ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

MASTER OF BUSINESS ADMINSTRATION PROGRAM in FINANCIAL SERVICES Insurance Stream

Final Project

On

Factors Influencing Purchasing Intentions of Contractors All Risk Insurance in the Construction Industry, in the case of Addis Ababa City

Advisor: Demeke Chimdessa (PhD)

For the fulfillment of MBA in Financial Services, insurance stream

Sossina Deribssa

June, 2024

Addis Ababa

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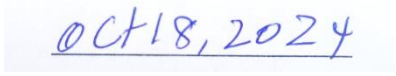
Approved by Boards of Examiners:

Demeke Chimdessa (PhD)		
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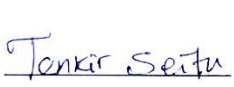		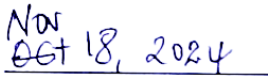
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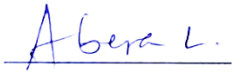	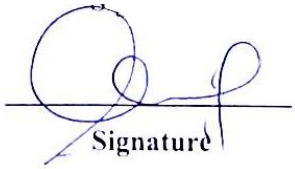	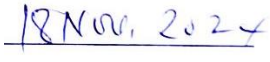
Internal Examiner:		**Date**

Declaration

I, Sossina Deribssa, declare that this project is my original work and that it has not been presented to other universities for a similar or any other degree award and all sources of materials used for the project have been appropriately acknowledged.

Sossina Deribssa

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ABSTRACT

Utilizing the Theory of Planned Behavior as a framework for analysis, this study explores key factors that are affecting purchasing intentions of Contractors All Risk insurance, such as attitudes towards CAR insurance, subjective norms influencing CAR purchasing decisions, perceived behavioral control over purchases and claims management processes, risk perception and past experiences with CAR insurance. The Objectives of the study was to identify key factors that affect contractors' purchasing intentions of CAR Insurance and to provide practical insights for enhancing CAR insurance practices and coverage within the construction sector. The study utilized exploratory research design using quantitative and cross-sectional data. Data was collected through a survey methods with questionnaires distributed among 69 project directors/managers and contract managers working in the construction industry in Addis Ababa City. Snowball sampling technique used to address participants. Through logistic regression analysis key psychological and situational variables were identified that significantly impact purchasing intentions. The findings reveal that Attitude, Perceived Behavioral Control and Risk Perception have a strong positive relationship with purchasing CAR intention. Conversely, Subjective Norms and Past Experience did not show significant effects on purchasing intentions and were thus rejected as influential factors. Future research should aim for larger sample sizes across multiple cities within Ethiopia for broader insights into contractor behaviors related to risk management via CAR insurances.

KEYWORDS: KEYWORDS: Contractors All Risk Insurance, Purchasing Intention, Theory of reasoned action Attitude, Subjective norm, Perceived behavioral control

ACRONYMS:
ALOP - Advance Loss of Profit
CAR - Contractor's All Risks
CGL - Commercial General Liability
DSU - Delay in Start-up
FIDIC - International Federation of Consulting Engineers
TPB - Theory of Planned Behavior

ABBREVIATIONS:
BG - Building Contractors
GC - General Contractors
RC - Road Contractors
SC - Specialized Contractors

CHAPTER 1: INTRODUCTION

1.1 Background of the study

Construction industry plays a significant role in the economy, which contributes at least 15% to the Gross National Product of both developed and developing countries (Dinku, 2000). Construction industry is crucial for economic development globally, especially in developing countries like Ethiopia, where it serves as a key driver of growth (Gashahun, 2020). Ethiopia is currently experiencing significant infrastructure development with projects including new airfields, roads, high-rise buildings, and factories.

The findings of Tadesse et al. (2016) evidenced that the construction industry has faced significant obstacles related to project management, safety, and risk mitigation. Research indicates that around 1.8 million individuals are engaged in construction activities in Ethiopia, with occupational accidents ranking the second highest, after transportation accidents, with approximately 1.9 million cases reported (Bahata, 2019). These risks can lead to consequences such as loss of life, personal injury, material damage and financial losses (Dinku, 2000).

These challenges have emphasized the importance of effective risk management strategies and insurance coverage to safeguard construction projects and stakeholders from potential losses and liabilities. Dinku (2000) emphasizes the critical importance of having appropriate insurance policies in the construction industry to protect the client's interests, ensure quality and safety standards, safeguard workers and the public, and effectively utilize national resources. Ethiopian construction industry has very unsatisfactory performance in safety, risk management, and time management aspects, which indicates the need for improvement in these critical areas to enhance project outcomes and efficiency (Tadesse et al., 2016). This emphasizes the importance of addressing the factors affecting the adoption of CAR insurance to improve risk management practices in the industry.

The FIDIC conditions of contract mandate that Contractors must have this policy in place, jointly naming the client and the contractor for coverage (Dinku, 2000). Therefore, it is essential to understand the factors influencing the adoption of CAR insurance so that contractors by knowing the factors that affects the contractors' adoption of CAR insurance to encourage contractors to

transfer those constant risks of substantial financial harm from accidents and liabilities in their construction projects mitigate these risks effectively. The study conducted by Tadesse et al. in 2016 highlighted the unsatisfactory performance of the Ethiopian construction industry in safety, risk management, and time management aspects, indicating a need for improvement in these critical areas to enhance project outcomes and efficiency. This emphasizes the importance of addressing the factors affecting the adoption of CAR insurance to improve risk management practices in the industry (Tadesse et al., 2016).

The research findings of Kikwasi, G. (Year) aligns with Perera et al.'s argument from 2010 that CAR insurance is widely accepted globally as a comprehensive insurance cover commonly used in construction projects. This suggests that CAR insurance is recognized as a valuable and widely utilized form of insurance within the construction industry, providing coverage for various risks associated with construction activities.

The research focuses on identifying the specific factors that influence the adoption of CAR insurance in the construction industry in Addis Ababa. By exploring these factors, the study aims to provide practical insights and recommendations for enhancing insurance practices and promoting a culture of risk management within the construction sector in Addis Ababa. This research aims to bridge the gap between past challenges and present-day needs, providing a comprehensive understanding of the factors affecting the adoption of CAR insurance and paving the way for informed strategies to enhance risk management practices in the sector.

1.2 Statement of the Problem

The construction industry in Ethiopia is a vital contributor to economic growth and development; however, it faces significant risks and uncertainties during project execution. This sector is characterized by high hazards, with accidents and injuries being prevalent due to its inherent complexities (Esubalew & Wondemagne, 2022). Alarmingly, construction-related incidents rank as the second leading cause of injuries in Ethiopia after automotive accidents. The need for effective risk management practices becomes paramount in this context particularly through the adoption of Contractors All Risks (CAR) insurance—to mitigate financial losses stemming from these risks while enhancing overall safety within projects.

CAR insurance serves as an essential policy that provides comprehensive coverage against various liabilities associated with construction activities. It offers contractors financial protection against potential damages related to their operations on-site while ensuring legal compliance (FasterCapital, 2024). Despite its critical importance globally recognized among insurers and stakeholders alike (Perera et al., 2010), there remains a low adoption rate among Ethiopian contractors when it comes to CAR insurance policies. Research indicates that many contractors primarily acquire such insurances merely for fulfilling legal or contractual obligations rather than engaging in comprehensive risk management strategies (Liu et al., 2018). This limited approach leaves them vulnerable to substantial risks without adequate protection measures in place.

Dinku (2000) indicates that widespread underutilization of available insurance products within Ethiopia's construction landscape since many do not fully appreciate the role of insurance despite existing dangers of construction. Moreover, although CAR insurance requirements are mandated throughout project lifecycles according to regulations aimed at safeguarding works during constructions phases, actual adherence often falls short. This is because mostly there is insufficient understanding about how CAR insurance policy functions effectively and because of prevailing market inefficiencies including delays encountered during claims processing which further deter contractor engagement with such necessary tools for managing operational threats (Dinku, 2000).

