and comfortable settlement replacement parcel because there was a struggle based on political, economic, and social interests. In underdeveloped areas, it is difficult to obtain infrastructure and utility services.

4.3.3. Poor communication and coordination between stakeholders

According to the table and graph, the MS = 4.47 and RII = 0.893 indicate that respondents believed poor communication among parties was the third cause of ROW problems on road construction projects. Poor communication typically results in a lack of information for the appraisal committee to develop, fewer opportunities for negotiation with property owners, and a lack of good faith in ROW acquisition efforts. It was critical to maintain open lines of communication with property owners to foster trust, reduce misunderstandings, and ensure that all parties involved (owners, clients, utility service company, consultant, and contractor) were on the same page.

Poor communication almost always results in project redesign and reconstruction, incurring additional costs for the same project. Furthermore, this communication issue exposes resource waste, community distrust, rework, and project destruction.

4.3.4. Repeated ROW plan changes and revisions

In Jimma Zone road construction projects, it was the fourth most common cause of ROW issues. The Mean Score = 4.43 and RII = 0.887 indicate that another challenge for ROW Management is due to plan and design change among the given alternatives. This is because there was no strong information exchange, binding policy, or schedule review system in place during the design, planning, scheduling, and construction phases. Construction plan and schedule coordination and revision are critical to project completion and quality output. This relevant activity would occur if the participant party performing in the common ROW emphasized the importance of regularly revising their plan and schedule.

4.3.5. Delays in the delivery of the appraisal report and compensation payment

Delays in the delivery of appraisal reports, as well as delays in a compensation payment, were the fifth-factor causing ROW issues (RII = 0.88). The ROW acquisition activity is delayed somewhere along the ROW acquisition process, causing the ROW acquisition activity to be delayed and, as a result, impacting the scheduled road project performance. According to the questionnaire and desk study, the project lags behind the project completion date due to delayed decision-making by the client and ROW agency. When they fail to make timely decisions on project issues, compensation amounts, and resettlement facilitation, they slow down road construction activities at project sites. Internal bureaucracy and a lack of good communication are among the causes of slow decision-making, according to the desk study and respondents' opinions.

4.3.6. Lack of a common schedule and guidance to work on ROW activities

The lack of a common schedule and direction to work on ROW activities is ranked sixth (RII = 0.87), indicating that it is the root cause of the ROW problem. This is an important aspect of the issue for stakeholders who share a common ROW in road quality maintenance. The use of guidance for reacting to a specified direction or performing an activity for road construction, combined with the lack of clear instructions on the roadside, may result in conflict and dispute.

4.3.7. Summary of causes of ROW problems

This section summarized the root cause of the ROW problem in Jimma Zone road execution practice. There were a total of 20 identified causes. These causes were determined based on a review of the literature as well as responses from questionnaire surveys and interviews. The following are the root causes of ROW problems on road construction projects in the Jimma Zone: complaints about inadequate compensation; property owners' refusal to leave their original parcel; poor communication among stakeholders; repeated ROW plan changes and

revisions; delays in the delivery of appraisal reports and compensation payments; and a lack of a common schedule and direction to work on ROW activities.

4.4. The Influence of factors-causing ROW problems on Road Projects

The effects associated with ROW problems causing factors on road construction projects were ranked up to nine. The primary data collected from section III of the questionnaire were analyzed from the perspective of clients, consultants, and contractors. The calculation of RII and ranking were done.

Table 4. 4: Ranking of Influence of ROW problems

No.	Impacts of ROW problems	Mean	RII	Rank
1	Time overrun	4.47	0.89	**1**
2	Cost overrun	4.10	0.82	**2**
3	Dispute between parties	3.07	0.61	**6**
4	Project termination	2.90	0.58	**7**
5	Work motivation is reduced	3.27	0.65	**5**
6	Creating social problems	3.30	0.66	**4**
7	Distrust between the society & the government	3.63	0.73	**3**
8	Limits the growth potential of the economy at large.	2.83	0.57	**8**
9	Loosing chance of fund from World Bank	2.70	0.54	**9**

Based on the ranking, the significant Influence of factors-causing ROW issues were: time overrun (RII = 0.89), cost overrun (RII = 0.82), distrust between society and the government (RII = 0.73), social problems (RII = 0.66), lowering work motivation (RII = 0.65), dispute between parties (RII = 0.61), project termination (RII = 0.58), and loss of funds (RII = 0.61).