Notable studies surrounding construction insurance have explored various aspects related to risk management and insurance practices among contractors. Dinku (2000) examined whether relevant construction insurance policies were purchased by contractors, while Bahata (2019) and Melese (2022) analyzed risk attitudes, perceptions, and management strategies employed by contractors in different sectors of the construction industry. Additionally, Debela (2014) and Meshesha (2021) assessed construction risk management practices as well as the utilization of construction insurance as a tool for transferring risks within these sectors. Furthermore, Gashahun (2020) focused on assessing current challenges faced during the implementation of insurance practices within Ethiopian construction industries. The work conducted by Mitikie et al., 2017 emphasized understanding how risks impact civil work performance but did not delve into specific purchasing behaviors regarding contractor's all-risk products.

Research such as that from Ibrahim et al., (2021) explored factors influencing acceptance rates concerning Contractors All Risks takāful products among Bumiputera contractors additionally, research conducted by Liu et al., 2018 developed an extended theory model addressing contractor behavior toward purchasing decisions regarding CAR Insurance; however, it is based solely on China's unique market dynamics which differ significantly from those present in Ethiopia.

Despite these existing works contributing valuable insights into various dimensions associated with managing risks via insurances like CAR policies, there remains a notable gap. No prior research has explicitly focused on identifying factors influencing contracting firms' intentions specifically toward acquiring CAR Insurance within Addis Ababa's construction industry using appropriate theoretical frameworks.

This study aims to fill this gap by developing a theoretical model to explore what influences contractor purchasing intentions concerning CAR Insurance specifically within the Addis Ababa construction industry. By examining elements like attitudes towards purchasing decisions, subjective norms affecting choices made based on peer influences/industry standards/professional advice, risk perceptions and past experiences. The goal here is twofold: firstly providing insights into what behaviors significantly influence the purchasing intentions of Contractors; secondly offering recommendations to improve awareness around best practices concerning adoption of Contractor All Risk Insurances. By examining these elements this research seeks to offer valuable contributions towards enhancing risk management practices in Ethiopian construction projects.

1.3 Research Questions

- How contractors attitude towards CAR insurance influence their purchasing intentions?
- How do contractors perceive risks associated with construction projects in Ethiopia?
- In what ways do past experiences with CAR insurance affect contractor intentions towards adopting such coverage?
- What role do subjective norms from peers and industry standards play in shaping contractors decisions regarding purchasing CAR Insurance?

1.4 OBJECTIVES OF THE STUDY

1.3.1 General Objective

General objective of the research is to investigate factors significantly influence the purchasing intentions of CAR insurance practices among contractors in Addis Ababa, by utilizing the Theory of Planned Behavior as a framework for analysis so as to help the policy makers, insurers and construction stakeholders to promote awareness within the construction industry regarding CAR insurance practices.

1.3.2 Specific Objectives

- Evaluate contractors' attitudes towards purchasing CAR insurance by examining their beliefs about its benefits and drawbacks.
- Assess perceived behavioral control among contractors regarding their understanding of policies and decision-making processes related to CAR insurance purchases.
- Identify subjective norms that influence contractors' purchasing intention of CAR insurance based on peer influences, industry standards, and regulatory requirements.
- Identify contractors' perception towards construction risks influence their intentions towards CAR insurance purchasing.
- Analyze how contractors past experience with CAR insurance impacts their purchasing intentions of CAR policy.
- Provide recommendations and practical insights for enhancing CAR insurance practices and promoting insurance coverage within the construction sector in Ethiopia.

1.5 Scope and Limitation of The Study

Scope of the Research: The research is involved in exploration of CAR insurance purchasing behavior among contractors in the construction industry, with a specific focus on those based in Addis Ababa. The study aims to gain a comprehensive understanding of the significant factors which influences the contractors' decisions related to the purchasing of CAR insurance. The choice of research approach, particularly focusing on the problem related to the purchase decision of CAR insurance with a binary outcome (buying or not buying).

Limitations of the Research:

Scope of Stakeholders: Due to time constraint the study's scope was limited to contractors involved in the construction industry. But the purchasing of CAR insurance in construction projects, not only influenced by contractors, but also project owners, the consulting engineer/architect and insurers which are key stakeholders in the construction industry. Therefore, a broader consideration of all stakeholders involved in the construction industry could provide a more holistic view of the insurance purchasing landscape, thus presenting an opportunity for further research to bridge this gap.

Geographical Limitation: The research was conducted solely in Addis Ababa, potentially impacting the generalizability of the findings beyond this specific geographical area. This limitation highlights the need for caution when applying the study's findings to a broader context.

Methodological Constraints: The choice of research approach, particularly focusing on the problem related to the purchase decision of CAR insurance with a binary outcome (buying or not buying), may present limitations in fully capturing the nuances and complexities of insurance purchasing behavior. This highlights the need for future research to delve into the extent and amount of CAR insurance purchases for a more comprehensive understanding.

1.6 Significance of The Study

The findings this research aims to inform policymakers, construction companies, and insurance providers about the current state of CAR insurance purchasing behaviors and suggest pathways for enhancing the adoption of CAR insurance to improve project outcomes and reduce vulnerabilities in the construction industry. The following points highlight the significance of this study:

1. Understanding Consumer Behavior: - The research provides valuable insights into how Attitudes, Subjective Norm, Perceived behavioral control, Risk perception and Past Experience influence contractors' decisions to purchase CAR insurance. This understanding helps insurers tailor their products and marketing strategies effectively.
2. Guiding Insurance Product Development: - For insurers, these insights can inform product development strategies that align with contractors' preferences and requirements.

Understanding what drives contractors to purchase insurance allows insurers to design policies that address specific concerns related to risk management in construction projects. This enhances market understanding and also improves the relevance of insurance offerings within the industry.

3. Informing Policy Decisions: - Policymakers can use these findings to advocate for regulatory frameworks that support a culture of risk management through mandatory or incentivized adoption of CAR insurance among contractors working on construction projects. By aligning regulations with industry needs identified through this study, policymakers can contribute towards building a more resilient construction sector in Ethiopia.
4. Enhancing Risk Management Practices: - The study highlights how improving perceptions around risk management through education could lead to higher adoption rates of necessary insurances like CAR Insurance which is crucial for protecting investments in construction projects.
5. Contribution To Academic Literature: - It adds empirical evidence regarding consumer behavior related specifically towards contractor's all-risk (CAR) insurances, contributing knowledge base available within academic circles while not only enrich existing literature but also opening avenues for future studies exploring similar themes across different contexts.

CHAPTER 2: LITERATURE REVIEW

2.1 General

2.1.1 Risk in Construction Industry

In recent years, there has been a growing interest in the concept of risk, with the understanding that uncertainties are inherent in our society. Scholars like Akintoye and Macleod have emphasized that risk is pervasive in all human activities, particularly in construction (Akintoye & Macleod, 1997) industry. The construction industry faces higher levels of risk and uncertainty compared to many other industries due to the complex nature of construction projects involving various phases, diverse workers, and the use of a wide range of equipment (Perera & Rameezdeen, 2010) and (Bunni, 1991). Risk management strategies play a crucial role in mitigating potential negative outcomes associated with risks. Risk can impact productivity performance quality costs as well as time schedules within construction projects (Praja et al., 2023). While having a well-thought-out plan skilled personnel are essential for project success; various factors known as project risks can influence outcomes (Bahata et al., 2019). Understanding managing these risks effectively is vital for successful execution within Construction Projects.

In the construction industry, risk refers to potential threats or opportunities that can impact project objectives like cost, schedule, and quality. It involves uncertainty about events that could affect project goals, leading to the possibility of failure, loss or undesirable outcomes (Gashahun et al., 2020) and (Musundire & Aigbavboa 2015). Risk management in construction aims to address uncertainties and mitigate potential negative impacts on project success. Effective recognition and management of these risks are crucial for navigating the unique challenges presented by construction operations. Various parties involved in Construction sector such as clients, consultants, contractors, subcontractors, insurers, and suppliers encounter different types of risks some unique, others shared among multiple parties (Perera & Rameezdeen, 2010). Managing these risks is essential for achieving project objectives like timely completion staying within budget meeting performance standards in Construction projects (Khosravi & Anari, 2020). This emphasizes importance understanding managing risks effectively mitigating potential damages caused by unforeseen risk events.

The emergence of new risks in construction projects due to advancements in technology, changes in implementation methods, and evolving plans underscores the importance of implementing effective mechanisms, particularly through engineering insurances, to safeguard investments and manage these new risks (Khosravi & Anari, 2020). Understanding and addressing construction risks through robust risk management procedures such as risk identification, analysis, and control are crucial for mitigating the impact of unpredictable events and optimizing project outcomes (Perera & Rameezdeen 2010). This process aids in comprehending the sources and types of risks evaluating their potential impact considering different risk management strategies making decisions on how to handle them effectively whether by transferring them or retaining internally (Perera & Rameezdeen, 2010).

The success of a project heavily relies on effectively managing associated risks as highlighted by Akintoye & Macleod (1997) who discuss risk response as allocation. The attitude towards responding to these inherent business venture-related challenges plays a vital role ensuring success efficiency within projects or business operations. Musundire & Aigbavboa (2015) discuss inherent business venture-related challenges especially within Construction industry where substantial resources are invested with expectation financial returns. Risk Management is emphasized crucial achieving Project Success they also highlight evolving Construction sector South Africa emphasizing need contractors manage Risks safeguard clients from potential losses amidst changing Business landscape.

2.1.2 Types of Risk Involved In Construction Industry

Based on the research conducted by Queen & Satheesh in 2018, various types of risks are involved in the construction industry that can impact project success. These include:

1. **Environmental Risks**: Environmental risks in the construction industry encompass natural disasters like earthquakes or floods, weather variations affecting construction schedules, and pollution generated during construction activities (Queen & Satheesh, 2018). These risks pose challenges to project completion and require proactive risk management strategies to mitigate potential negative impacts on the project timeline and budget.
2. **Technical Risks**: Technical risks in the construction industry involve uncertainties related to resource availability, material access, site investigation adequacy, and design completeness

(Queen & Satheesh, 2018). If not effectively managed these technical risks can lead to project delays cost overruns quality issues Addressing technical risks through thorough planning resource management design validation is crucial for successful execution within Construction sector.

3. **Financial Risks:** Financial Risk encompasses delays from clients unexpected increases staff benefits unforeseen spikes raw material prices fluctuations estimated finances compared actual costs (Queen & Satheesh, 2018)These financial-related challenges can impact budgets timelines overall profitability underscoring importance effective risk management strategies insurance coverage mitigate potential financial losses Construction projects

4. **Construction Risks**:- Disputes between laborers damage individuals property changes sequences unavailability fluctuation quantities worker safety concerns categorized as Construction related Challenges (Queen & Satheesh, 2018)These factors have potential influence Project Timelines Budgets Safety highlighting significance effective Risk Management Strategies Insurance Coverage safeguard against liabilities ensure Project Success Understanding addressing these inherent Industry-specific Challenges essential Contractors navigate complexities safeguard unforeseen obstacles

2.2 Construction Insurance

Risk transfer and insurance mechanisms play a crucial role in managing uncertainty and mitigating risks in construction projects. The concept of insurance involves transferring risks to insurers to mitigate potential losses, promoting economic stability and facilitating investment activities. Insurance creates security and risk management within societies, contributing to overall economic growth (Perera & Rameezdeen, 2010). It is crucial in mitigating the impact of threats on various activities by providing solutions for disruptions that can have far-reaching consequences on individuals and institutions. By offering stability, assurance, and risk mitigation for individuals and businesses, insurance plays a significant role in economic growth by managing uncertainties and promoting investment (Perera & Rameezdeen, 2010).

Organizations can better navigate uncertainties and protect themselves from potential financial losses by transferring risks through insurance (Liu et al, Year). Construction firms often manage risks through methods like insurance, subcontracting, or modifying contract conditions, with

insurance being a commonly used risk transfer method in industries like construction in countries such as Nigeria and Sri Lanka (Perera & Rameezdeen, 2010) and Musundire & Aigbavboa (2015). Insurance is defined as the transfer of potential loss from one entity to another in exchange for a premium, aiding in risk management by recognizing and reducing potential risks.

Akintoye and Macleod (1997) observed that construction companies in the industry primarily focus on risk transfer as a strategy for managing risks, using methods such as insurance and subcontracting. This approach involves shifting responsibility for managing risks to external parties rather than retaining them internally. The importance of mitigating potential losses by transferring certain risks within the construction sector is highlighted due to uncertainties like accidents, injuries, property damage, and unforeseen events that can disrupt project progress. Construction insurance plays a crucial role in providing financial protection against contingencies and liabilities in construction projects (Queen & Satheesh 2018).

Projects involving new technologies or complex organizational structures are at higher risk of experiencing losses compared to traditional works due to their innovative nature. These risks are more prevalent in dynamic construction projects than static property risks. Liu et al., emphasize the significance of effective risk management strategies including insurance within the construction industry given these complexities present in modern-day constructions works (Liu et al., Year). It is essential for firms operating within this sector to adopt robust approaches towards identifying potential threats while implementing adequate measures such as comprehensive insurances policies aimed at safeguarding against any eventualities during project execution.

Construction insurance plays a crucial role in ensuring project success by providing financial protection against losses from events like natural disasters (Liu et al, Year and Queen & Satheesh, 2018). Various methods such as transferring responsibility to another party, sharing risks through contracts, insurance, or partnerships, and obtaining insurance for specific risks like political risks and force majeure events are highlighted as effective risk mitigation measures in construction projects (Liu et al, Year). However, practitioners often lack a clear understanding of how to allocate risks and effectively manage them through insurance, leading to a lack of attention to this important aspect of risk mitigation in the construction industry. This emphasizes

the need for better education and awareness among stakeholders to optimize the benefits of insurance in managing construction-related risks (Queen & Satheesh, 2018).

In construction projects, multiple insured parties such as the owner/principal, contractor, sub-contractors, financiers, and suppliers/vendors collaborate to manage risks effectively for successful project completion within budget (Liu et al., Year). These projects face interconnected risks including construction/erection risks and property/personal injury liabilities that necessitate comprehensive risk management strategies. Unlike property insurance policies that renew annually, construction insurance policies are project-specific without automatic renewal each year. Understanding and addressing diverse project risks is crucial for all involved parties to work together towards minimizing these risks for successful outcomes in construction projects (Liu et al., Year).

The practice of transferring construction risks into an insurance policy is a common approach globally (Perera & Rameezdeen, 2010). Insurance related to construction projects typically falls into two main categories: property insurance and liability insurance. Recently, there has been an expansion to include coverage for business interruptions during construction, known as Delay in Start-up (DSU) or Advance Loss of Profit (ALOP). This extension aims to protect against financial losses due to delays in project completion, offering additional safeguards beyond traditional property and liability coverage in the construction industry (Liu et al, Year).