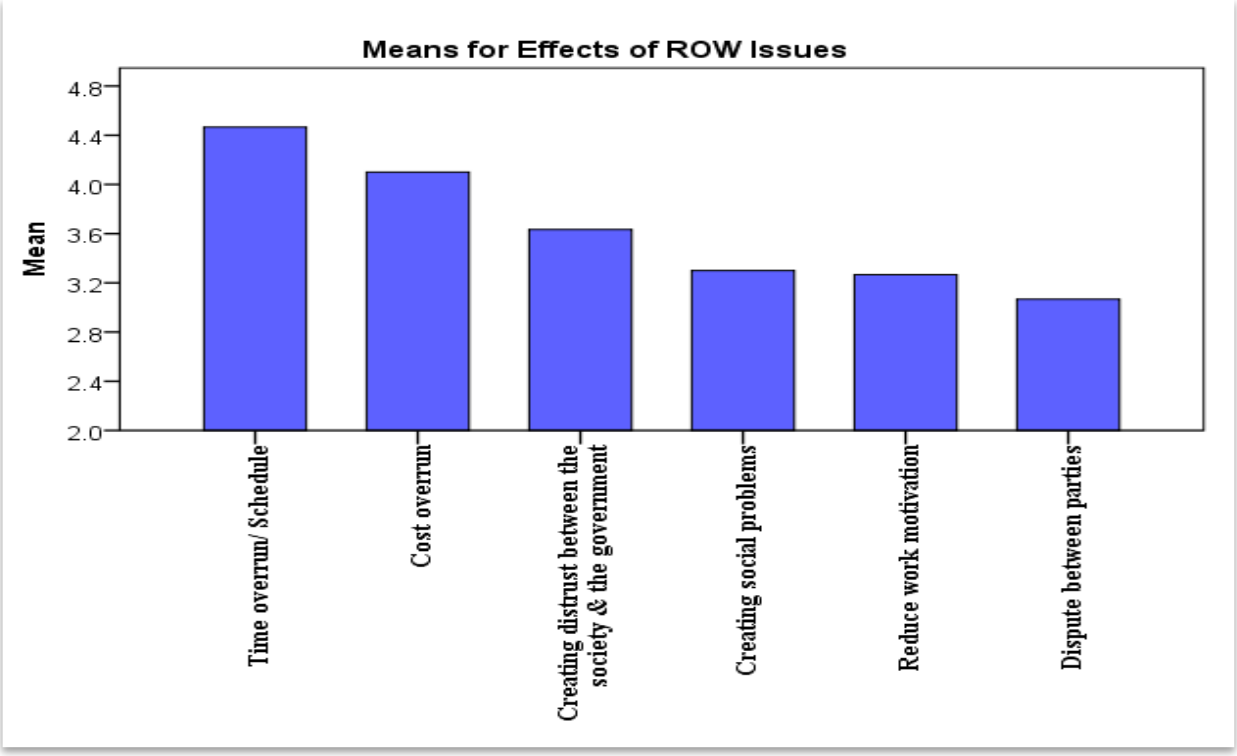

Figure 4. 6: Mean score for the effects of ROW problems

According to literature reviews, desk studies, and questionary surveys, the highest-ranked effects of ROW problems on road construction projects are time overrun and cost overrun. Poor management of ROW problems causes project delays and cost overruns, emphasizing that disputes during the early stages of project investigation and acquisition can be controlled in a simple situation.

The lack of trust that property owners have in the government and ROW agencies is ranked third with a mean score of 3.63. This lack of trust frequently contributes to the failure of good-faith negotiations and an increase in the number of condemnation cases. Some property owners tend to think that the ROW agency would withhold important information and a fair market value for compensation. Some property owners refuse to let appraisers enter their property to collect information and value it. ROW staff sometimes face difficulty in communicating with property owners.

4.5. Methods for Reducing ROW Problems

Table 4.5 summarizes the survey questionnaire of Section III on methods to minimize ROW problems in road construction projects in the Jimma zone. Seventeen (17) factors were identified as potential ROW solutions. To identify the most significant solutions to ROW problems, the relative importance index (RII) was calculated.

According to client, contractor, and consultant perceptions, the most important possible solutions to ROW problems were: (1) encouraging valuation of the property depending on current market values (RII = 0.93); (2) considering a reasonable, fair, and adequate compensation payment (RII = 0.92); (3) avoiding unnecessary compensation payment delays (RII = 0.91); (4) providing training to all staff to improve their skills (RII = 0.91); and (5) communication with all parties during the planning, design, and scheduling phases (RII = 0.90). As a result, all stakeholders should focus and collaborate on reducing ROW acquisition challenges, which are common causes of project failure.

Table 4. 5: Ranking of the Methods to minimize ROW problems

No.	Methods to minimize the ROW Problems	Mean	RII	Rank
1	Consider a reasonable, fair, and adequate compensation payment	4.60	0.92	**2**
2	Avoid unnecessary delays in compensation payment	4.57	0.91	**3**
3	Encourage valuation of the property depending on current market values	4.63	0.93	**1**
4	Provide for all basic needs of displaced families in their new settled area	4.20	0.84	**12**
5	Establish incentive programs for owners who settle early	4.37	0.87	**11**
6	Relocate utilities along the right-of-way as soon as possible.	3.87	0.77	**13**
7	Create a legally binding policy that requires all stakeholders to coordinate ROW activities.	4.43	0.89	**7**
8	Provide training to all levels of ROW staff to improve their skills	4.53	0.91	**4**
9	Use a modern software system to manage ROW activity.	4.40	0.88	**10**
10	Check and modify the current appraiser system.	4.47	0.89	**6**
11	Communicate with all parties during the road project's planning, design, and scheduling.	4.50	0.90	**5**
12	Involve key stakeholders early in the project development process.	4.43	0.89	**7**
13	Provide a thorough understanding of the projects for society.	4.43	0.89	**7**
14	Provide the Designer with the necessary design input data	2.90	0.58	**17**
15	Implement a realistic acquisition schedule to reduce delays due to design issues	3.87	0.77	**13**
16	Solving disputes immediately with the assistance of team members	3.67	0.73	**15**
17	Identifying problem areas, deficiencies, and deviations.	3.10	0.62	**16**