The role of construction insurance in risk management within the construction industry is paramount, encompassing coverage for financial losses, product liability, public liability, and legal expenses (Queen & Satheesh Kumar, 2018). Contractors play a crucial role in effectively managing risks during projects, often transferring these risks to insurance entities or subcontractors (Liu et al, Year). Understanding the diverse insurance policies available, such as Material Damage, Materials in Transit, Workmen's Compensation, Motor insurance, Damage to Constructional Plant, Third Party Liability, and Professional Indemnity, is essential for contractors to mitigate risks effectively and ensure project success by safeguarding against potential financial losses and liabilities.

2.2.1 Construction Industry Stakeholders

In the construction industry, stakeholders such as clients, contractors, and insurers possess distinct risk perspectives aligned with their interests and priorities. Clients prioritize timely and budget-compliant project completion, contractors emphasize profitability, and workers focus on health and safety. Effective risk management necessitates understanding these diverse viewpoints to allocate risks to the most suitable party for successful project execution, with construction insurance serving to protect the interests of all involved stakeholders throughout the project lifecycle. (Liu et al, Year).

Clients: Clients play a crucial role in the construction industry as they ultimately bear the financial responsibility for the project. Understanding and meeting the clients' needs and expectations is essential. Clients initiate the risk management process and collaborate with contractors throughout the construction stages to achieve their objectives related to cost, time, and quality (Liu et al, Year). Edwards (1995) highlighted that promoters, such as financiers or clients, aim to achieve a reasonable rate of return while considering the impact of estimated cost, benefits, and timing changes on that return. The traditional perspective suggests that transferring more risk away from the client can enhance budget security, but this approach should be weighed against the total cost of transferring those risks. Balancing risk transfer with associated costs is crucial for ensuring financial stability and project success.

The main risks faced by clients in construction projects include failure to secure funding, delays in progress payments, increased government administrative costs, land acquisition challenges, unavailability of client-provided materials, changes in project requirements, conflicts among involved parties, and project delays. These risks can result in cost overruns, poor project quality, the need for frequent repairs, project abandonment, and wasted investments, highlighting the importance of effective risk management strategies in construction projects to mitigate these potential negative outcomes (Liu et al, Year).

Contractors: In construction projects, contractors play a vital role in effectively managing risks to ensure project success. They are responsible for handling risks such as unforeseen events and must allocate risks to the party best equipped to control and bear them. By aligning risk allocation, considering factors like weather and subcontractor performance, and implementing

appropriate risk management strategies, contractors can mitigate misunderstandings and potential project failures, ultimately contributing to project success. To manage these risks effectively, contractors must consider factors like insurance obligations, transferring risks to subcontractors or insurers, and implementing risk management strategies based on their capabilities and responsibilities (Liu et al, Year).

Liu et al (Year) explains that in construction projects, risks can vary from insurable risks like fire and theft to risks that can be transferred to subcontractors or shared with clients, such as delays due to bureaucracy. Contractors must make decisions on whether to retain, reduce, transfer, or avoid these risks through a systematic risk management process to improve their chances of dealing with and minimizing the impact of potential risks effectively.

In the construction industry, contractors use insurance as a tool to transfer risks and responsibilities outlined in contracts to insurance companies. This process helps in managing risks effectively and is a crucial component of an integrated risk management system. By ensuring the correct allocation of risks through insurance contracts, contractors can protect themselves and their clients from potential financial losses and liabilities. It is crucial for contractors to ensure that insurance policies are accurately tailored to the specific project requirements and construction contracts to avoid gaps in coverage. Contractors should be knowledgeable about different construction insurance policies and select the right insurer based on factors such as financial strength and market reputation to secure appropriate insurance coverage (Liu et al, Year).

Insurers: In the realm of construction projects, insurers play a critical role in assisting contractors in effectively managing risks. Insurers bring their expertise to the table by helping identify potential risks, working towards reducing their likelihood, and offering insurance coverage that aligns with the safety measures implemented by the insured parties. The willingness of insurers to provide such coverage not only benefits contractors but also reflects positively on their dedication to ensuring safety, health, and environmental protection within the construction industry (Liu et al., Year).

Khosravi & Anari (2020) highlight how insurers analyze and evaluate risk levels in insurance projects based on various factors including project type, technical aspects involved, and

professional expertise of contractors engaged in the project execution process as well as considering potential natural disasters like earthquakes or floods. This comprehensive risk assessment is crucial for determining appropriate insurance coverage tailored to specific project needs. The risks associated with engineering projects can be broadly categorized into simple construction risks encompassing residential buildings; administrative and commercial complexes; industrial plants; warehouse buildings; hotels; entertainment venues cultural centers etc., while civil engineering operations entail building bridges dams tunnels ports subways airports among others.

Rejda (2011) underscores that it is imperative for insurers to thoroughly assess these diverse types of risks inherent in engineering projects so they can offer suitable coverage options that effectively manage potential liabilities. By collaborating closely with insurers who possess specialized knowledge about risk management strategies within construction contexts - contractors are better equipped at navigating uncertainties while safeguarding against unforeseen events throughout different phases of a project's lifecycle. Perera & Rameezdeen, (2010) in their study revealed that while there are multiple insurance covers available for risk treatment in construction, stakeholders often do not fully utilize these covers, indicating a gap in risk management practices within the industry. Perera et al. (2010) highlighted the use of insurance as a common risk management strategy in the Sri Lankan construction industry.

2.3 Types of Construction Insurance

Builders Risk Insurance: This specialized insurance provides coverage for the value of a building under construction in case of damage, protecting the financial interests of project stakeholders, including property owners, contractors, and lenders, from potential losses due to unforeseen events like fire, vandalism, or natural disasters.

Commercial General Liability (CGL) Insurance: Provides coverage for third-party liability claims related to bodily injury or property damage resulting from an occurrence. Excess/Umbrella Liability Insurance supplements CGL coverage by providing additional liability protection beyond the limits of the primary policy.

Construction All Risks CAR/Erection All Risks (EAR): provides comprehensive coverage for potential physical loss or damage to materials, equipment, fixtures, and temporary structures

during construction projects. It safeguards against a wide range of risks that can occur throughout different phases of a construction project, offering financial protection in case of unforeseen events impacting the construction process. CAR insurance is designed to protect against property damage, accidents during construction, injuries to subcontractors, and various other risks, providing a broad level of protection for construction endeavors as explained by Perera et al. (2008) and Musundire, S., & Aigbavboa, C. (Year), Kikwasi, G. (Year).

Workers' Compensation: provides coverage for employees who are injured or develop occupational illnesses while carrying out their job responsibilities. This type of insurance offers financial assistance for medical treatment, lost wages, and rehabilitation expenses resulting from work-related incidents. It is a crucial safety net mandated by law to ensure that both employees and employers in the construction industry are financially protected and supported in case of workplace injuries (Queen & Satheesh 2018).

Employer's Liability Insurance: Offers extensive coverage for employee injuries or fatalities not covered by worker's compensation, safeguarding both the employer and employees in cases where legal action is pursued due to workplace injuries.

Professional Indemnity Insurance: Provides coverage for contractors with design responsibilities, protecting them against liability resulting from professional negligence under design and build contracts.

Contractors Equipment Coverage: Specifically tailored to protect contractors' equipment, safeguarding against potential damages or losses to tools and machinery used during construction projects.

Product Liability: refers to the legal responsibility of a company or individual to compensate third parties for any harm or damage caused by their products. This type of insurance coverage is crucial for businesses to protect themselves from potential lawsuits and financial losses arising from product-related incidents. Product Liability insurance provides coverage for legal costs, settlements, and damages in case a product causes harm to consumers or users (Queen & Satheesh 2018).

Public Liability insurance: provides coverage for the legal liability of a business to pay compensation to third parties for bodily injury or property damage arising from the business

activities of the insured. This type of insurance is crucial for protecting a business from potential financial losses and legal claims that may arise from accidents or incidents involving third parties on the business premises or as a result of the business operations (Queen & Satheesh 2018).

The Standard Fire and Special Perils Insurance: policy provides coverage for both movable and immovable properties against a wide range of unforeseen perils. These perils include accidental fire, lightning strikes, explosions, manmade events like riots, natural disasters such as storms and floods, as well as damage caused by various other factors impact by vehicles. This insurance contract safeguards against a diverse set of risks that could lead to property damage or destruction, offering financial protection in case of such events (Queen & Satheesh 2018).

Marine insurance: specifically marine cargo insurance, provides coverage for loss or damage to goods while in transit via various modes of transportation such as rail, sea, road, air, or post. This type of insurance compensates the owners for financial losses incurred due to unforeseen events during the transportation of goods, offering protection and financial security in the event of damage or loss. Marine insurance plays a crucial role in risk management for businesses involved in international trade and logistics by mitigating potential financial risks associated with the transportation of goods (Queen & Satheesh 2018).

Burglary insurance: provides coverage against losses or damages to property and financial losses resulting from illegal entry and theft by burglars. This type of insurance is designed to protect individuals or businesses from the financial impact of burglary incidents, offering compensation for the losses incurred due to unauthorized access and theft on the insured premises. In the context of the construction industry, understanding and selecting appropriate insurance policies, such as burglary insurance, is crucial for risk management and ensuring financial protection against potential threats (Queen & Satheesh 2018).

2.4 Contractors' All Risks (CAR) Insurance

The historical background and development of CAR Insurance can be traced back to the establishment of the first engineering insurance company in 1858 following an explosion incident in Manchester City. The evolution of engineering insurances, with the introduction of policies in Iran in the early 1960s, has been influenced by German insurance companies like

Munich Re. The majority of common insurance policies in this field are adaptations of the main insurance policies established by these pioneering companies (Khosravi & Anari, 2020).

Originating in the late 1920s, CAR insurance covers both property damage and liability for third-party claims in construction projects. It provides essential coverage for engineering projects involving building and civil engineering works, offering a broad safety net for construction projects. The policy aims to simplify the insurance needs of construction projects by combining coverage for construction works and machinery erection under a single policy (Swiss Re).

Construction and erection projects often require heavy and specialized machinery like tunnel boring machines, earthmoving equipment, cranes, pumps, and air compressors to complete tasks efficiently. These types of equipment can be insured through specific endorsements under policies known as Contractors All Risks (CAR), Erection All Risks (EAR), or Contractors Works All Risks (CWAR). These endorsements provide coverage for potential damages or losses that may occur while using this equipment on construction sites (Swiss Re).

In the South African construction industry, construction risk management involves various methods to mitigate risks, with insurance being a commonly used risk transfer mechanism. Specifically, the contractor's all-risk insurance policy plays a significant role in mitigating construction risks in South Africa. This approach aligns with the broader practice of transferring risk through subcontracting, insurance, and contract modifications to enhance risk management effectiveness in construction projects (Musundire & Aigbavboa, 2015).

CAR insurance policy is typically obtained jointly in the names of the Client or Principal agent and the Contractor, with the option for other parties like funders to be added. This policy is designed to provide comprehensive coverage for all parties involved in the project, ensuring that insurance funds are available for reinstatement in case of damage to the insured property, irrespective of fault. By combining CAR with Public or Third party liabilities policies, the construction project stakeholders can mitigate risks and ensure financial protection against unforeseen events during the project lifecycle (Musundire & Aigbavboa, 2015)

In joint names insurance within CAR policies, each party involved in the construction project holds individual rights to claim against the insurer. While all insured parties must fulfill disclosure and notification obligations, the insurer is precluded from seeking reimbursement

from one co-insured by pursuing subrogation against another co-insured, as outlined by legal scholars Bunni, Flanagan & Norman, and Dunning. This arrangement ensures that insurance funds are available for reinstatement regardless of fault, fostering a collaborative risk-sharing approach among project stakeholders (Musundire & Aigbavboa, 2015)

In the context of CAR insurance, the term "All Risk" signifies that any risk not explicitly listed as an exception is covered by the insurance policy. The key causes for compensable damages under this type of insurance typically include events such as fire, thunderbolt, explosion, flood, theft, low-quality implementation, negligence, and acts of bad faith or fault by individuals, as outlined by Roberts in 2005.

CAR insurance is a comprehensive policy commonly used in construction contracts to cover various aspects of the construction process. It includes coverage for both permanent and temporary works, contractors' tools and equipment, property recovery costs, materials in transit or storage, professional fees, debris removal, maintenance periods, rewriting plans, employee tools, show house contents, and optional extensions for continual hiring fees. Different insurance companies may offer variations in the policy wording to cater to specific client needs while providing a standardized format for coverage across different regions (Musundire & Aigbavboa, 2015). Musundire & Aigbavboa (2015) found that CAR insurance policies effectively safeguard the interests of clients and contractors while aiding in risk management by identifying and mitigating potential risks.

CAR insurance provides coverage for physical damage to materials used in a construction project, whether they are in transit, in storage, or part of the works. When considering this type of insurance, factors such as coverage limits, costs, insurance duration, policy flexibility, exclusions, deductibles, insurer reliability, and potential gaps in coverage should be carefully evaluated to ensure adequate protection for the project. CAR insurance helps mitigate risks associated with construction projects by providing financial protection against unforeseen events that could lead to material damage or loss (Liu, et. al Year)

The CAR insurance policy focuses on providing comprehensive coverage for accidental physical loss and damage in construction projects, along with third-party liability insurance. Other insurances like contract bonds, motor liability, marine, and workmen's compensation are

typically excluded from the CAR policy due to their compulsory nature and availability under separate standard policies with specialized underwriting expertise in many countries. This exclusion allows the CAR policy to concentrate on addressing risks specific to construction activities beyond traditional property insurance, ensuring a more tailored and effective coverage for construction projects (Swiss Re).

The CAR Insurance policy covers a wide range of activities related to construction projects, including installation operations of equipment, materials, electrical devices, and machinery, as well as setting up metal skeleton structures, provided their value does not exceed 20% of the total sum insured. This type of insurance offers comprehensive coverage for construction works by addressing potential damages and losses that may occur during the project, even when the exact cause of damage is not easily identifiable, hence presenting an "all risk coverage" approach to protect against unforeseen incidents. The policy emphasizes the importance of coherent support from both the main insured party and other involved parties in construction projects to ensure effective risk management and timely compensation for damages (Khosravi & Anari, 2020).

Exceptions in a CAR insurance policy outline specific scenarios not covered by the policy, such as damages resulting from war, intentional negligence, nuclear events, machinery breakdowns, and defective construction plans (Ostrager, 2018). In complex construction projects like hydroelectric power plants, where the construction and erection phases involve significant risks, insurance coverage is crucial. Traditionally, separate insurance policies are issued for the construction works and the erection of machinery to address specific risks. However, to streamline coverage and reduce administrative burden, Swiss Re introduced a CAR insurance policy that combines coverage from both CAR and Erection All Risks policies, offering comprehensive protection for various aspects of the project (Swiss Re).

Ibrahim, et. al. (2021) highlights the significance of construction insurance, particularly the CAR insurance policy, in mitigating risks within the construction industry due to its comprehensive coverage for construction projects. CAR provides a mechanism to manage risks in construction projects by transferring or reducing potential financial losses from one party to another. Contractors often use CAR insurance in construction projects to provide broad coverage against

damage or failure during the project implementation. CAR insurance follows global insurance standards and is offered by insurers like Munich-Re and Swiss-Re (Praja, 2023).