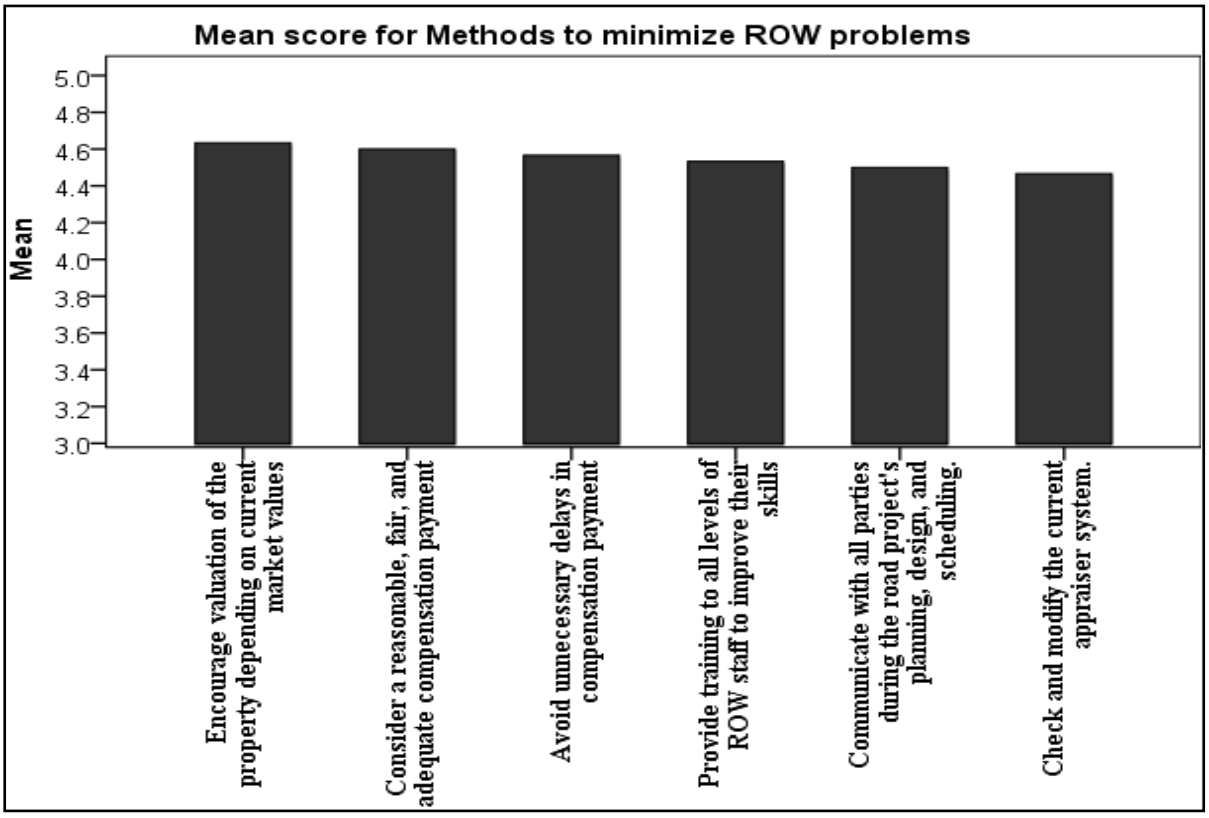

Figure 4. 7: Mean score for the methods to reduce ROW problems

4.5.1. Encourage valuation of the property depending on current market values

The RII= 0.93 in Table 4.5 and Mean score= 4.63 in Fig. 4.7 above shows that, the periodical valuation of property depending on current market price is a possible solution for minimizing the ROW problem. Due to variation of the current market condition and the inflation power of currency extremely high; the periodical valuation or estimation system should be developed to adjust the property compensation depending on the current market situation.

According to Belachew Yirsaw, due to low compensation payment and high cost of construction materials, it was hardly possible for the affected people to construct replacement residence house in a year. Consequently, many displaced property owners were not satisfied and some of them quarreled with the demolishing team.

4.5.2. Avoid unnecessary delays in compensation payment

The RII= 0.91 indicate that reducing the time-lapse between propert valuations and compensation payment is important role in order to minimize the ROW problems, strengthen the negotiation power of ROW staff, reduce complaint raised from property owners, and facilitate early agreement with owners. Due to many stakeholders are involved in ROW acquisition activity the process was so long and the payment for owners always delayed, therefore it is important to make payment early as much as possible.

4.5.3. Provide training to all levels of ROW staff to improve their skills

Offering periodical training for all staff is the most important solution and ranked fourth in reducing the ROW problems with RII= 0.91 and MS= 4.53. All respondent agree that developing the knowledge and experience of staff was critical in the overall ROW issues resolution practice. Inadequately trained staff could be one of the biggest obstacles for ROW acquisition practice. Continuous efforts to provide proper education and training on the ROW problems resolution practices and to introduce effective methods should be made.

4.5.4. Communicate with all parties during the projects planning and scheduling.

The RII= 0.90 and MS= 4.5 indicate that communication has great role in reducing the ROW problems during the project planning, design and scheduling according to the respondents perception. To improve the coordination between the stakeholders, a strong system should be established the party to hold and forced to work together or to revise their plan, design and schedule in all activity.