Various studies, such as those by Halwatura (2015), Musundire & Aigbavboa (2015), and Perera et al. (2008), have explored the efficiency of CAR insurance. Effectiveness refers to how well CAR insurance can mitigate risks, while efficiency pertains to the balance between claim amounts received and the costs of both damages and insurance premiums incurred (Praja, W. K. 2023).

However, issues such as under-settled claims and rejections by insurers highlight challenges related to poor risk management knowledge and experience among local contractors. Perera & Rameezdeen (2010) evaluated how efficiently CAR insurance is utilized in civil engineering projects in Sri Lanka, identifying factors influencing its effectiveness through data collected from a survey. The study highlighted issues such as high third-party damages, under-settlement of claims, and rejections due to poor risk management knowledge among local contractors.

2.4.1 Insured Parties

Contractors, project owners, and insurers play crucial roles in influencing CAR insurance within construction projects. Contractors are key stakeholders responsible for maximizing the effectiveness of CAR insurance; however, they may sometimes perceive it as an additional expense due to inadequate risk management practices and lack of knowledge (Perera et al., 2008).

Typically, the contractor and the entity that hired them (such as the property owner) are the primary parties to obtain a CAR insurance policy for a project. Additionally, other stakeholders like finance companies, subcontractors, suppliers, and manufacturers can also be included on the policy (Adam 2023).

The individual Contractors' All Risks insurance policy is typically issued in the joint names of both the owner/employer and the contractor. When provided in a composite format, the section concerning property damage should be regarded as joint insurance. In contrast, the public liability section can either be issued jointly to both parties or solely under the contractor's name, with indemnity extended to the owner/employer through a provision known as a Principal Clause (Swiss Re). This inclusive coverage ensures that all relevant parties involved in the construction

process are protected under a single policy to facilitate efficient handling of damages or losses without delays for fault investigations.

The comprehensive coverage provided by insuring all involved parties under one policy benefits both principals by streamlining indemnity processes and offering control over policy monies while safeguarding contractors and subcontractors with essential protection for their capital resources. In case damage occurs during construction work covered by a CAR policy eliminates time-consuming fault investigations allowing prompt repairs to begin without disrupting undamaged areas' progress (Swiss Re III).

In "Contractors All Risks Insurance" by Swiss Re III, the insured entities under Contractors All Risks insurance include the principal (employer), the contractor or subcontractor, as well as the consulting engineer or architect.

The principal (employer): In the context of a CAR policy, insuring the principal (employer) provides several advantages, including comprehensive coverage for all involved parties, exclusion of the employer's risks for broader protection, joint indemnity for control over policy funds, coverage for employer and employee actions on the construction site to prevent disputes, and meeting contractual requirements for joint coverage of contract works and third-party liability with the contractor. This arrangement streamlines insurance processes, enhances risk management, and ensures smooth operations during construction projects by aligning interests and responsibilities among stakeholders.

The contractor/subcontractors: In construction projects, contractors and subcontractors are vital for project completion and are responsible to the principal. Insurance provides crucial protection for contractors with limited financial resources, reducing their exposure to project risks. Including subcontractors in the insurance policy ensures comprehensive coverage for all involved parties, offering stability and security in project collaborations.

The consulting engineer/architect: If the consulting engineer or architect were included as insured parties under the policy, any damage resulting from faulty design would typically be covered and compensated under the policy, unless gross negligence could be proven. However, proving gross negligence in such cases is rare, making it unlikely for the insurer to face such

claims. This highlights the importance of professional indemnity policies for engineers and architects to cover their liabilities effectively (Swiss Re III)

2.4.2 General Policy Conditions

The general policy conditions are mostly similar to those of other property insurance policies. However, specific provisions unique to CAR insurance are highlighted in the text, focusing on aspects crucial to construction projects such as sound engineering principles, adherence to safety rules, and professional standards throughout the project lifecycle.

The following outlined conditions in the book "Contractors All Risks Insurance" by Swiss Re III, emphasize the importance of following best practices in engineering to prevent loss or damage and ensure compliance with industry standards from project inception to completion.

Sound engineering principles and practice: Adhering to sound engineering principles and practices is crucial in construction projects to prevent loss or damage and maintain the validity of insurance policies. Civil engineers must follow safety regulations, professional standards, and industry best practices throughout the project lifecycle to ensure compliance and minimize risks. Violating these principles can lead to significant consequences, highlighting the importance of upholding engineering standards for project success and risk mitigation.

Maintenance of plant and equipment: It is important to maintain mobile plant equipment to prevent accidents and avoid damage to construction projects indirectly. Operator training is needed to align with project requirements and suggests insurers should assess actual maintenance practices against project needs to mitigate risks effectively. This underscores the critical role of proactive maintenance strategies and alignment with project specifications in ensuring operational safety and project success.

Material change of risk; A material change of risk in a construction project refers to significant alterations that could increase the likelihood of losses, such as adding storeys to a building or changing construction methods. It is crucial for contractors to promptly inform insurers about such changes to assess new risk levels and adjust insurance conditions accordingly to ensure proper coverage. Failure to disclose material changes may result in the contractor not receiving

compensation in case of a loss, emphasizing the importance of communication between the contractor and the insurer for effective risk management.

Information and right of access to the site: The provision regarding information and right of access to the site allows insurers to request access to the construction site and relevant documentation, such as drawings and specifications, held by the principal. Regular site visits at various construction stages are crucial for effective CAR insurance, enabling assessment of environmental risks before policy issuance and monitoring loss prevention measures and claims management during construction. These measures help insurers mitigate risks and ensure proper coverage for larger construction projects.

Termination of cover: In the context of construction insurance, the termination of cover under a CAR policy is typically tied to the expected duration of the project and can only be canceled under specific conditions. These conditions include a significant alteration in the insured risk or the abandonment of the project by the principal or key contractors for various reasons. If work on the project resumes, the insurance coverage can be reinstated with the insurer's approval.

2.4.3 Exclusions from CAR Insurance Coverage

According to Bunni in "Risk and Insurance in Construction," there are two categories of exclusions in a Contractors All Risks (CAR) policy: General exclusions and Specific exclusions.

General Exclusions: Although a CAR insurance policy is labeled as "All Risks," there are several exclusions that limit the coverage provided by the policy, whether due to necessity, choice, or preference. By examining these exclusions, one can determine if a specific risk is covered; if a risk isn't explicitly excluded, it is considered included in the coverage (Bunni, 2003). The General Exclusions apply universally across all sections of the policy and exclude from coverage any loss, damage, or liability directly or indirectly resulting from:

1. Inevitable or anticipated losses.

2. War-related events such as invasion and hostilities (regardless of whether war has been declared), civil war, rebellion, revolution, insurrection, mutiny etc.

3. Nuclear reactions and associated radiation or radioactive contamination

4. Sonic waves produced by aircraft or other aerial vehicles traveling at sonic or supersonic speeds
5. Confiscation; commandeering; requisitioning; destruction of property; damage ordered by any legally constituted authority.
6. Intentional acts or gross negligence on part of the insured party.
7. Work stoppage—either total or partial.

Special Exclusions: These exclusions are specific to certain aspects of a composite policy and pertain to risks that, if included in coverage, would either lead to a significant rise in premiums; result in negative impacts on the primary contract insured by the policy; or disrupt other types of insurance covered under separate policies (Bunni, 2003).

1. Consequential losses, including loss of use, penalties, fines, loss of contracts, and loss arising from delay in completing or negotiating contracts
2. Mechanical and/or electrical breakdown or derangement of construction plant
3. Wear and tear, corrosion, oxidation, deterioration due to lack of use and normal atmospheric conditions
4. Defective material and workmanship
5. Defective design:
6. Partial possession or handing over of the project
7. Loss of or damage to aircraft, vessels, watercraft, or plant mounted on such vessels:
8. Mechanically propelled vehicles which are licensed for public road use
9. Loss of or damage to files, drawings, accounts, bills, currency, stamps, deeds, evidence of debt, notes, securities or cheques
10. Loss discovered only at the time of taking an inventory.

2.5 Empirical Literature review

The empirical literature review on CAR insurance in construction projects reveals several key findings:

Client Needs: Clients' requirements play a crucial role in the decision to opt for CAR insurance, with some clients themselves securing this policy for the project. This motivates contractors to choose CAR insurance based on client demands (Perera & Rameezdeen, 2010).

Conditions of Contract: The Conditions of Contract rank as the second most critical factor influencing the need for an Insurance policy in construction projects (Perera & Rameezdeen, 2010).

Knowledge and Experience: Knowledge and experience are highlighted as essential factors for decision-making related to deductibles, safety measures, record-keeping, and claims processing within CAR policies (Perera & Rameezdeen, 2010). Foreign contractors tend to place higher significance on knowledge and experience compared to local contractors.

Risk Transfer Impact: Putri and Yuwono (2017) found that CAR insurance significantly influences risk transfer within construction projects by up to 72.54%.

Challenges Faced by Construction Professionals: Bahata (2019) emphasized that time management, cost control, and risk management are among top challenges faced by professionals working in constructions industry. The study revealed significant deviations from initial plans, schedule slippage ranging from 61-80% and deviations planned costs, quality resources utilization, and safety falling between 21-40%. Effective strategies were recommended to address these challenges

Claims Settlements: In cases where claims were made under a CAR. Perera et al. (2008) reported that only 47% of those claims were settled while 73% of settlements undervalued. This was attributed inadequate knowledge among local contractor leading insurers focusing more maintaining business relationships rather than accurately assessing risks

Attitudes towards Insurance Coverage: Gashahun (2020) demonstrated varying perceptions regarding purchasing insurances voluntarily. Around 87.21% were willing purchase coverage recognizing it crucial means transferring liability risks inherent industry. However, a minority

approximately12.79% viewed additional cost opting not buy unless mandated indicating differing views necessity their projects. Data further showed acceptance different types of policies with higher percentages favoring third party insurances labor compared material damage (Gashahun, 2020).

The research conducted by Liu et al. (2018) developed an extended Theory of Planned Behavior model to understand Chinese contractors' intention to purchase construction insurance, finding that attitudes and subjective norms significantly influenced insurance purchasing intention, while perceived behavioral control had a lesser impact. Factors such as risk perception and past experiences were identified as key influencers of attitudes and perceived behavioral control related to insurance purchasing behavior among contractors in the construction industry. The findings highlighted the importance of considering these factors when analyzing contractors' decisions regarding acquiring insurance within their projects. By emphasizing how perceptions, social influences, and past encounters with insurance can affect decision-making processes, this research underscored the complexity involved in understanding why individuals choose to invest in specific types of coverage.

Odeyinka's (2000) study on risk management tools within Nigeria's construction industry shed light on the significance of all-risk insurance policies for managing various risks associated with construction projects. The correlation between premiums paid for insuring against damages and actual compensation costs was noted; however, it was observed that typical claims only covered around 61% of total compensation expenses incurred due to damages.

Kikwasi pointed out gaps in coverage under CAR Insurance policies concerning certain aspects like worker protection where reliance solely rested upon employers' discretion rather than comprehensive policy provisions specifically addressing workers’ needs within the sector. These combined findings emphasize not only a need for deeper insights into what motivates contractor decisions regarding purchasing construction-related insurances but also highlight areas where existing policies may fall short or require enhancements tailored towards better protecting both project stakeholders and workers alike within this dynamic industry landscape.

In the construction insurance domain, it is noted that purchasing insurance involves specific professional skills and often requires seeking assistance from insurance brokers and legal

advisers due to the complexity of risk assessment and insurance product selection. This highlights the nuanced nature of behavioral control factors in different decision-making scenarios, emphasizing the importance of considering domain-specific complexities when analyzing predictors of intention (Liu, et al, 2018).

While previous studies have found perceived behavioral control to be a significant predictor in other contexts, such as visiting green hotels, the complexities involved in purchasing construction insurance suggest that the influence of perceived behavioral control may manifest differently in this domain. The need for specific professional skills and the involvement of insurance brokers and legal advisers introduce unique challenges that can impact contractors' decision-making processes regarding insurance acquisition within the construction industry. Therefore, the study by Liu, et al (2018) emphasizes the importance of considering these domain-specific complexities when analyzing predictors of intention in the context of construction insurance purchasing. These research findings underscore the importance of understanding client needs, risk transfer impact, knowledge/experience levels, challenges faced professionals settlement practices when considering or utilizing CAR insurance in construction projects.

2.6 Extended Theory of Planned Behavior (TPB) Model

The Theory of Planned Behavior (TPB) is a widely used model in social psychology that explains how an individual's behavioral intention influences their actual behavior. TPB posits that behavioral intention is shaped by three main factors: attitude towards the behavior, subjective norm, and perceived behavioral control. In the context of contractors' construction insurance intention, TPB serves as the theoretical framework to analyze and predict their purchasing decisions of CAR insurance based on these key determinants.

Attitude: as it is defined by Fishbein and Ajzen (1975), attitude represents the influence of one's emotions towards a specific behavior, whether positive or negative. Ajzen and Fishbein (1980) further elaborate that attitude plays a significant role in shaping one's behavior, regardless of whether it is considered positive or negative. Additionally, Doane et al. (2016) as cited in Ibrahim, et. al. (2021) suggests that attitude serves as a mental readiness for responding in a positive manner. Research by Taylor and Todd (1995) indicates that a positive attitude influences

intention towards purchasing insurance and insurance products being key components measured in the study.

Liu et al, 2018 highlights the significance of contractors' attitudes in shaping their intention to engage in construction insurance-related behaviors within the framework of the Theory of Planned Behavior. Ibrahim, et. al. (2021) discusses the significant impact of attitude on the selection of CAR takaful insurance in the study. It highlights the belief that attitude plays a crucial role in influencing the contractors' choice of CAR takaful insurance.

Subjective norm:, Subjective norm, as defined by Ajzen, refers to an individual's perception of social pressure from significant reference groups like family, friends, supervisors, and colleagues influencing behavior. This concept is crucial in shaping attitudes and behaviors related to acceptance of products or services such as CAR insurance where social influences impact (Ibrahim et al., 2021). Studies have consistently shown a positive relationship between subjective norm and CAR insurance acceptance (Amin et al., cited in Ibrahim et al., 2021), emphasizing the importance of understanding these social pressures. In the context of decision-making regarding construction insurance purchases within the construction industry, subjective norm plays a vital role influenced by factors like local laws, contract requirements, market influences, and past projects. Liu et al., 2018, highlights that subjective norms significantly shape individuals' intentions towards insurance decisions within this sector.

Perceived behavioral control: Perceived behavioral control, as a component of the Theory of Planned Behavior, refers to an individual's perception of their ability to perform a specific behavior. In CAR insurance purchasing intention, Perceived behavioral control encompasses their perceived ease or difficulty in purchasing CAR insurance and handling claims. The hypotheses proposed suggest that a contractor's perceived ability to engage in this insurance-related behavior influences their purchasing intention (Liu et al, 2018).

Researchers have sought to enhance the TPB model by incorporating additional constructs to better predict behavioral intentions in specific scenarios. This involves ensuring that any modifications align with existing theory predictors and introduce new factors that are conceptually distinct. The extension of the TPB model in the study on construction insurance purchasing introduces new elements such as past experience and risk perception, aiming to

provide a more comprehensive understanding of contractors' intentions in purchasing CAR insurance (Liu et al, 2018).