Communications were an important role success completion in road construction project. It improves the following process, it provides the critical links among peoples, idea clearly transfer to the percipient party, information that are necessary for the project success would be obviously share, important to avoid losses arising from idle capacity and deterioration of stocks of material and develop the collection and gathering of the project progress. This could be success considering periodical revision of the stakeholder schedule and timely evaluation of the project progress.

4.6 Validation and Reliability of the Research Result

The internal consistency reliability was measured using Cronbach's Alpha testing method. Cronbach's alpha, which is commonly regarded as satisfactory when it is equal to or greater than 0.70. The value in excess of 0.80 is preferable, and above 0.90 is desirable.

Based on this interpretation, the reliability results of the cause of ROW problems, the influence of the causes and methods to minimize ROW problems reliability result from SPSS listed as follow in the table.

- **Reliability Result for the Causes of ROW Problems**

Cronbach's alpha result is 0.820, indicating that the variable set with the highest level of internal consistency or reliability.

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.820	.803	20

- **Reliability Result for the Effects of the Factors that Cause ROW Problems**

Cronbach's alpha result is 0.907. This demonstrates the item's consistency, and the effects of the causes on the road construction project in the Jimma Zone to be strong.

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	100.0

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.907	.899	9

- **Reliability Result for the Methods to Minimize ROW Problems**

This has a Cronbach's alpha of 0.857. It shows that the items in the research has a greater chance of resolving the ROW issues if this recommendation is followed.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.857	.851	17

Finally, the three variable categories are reliable because all of the Cronbach's alphas are greater than 0.70.

Table 4. 6: Summary of Reliability Test Result

No.	Factors	Cronbach's alpha	N of items
1	Causes for ROW problems	**0.820**	**20**
2	Effects of the factors cause ROW Problems	**0.907**	**9**
3	Methods to Minimize the ROW Problems	**0.857**	**17**

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

The main objective of this research was to assess the impacts of ROW problems on road construction projects in the Jimma zone, as the findings indicated that there were a variety of impacts of ROW problems on Jimma zone road construction projects based on the questionnaire survey and interviews with various respondents. The opinions of various stakeholders involved in ROW acquisition activity, valuations, and compensation committees from ERA, ORA, Jimma Zone, and Jimma City construction authority offices, consultants, contractors, and utility companies were collected using a questionnaire survey and interviews to achieve the objectives of this research.

Based on the best practices identified in the literature reviews, a questionnaire survey was designed to identify (1) the causes of ROW problems in Jimma zone road construction projects; (2) their influences on the road project performance; and (3) how ROW problems were controlled or minimized in Jimma zone road projects. As a result, the study identified twenty causes of ROW problems in road construction projects, nine effects of the factors that causes ROW problems on road projects, and seventeen methods to minimize ROW problems in Jimma zone road construction projects. As a result, the following were the top three causes of ROW issues: (1) property owners' complaints about insufficient compensation payment (RII = 0.967); (2) property owners' refusal to leave their original parcel (RII = 0.92); and (3) poor communication among stakeholders (RII = 0.893). This study then identified the effects of ROW issues on road projects. Time-overrun was ranked first (RII = 0.89), followed by cost-overrun (RII = 0.82), and a losing chance of funds from donors was ranked last (RII = 0.54).

Finally, the study identified seventeen methods for ROW problem minimization. The top five methods identified were: valuation of property prices should be based on current market values (RII = 0.93); considering reasonable, fair, and adequate compensation payment (RII = 0.92); avoiding compensation payment delays (RII = 0.91); providing training to all ROW staff to improve their skills (RII = 0.91); and good communication and relations with all parties during the planning, design, and scheduling phases (RII = 0.90).

5.2 RECOMMENDATIONS

In Jimma Zone various road construction projects are implemented with a purpose of addressing safely, quality and functional road facility. However, most of the road projects faced a number of challenges relating with right-of-way issues.

Therefore, based on the research findings, the following recommendations were made to reduce ROW issues and their associated effects on road construction projects in the Jimma zone.

- The compensation amount will be reviewed and adjusted continuously based on market value.
- Before displacing people from their original parcel, the government should provide basic infrastructure on the resettlement area or site.
- Establish incentive programs for property owners who settle early
- Get stakeholders involved at the early stages of project development. Before beginning ROW acquisition activities, adequate public participation is required.
- Allow the engineers and designers to work conjunctionally with ROW agents to engage public

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REFERENCES

Ababeker Jemal Mustefa (2015). Factors Affecting Time and Cost Overrun in Road Construction Projects in Addis Ababa. A Thesis Submitted to Addis Ababa University Institute of Technology.

Abera Legesse Yada and Fekadu Takele Yadeta (2016). Factors Affecting the Performance of Construction Project under Oromia Industry and Urban Development Bureau, Ethiopia. ABC Research Alert, Vol 4, No 2 (2016).

Aleithawe, Imad (2010). Acquisition Of Right Of Way For Highway Construction. A thesis submitted to the faculty of Mississippi State University, Department of Civil and Environmental Engineering, Mississippi State, Mississippi.

Amanuel Alemie Dessie (2019). Right Of Way Acquisition and Its Influence On Road Construction Project Schedule Performance The Case Of Projects Under Addis Ababa Road Authority. MSc. Thesis, St.Mary's University, School of Graduate Studies, Department of Project Management.

AASHTO (2004). Right of Way and Utility Guidelines and Best Practices, ASSHTO Standing Committee On Highways (SCOH), Washington, D.C.

Belachew Yirsaw Alemu. (2013). "Expropriation, Valuation, and Compensation in Ethiopia." Doctoral Thesis in Real Estate Planning, Department of Real Estate and Construction Management, School of Architecture and the Built Environment, Royal Institute of Technology (KTH), Stockholm, Sweden.

Belew Dagnew Bogale. (2016). "Socioeconomic Impacts of Road Development in Ethiopia." Doctor of Philosophy in Geography, College of Agriculture and Environmental Sciences, Department of Geography, University of South Africa.

Bhandari N, Dhital MR (2019). "Factors Causing Land Acquisition Problem and its Impacts on Project Implementation in Kathmandu Valley Road Expansion Project." Journal of Advanced Research in Construction and Urban Architecture, Vol.4 (3), pp. 21–26.

Caldas, C. H., Le, T., Gibson, Jr., G. E., and Thole, M. (2007a). Identifying Right-of-Way Requirements during the Project Development Process, Texas Department of Transportation Research Report 0-5478-1, Austin, TX.

Carlos H. Caldas, Zhanmin Zhang, Kara M. Kockelman, Khali R. Persad, Ragheb Al-Halabi, and Elizabeth Kincaid. (2011). Development of Best Practices for Right-of-Way Valuations and Negotiations in Transportation Projects. Transportation Research Forum Journal, Vol. 50 (3), pp. 1-20.

Chhavi Gupta and Chitranjan Kumar. (2020). A Study of Factors Causing Cost and Time Overrun in Construction Projects IJERT (International Journal of Engineering Research and Technology); 9(10): 202-206. https://www.ijert.org

David, J. (2016). Barriers to Right-of-Way Acquisition and Recommendations for Change, Construction Management and Technology Program, Institute for Transportation, Iowa State University, Minnesota Local Road Research Board, Minnesota.

E. Bingham (2010). Development of the Project Definition Rating Index (PDRI) for Infrastructure Projects MSc Thesis, Arizona State University, USA

ERA (2016). Final Revised Resettlement Action Plan (RAP), Feasibility and EIA Study, Jima to Chida Road Project.

F. Yadeta Bayissa. (2018). "Causes And Effects Of Delay In Oromia Roads Construction Projects Pertinent To Oromia Roads Authority Road Projects." A Thesis Submitted to Addis Ababa Science and Technology University

Girma Kassa Kumsa (2011). Issues of Expropriation: The Law and Practice in Oromia, MSc Thesis, Addis Ababa University, School of Law.

Haimanot Chalchissa (2021). Variation Order And Its Effect On Construction Project Performance: In The Case Of Road Construction Projects In Addis Ababa." St. Mary's University, Department of Project Management.

Haseeb, Jamal (2019). "What is the right-of-way?—Definition & Factors Affecting RoW." [Internet] on July 26, 2021. https://www.aboutcivil.org/right-of-way.

Hamidy, M. M. (2020). "Utility Impact Assessment of Road Projects in the State of Qatar." Doha, Qatar: International Conference on Civil Infrastructure and Construction (CIC 2020). DOI: https://doi.org/10.29117/cic.2020.0015

Henok Asrat (2020). Assessment of Time and Cost Performance Evaluation of Ethiopian Construction: A Case Study of Addis Ababa City Road Authority St. Mary's University, School of Graduate Studies, Department of Project Management.

Joseph Musyoki Kisavi. (2019). Critical Factors And Their Influence On Performance Of Road Construction Projects In Kiambu County, Kenya. MSc. Thesis, Kenyatta University, School of Business, Department Of Management Science.

Ludwig Rivera, Hilario Baguec, Jr., and Chunho Yeom (2020). "A Study on the Causes of Delay in Road Construction Projects across 25 Developing Countries." International School of Urban Sciences, University of Seoul, vol.5 (84). https://www.mdpi.com/journal/infrastructures.

Mamuye Busier, Emer T. Quezon, and Yosef Amare. (2017). "Causes of Delays During Construction Phase of Road Projects Due to the Failures of Contractor, Consultant, and Employer in Addis Ababa City Road Authority." International Journal of Scientific & Engineering Research, Vol. 8 (3): P.P. 15–25. http://www.ijser.org

Muhammad Sabri BinMusa. (2013). Impact of Site Issues For The Construction Projects. MSc.Thesis, Universiti Technology of Petronas, Malaysia.

Mukhtar, A., Bedard, C.and Fasio, P. (2000). Collaborative Planning and Scheduling of Interrelated Design Changes. Journal of Architectural Engineering; 6(2): P.P. 66-75.

Nigussie Wendmu Zengu. (2018). "Causes Of Project Delay And Cost Overrun In Enyi Construction." Addis Ababa University, College of Business and Economics.

Pavan pal, Dr. Mukesh Pandey, & O.P., Bhadaoriya. (2017). Factors Affecting Construction Cost and Time in a road project. International Research Journal of Engineering and Technology (IRJET); Vol. 4(8): PP 1561-1563.

Rahman RA, Radzi AR, and Saad MSH. (2020). Factors Affecting The Success of Highway Construction Projects: The Case of Malaysia. IOP Conf Ser: Master Sci Eng. 2020: 10.1088/1757-899x/712/1/012030

Richard Moeller, Joachim Pestinger, and Myron Frierson. (2002). "EUROPEAN RIGHT-OF-WAY AND UTILITIES BEST PRACTICES." U.S. Department of Transportation, National Cooperative Highway Research Program (Panel 20-36) of the Transportation Research Board, pp. 1-80.

Right-of-Way Handbook Volume I-III. (2016). Preliminary Right of Way Studies. New Mexico Department of Transportation, ROW Bureau.

S. Elong, L. Muhwezi, and J. Acai. (2019). "Assessment of the Challenges and Effects of Delays in Compulsory Land Acquisition on Road Construction Projects' Performance in Uganda." International Journal of Scientific & Engineering Research, Vol. 10 (9), pp. 1409–1426. https://www.researchgate.net/publication/336318946.

Shamble Gebrehiwot Tadewos, and Dixit Patel. (2018). "Factors Influencing Time And Cost Overruns In Road Construction Projects: Addis Ababa, Ethiopian Scenario." International Research Journal of Engineering and Technology, Vol.5 (1), pp.177-180.

Sintayehu Assefa, Zewudu Tefera Worke, Murad Mohammed. (2015). Stakeholders' Impact Analysis on Road Construction Project Management in Ethiopia: A Case of the Western Region. International Journal of Engineering and Technical Research, Vol. 3 (1), pp. 115–121.

Soni, D., and VK Punjabi (2018). "Delays In Project Due To Land Acquisition." International Research Journal of Engineering and Technology (IRJET) vol.5 (7): PP.1349–1353.

Temesgen Tegabu, (2015). Right of Way Risk Management of Road Construction Projects in Urban Areas, A Case Study of Addis Ababa. MSc. Thesis, AAU, School of Civil & Environmental Engineering, Construction Technology and Management.

T. Siraw Y. (2014). "Analysis of Factors Contributing to time overruns on Road Construction Projects under Addis Ababa City Administration," Addis Ababa University.

The Reporter Ethiopia, (2016). Right-of-way issues frustrate road contractors. https://www.thereporterethiopia.com/content/right-way-issuesfrustrate-road contractors.

Trending Le, B.E.; M.E., (2009). Improving Right-of-Way Acquisition in Highway Projects through Scope Definition and Management of Inherent Factors. Dissertation for the Degree of Doctor of Philosophy, The University of Texas at Austin.

The World Bank Document. (2018). Implementation completion and results report (IDA 45610). Ethiopia-Road Sector Development Program, to the federal democratic republic of Ethiopia.

Werku, Koshe, and K. N. Jha (2016). Investigating Construction Delay Causes in Ethiopian Construction Industries. Journal of Civil, Construction, and Environmental Engineering, Vol. 1 (1), pp. 18–29.

Wondwesen T. G. Michael. (2019). Assessment of Right of Way Conflict Management Practices of Road Construction Projects in Addis Ababa. Bahir Dar Institute of Technology, Department of Construction Technology and Management.

Yenealem Fentahun Kassa (2020). "Determinants of Infrastructure Project Delays and Cost Escalations: The Cases of Federal Road and Railway Construction Projects in Ethiopia." American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS), Vol. 63 (1): pp. 102-136. http://asrjetsjournal.org

Zunjarrao, A. R. (2017). Delay in time and rise in the cost of construction projects. International Journal of Engineering Sciences & Research Technology, vol.6(11), pp. 473-477. DOI: 10.5281/zenodo.1066214.

APPENDIX A

QUESTIONNAIRE

This questionnaire aims to assess the impact of right-of-way (ROW) problems on road construction projects in the Jimma zone. The research was conducted to fulfill the requirements for the degree of MSc in Construction Engineering and Management at Jimma University. This questionnaire is required to be filled in with exact relevant facts as possible. Your response is very important for the success of the study because all the information that you provide determines the analysis, conclusion, and recommendation of the research. Your input into the research outcome is crucial in this respect.

The confidentiality of this questionnaire will be maintained. All information provided in this questionnaire will be treated with strict confidentiality and used only for the academic research under consideration. Thank you very much for your time and cooperation.

Sincerely yours,

Mahfuz Mohammed

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MSc. in Construction Engineering and Management

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Definitions of Key Terms

Right-of-way (ROW) refers to the total land area acquired for the construction of the roadway.

A parcel is a piece of land that the government needs to acquire for a public project.

Appraisal (valuation) is the process of estimating the market value of land or property or the amount of damage payable to the owner (or the process of determining property value).

The acquisition is the process by which the state obtains legal possession or control of real property required for some aspect of public transportation infrastructure construction or improvement.

Stakeholders are individuals, groups, or organizations. It can be clients, consultants, contractors, suppliers, community leaders, and utility companies (ELPA, TELE, etc.). service providers in the road construction sector.

SECTION I: General Information

Please put (√) in the appropriate box (es) and fill in the blanks as appropriate.

1. Name of your Organization/Company:_____

2. Type of your Organization/Company:

   Client ☐ Contractor ☐ Consultant ☐

   Other, please specify:_____

3. Your current job position in the company/organization:

   Director ☐ Project Manager ☐ Coordinator ☐

   Site engineer ☐ Office Engineer ☐

   Other, specify:_____

4. Your experience in road construction projects

   < 4 years ☐ 4–8 yrs ☐ 8–12 yrs ☐ > 12 yrs ☐

5. Your educational level/ status:

   Diploma ☐ Degree ☐ MSc ☐ PhD ☐

6. Your educational profession:

   Engineering Related ☐ Construction Management ☐

   Project management ☐

   Other, please specify:_____

SECTION II: Causes of Right-of-Way (ROW) Problems

Based on your experience, evaluate how each of the following items contributes to (causes) right-of-way (ROW) problems. Please use the scale below. Where,

1 = Strongly disagree **2 = Disagree** **3 = Neutral**

4 = Agree **5 = Strongly Agree**

No.	Lists of the causes of the ROW problem	Scale				
		1	2	3	4	5
1	Low amount of compensation payment for property owners					
2	Unfair valuation systems or compensation estimations are not based on current market value.					
3	Slow obstructions clearance & utility relocation along the right-of-way					
4	Property owners refuse to leave their original parcel					
5	Lack of common schedule and guidance for stakeholders to work on ROW activities.					
6	Delays in delivery of appraisal report & delay in compensation payment					
7	Lack of communication and coordination between stakeholders					
8	Repeated ROW plan changes and revisions (scope & design change)					
9	Challenge/difficulty in the relocation of property owners					
10	Lack of stakeholder involvement early in the project development process					
11	Insufficient number of ROW staff or appraisers					
12	Poor relationship between the Appraisers (ROW agency) & property owners					
13	lack of experienced ROW personnel, unqualified fee appraisers					
14	Disagreements between appraisal reports (e.g., significantly different values for the same parcel)					
15	Property owners distrust the agency and/or disagree with appraised values					
16	Limited information provision to the public (e.g. price disclosure)					
17	lack of public awareness and too many complaints about ROW activities					
18	Conflicts of interests among the parties involved in RoW					
19	The courts restrict the ROW works due to claims from property owners					
20	The political environment of the country and Corruption					

Please specify if there are any factors that causes ROW problems in road projects?_____

_____

_____

SECTION III: Impacts of ROW Problems on Road Projects

Below is the list of impacts of the Right-of-Way problems. From your experience, evaluate the impacts of the ROW problems on the road construction projects. Please tick "✓" in the appropriate box. Where,

1 = Strongly disagree **2 = Disagree** **3 = Neutral**

4 = Agree **5 = Strongly Agree**

S.N	List of the impacts of right-of-way problems	1	2	3	4	5
1	Time overrun					
2	Cost overrun					
3	Dispute between parties					
4	Project termination					
5	Work motivation is reduced					
6	Creating social problems					
7	Distrust of Property Owners and Poor Communication					
8	The growth potential of our country's economy will be limited					
9	Losing chance of funds from donors					

Please indicate if there are any other Impacts of the ROW problem on road projects from your personal experiences._____

_____

_____

SECTION IV: Methods To Minimize ROW Problems

This section contains the suggested methods to minimize right-of-way problems in road construction projects. Please evaluate the importance or significance of the following lists based on your experience by using the 5-point Likert scale. Where,

1= Insignificant **2= Less Significant** **3= Significant**

4= High Significant **5= Extremely Significant**

No.	List of methods to minimize the ROW Problems	1	2	3	4	5
1	Consider a reasonable, fair, and adequate compensation payment					
2	Avoid unnecessary delays in compensation payment					
3	Encourage valuation of the property depending on current market values					
4	Provide for all basic needs of displaced families in their new settled area					
5	Establish incentive programs for owners who settle early					
6	Relocate utilities along the right-of-way as soon as possible.					
7	Create a legally binding policy that requires all stakeholders to work on ROW activities.					
8	Provide training to all levels of ROW staff to improve their skills					
9	Use a modern software system to manage ROW activity.					
10	Check and modify the current appraiser system.					
11	Communicate with all parties during the road project's planning, design, and scheduling.					
12	Involve key stakeholders early in the project development process.					
13	Provide a thorough understanding of the project for society.					
14	Provide the Designer with the necessary design input data					
15	Implement a realistic acquisition schedule to reduce delays due to design issues					
16	Solving disputes immediately with the assistance of team members					
17	Identifying problem areas, deficiencies, and deviations.					

Please indicate if there are any methods to minimize Right-of-way problem in road projects

_____

_____

Thank you for your time & cooperation!

KEY INFORMANT INTERVIEW

Company/organization name: _____

Position of respondent in the company: _____

1. **What are the main causes of the ROW problems during road construction projects in the Jimma Zone?**_____

   _____

   _____

   _____

   _____

   _____

   _____

   2. What are the influence/impacts of those cause on the construction of road projects?_____

   _____

   _____

   _____

   _____

   _____

   3. What are the possible solution or methods to reduce ROW problems?_____

   _____

   _____

   _____

   _____

   _____

APPENDIX B

Raw Data Collected by a Questionnaire Survey from 30 Respondents

Table A. 1: Ranking the Causes of ROW problem of the selected on-going road projects

No.	Causes for ROW problems	5	4	3	2	1	Mean	RII	Rank
1	Low amount of compensation payment for property owners	25	5	0	0	0	4.83	0.97	**1**
2	Unfair valuation systems or compensation estimations are not based on current market value.	17	10	3	0	0	4.47	0.89	**3**
3	Slow obstructions clearance & utility relocation along the right-of-way	15	12	2	1	0	4.37	0.87	**6**
4	Property owners refuse to leave their original parcel	19	10	1	0	0	4.60	0.92	**2**
5	Lack of common schedule and guidance for stakeholders to work on ROW activities.	14	10	5	0	1	4.20	0.84	**8**
6	Delays in delivery of appraisal report & delay in compensation payment	16	11	2	1	0	4.40	0.88	**5**
7	Lack of communication and coordination between stakeholders	11	12	5	1	1	4.03	0.81	**12**
8	Repeated ROW plan changes and revisions (scope & design change)	18	9	1	2	0	4.43	0.88	**4**
9	Challenge/difficulty in the relocation of property owners	12	11	6	1	0	4.13	0.83	**10**
10	Lack of stakeholder involvement early in the project development process	13	12	3	1	1	4.17	0.83	**9**
11	Insufficient number of ROW staff or appraisers	8	9	8	3	2	3.60	0.72	**16**
12	Poor relationship between the Appraisers(ROW agency) & property owners	7	11	6	2	4	3.50	0.70	**18**
13	lack of experienced ROW personnel, unqualified fee appraisers	14	8	5	2	1	4.07	0.81	**11**
14	Disagreements between appraisal reports (e.g., significantly different values for the same parcel)	14	11	3	2	0	4.23	0.85	**7**
15	Property owners distrust the agency and/or disagree with appraised values	9	9	7	2	3	3.63	0.73	**15**
16	Limited information provision to the public (e.g. price disclosure)	5	11	7	3	4	3.33	0.67	**19**
17	lack of public awareness and too many complaints about compensation activities	6	15	7	0	2	3.77	0.75	**13**
18	Conflicts of interests among the parties involved in RoW	4	8	9	5	4	3.10	0.62	**20**
19	The courts restrict the ROW works due to claims from property owners	6	14	5	1	4	3.57	0.71	**17**
20	The political environment of the country and Corruption	9	9	7	3	2	3.67	0.73	**14**

Where,

1 = Strongly disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

Table A. 2: Ranking the Effects of ROW problem on road projects

No.	Effects	5	4	3	2	1	Mean	RII	Rank
1	Time overrun	17	10	3	0	0	4.47	0.89	**1**
2	Cost overrun	10	14	5	1	0	4.10	0.82	**2**
3	Dispute between parties	4	8	7	8	3	3.07	0.61	**6**
4	Project termination	4	6	6	11	3	2.90	0.58	**7**
5	Work motivation is reduced	5	6	11	8	0	3.27	0.65	**5**
6	Creating social problems	5	10	6	7	2	3.30	0.66	**4**
7	Distrust of Property Owners and Poor Communication	8	10	6	5	1	3.63	0.73	**3**
8	The growth potential of the economy will be limited	5	5	4	12	4	2.83	0.57	**8**
9	Losing chance of funds from donors	4	3	8	10	5	2.70	0.54	**9**

Table A. 3: Ranking the methods to minimize ROW problems on road projects

No.	Methods to minimize the ROW Problems	5	4	3	2	1	Mean	RII	Rank
1	Consider a reasonable, fair, and adequate compensation payment	20	9	0	1	0	4.60	0.92	2
2	Avoid unnecessary delays in compensation payment	18	11	1	0	0	4.57	0.91	3
3	Encourage valuation of the property depending on current market values	20	9	1	0	0	4.63	0.93	1
4	Provide for all basic needs of displaced families in their new settled area	10	16	4	0	0	4.20	0.84	12
5	Establish incentive programs for owners who settle early	15	12	2	1	0	4.37	0.87	11
6	Relocate utilities along the right-of-way as soon as possible.	9	12	6	2	1	3.87	0.77	13
7	Create a legally binding policy that requires all stakeholders to coordinate ROW activities.	17	10	2	1	0	4.43	0.89	7
8	Provide training to all levels of ROW staff to improve their skills	18	9	3	0	0	4.53	0.91	4
9	Use a modern software system to manage ROW activity.	17	9	3	1	0	4.40	0.88	10
10	Check and modify the current appraiser system.	16	12	2	0	0	4.47	0.89	6
11	Communicate with all parties during the road project's planning, design, and scheduling.	16	13	1	0	0	4.50	0.90	5
12	Involve key stakeholders early in the project development process.	18	7	5	0	0	4.43	0.89	7

13	Provide a thorough understanding of the projects for society.	17	12	1	0	0	4.43	0.89	7
14	Provide the Designer with the necessary design input data	1	8	11	7	3	2.90	0.58	17
15	Implement a realistic acquisition schedule to reduce delays due to design issues	6	16	6	2	0	3.87	0.77	13
16	Solving disputes immediately with the assistance of team members	4	15	9	1	1	3.67	0.73	15
17	Identifying problem areas, deficiencies, and deviations.	6	7	6	6	5	3.10	0.62	16