Risk perception: Risk perception refers to individuals' subjective understanding and feelings towards the risks associated with construction projects. Contractors who underestimate the likelihood or potential magnitude of risks may view insurance as less attractive, as noted by Petrolia et al. (2013). This perception of risk and understanding the importance of accurately assessing and addressing risks in decision-making processes within the construction industry significantly influences contractors' attitudes towards purchasing CAR insurance,.

Liu et al. (2018) further emphasizes how risk perception impacts individuals' purchasing decisions, particularly concerning insurance choices. The study highlights that contractors with a stronger sense of risk perception tend to have more positive attitudes towards acquiring insurance coverage. In their research, Liu et al (2018) measures risk perception through two dimensions: risk probability and risk influence, illustrating how understanding individuals' perceptions and assessments regarding risks can shape their behaviors when it comes to making decisions related to insurances like Construction Insurance.

Past experience: Past experience, while not initially included in the Theory of Planned Behavior (TPB), has been identified by researchers as a critical factor in enhancing the predictive capability of the TPB model. Studies have demonstrated that past experiences play a significant role in shaping attitudes, perceived behavioral control, and decision-making processes related to insurance purchasing behavior. This recognition has led to incorporating past experience as a variable in various fields to strengthen the predictive power of TPB (Liu et al., 2018).

Additionally, Kikwasi highlighted that inadequate compensation from insurers can act as a deterrent for individuals when considering opting for insurance coverage. This observation underscores how real-world experiences with insurers and their responsiveness can impact individuals' perceptions and decisions regarding insurance purchases. In summary, past experiences are crucial influencers on attitudes towards insurance acquisition within the context of decision-making processes. Understanding how previous encounters with insurers shape perceptions is essential for predicting behaviors related to purchasing insurances like Construction Insurance effectively.

2.6.2 Conceptual Framework

The conceptual framework for this research builds upon Liu et al. (2018) and their investigation into their study on why Chinese contractors are hesitant to purchase construction insurance, adopts an extended Theory of Planned Behavior model. This enhanced model incorporates new constructs of past experience and risk perception alongside the original variables of attitude, subjective norm, and perceived behavioral control.

In this proposed extended Theory of Planned Behavior model for contractors' intent regarding CAR insurance purchasing behavior, both original variables like attitude, subjective norm, and perceived behavioral control are retained while introducing new constructs such as risk perception and past experience into the framework.

Intention to Purchase Contractors All Risk Insurance (PI): The likelihood that contractors will engage in purchasing CAR insurance for construction projects. This will be measured by their stated likelihood of purchasing CAR insurance in the near future.

Attitude towards Contractors All Risk Insurance (AT): Represents contractors' overall evaluation of purchasing CAR insurance, whether positive or negative. This will be measured by contractors' beliefs about the benefits and drawbacks of Contractors All Risk insurance, as well as their overall sentiment towards CAR insurance policy.

Subjective Norm (SUN): Encompasses the perceived social pressure to engage in purchasing CAR insurance. This will be measured by the influence of significant others, such as peers, industry standards, and professional advice, on the contractors' decision-making process.

Perceived Behavioral Control (PBC): Reflects contractors' perception of the ease or difficulty of purchasing and managing CAR insurance. This concept will be operationalized by assessing contractors' confidence in their ability to understand CAR insurance policy, make informed decisions, and manage insurance claims.

Risk Perception (RP): Defined as contractors' assessment of the probability and potential impact of risks associated with construction projects. This concept will be measured through two dimensions: risk probability (likelihood of risk occurrence) and risk influence (potential impact of the risk on the project).

Past Experience (PE): Refers to contractors' previous encounters with Contractors All Risk insurance, including purchasing and claim processes. This concept will be operationalized by assessing the frequency and quality of past CAR insurance-related experiences.

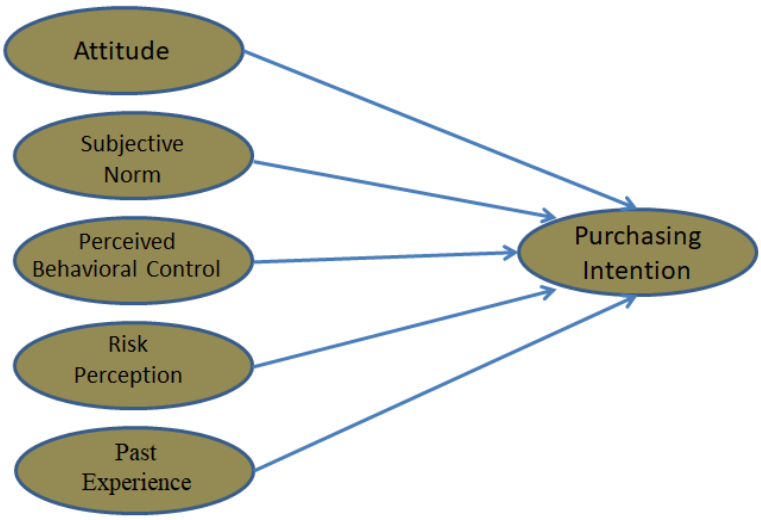

Figure 1: Proposed extended TPB model for contractors' purchase intention on CAR insurance

2.6.1 Hypotheses

1. **Hypothesis 1 (H1): Attitude** towards CAR insurance has a positive and significant effect on the intention of CAR insurance purchase. This hypothesis expects that higher levels of Attitude will lead to CAR insurance purchase.
2. **Hypothesis 2 (H2): Subjective norm** positively influences contractors' intention to purchase CAR insurance. This hypothesis assumes that social pressures or expectations from significant others (e.g., peers, Client's Requirement, industry norms) encourage contractors to buy CAR insurance.
3. **Hypothesis 3 (H3): Perceived behavioral control** positively affects contractors' intention to purchase CAR insurance. This hypothesis indicates that the easier contractors perceive the process of purchasing and managing CAR insurance, the more likely they are to intend to purchase it.
4. **Hypothesis 4 (H4):** There is a positive relationship between contractors' **risk perception** (both in terms of risk probability and risk influence) and purchasing intention on CAR

insurance. This hypothesis expects that higher levels of perceived risk will lead towards CAR insurance purchase.

5. **Hypothesis 5 (H5):** Contractors with positive **past experiences** related to CAR insurance are more likely to exhibit a higher intention to purchase CAR insurance. This hypothesis posits that positive past experiences enhance individuals' intentions to purchase CAR insurance.

These hypotheses and conceptual definitions provide a structured framework for investigating the factors influencing contractors' intentions to purchase CAR insurance, incorporating both psychological constructs and practical experiences

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the primary objective is to provide an overview of the research design and methodology employed to investigate the research problem. As emphasized by Kothari (1990), obtaining data from appropriate sources using suitable methods and analyzing it with relevant analytical tools are crucial for achieving success in a study. The methodologies and procedures discussed in this section include:

3.2 Research Design

The research design used descriptive and explanatory research design using quantitative method. The rationale behind using descriptive study design is, it is preferable to describe the existing phenomena by reviewing literatures regarding the factors affecting CAR insurance purchasing of contractors. And using explanatory research design is to determine how the dependent variable (CAR insurance Purchasing intention) explained by the independent variables of the study.

3.3 Source of data

For the study primary source of data were used. The primary sources were contractors in Addis Ababa. They are considered being the relevant sources of data because contractors are the ones influence CAR insurance in construction projects.

3.4 Method of data collection

Questionnaires were used to gather primary data from project directors, managers, and contract managers/administrators in the construction industry in Addis Ababa. This approach allows for direct responses and feedback from participants, facilitating quick and easy data collection. The study focuses on a cross-sectional design, where data is collected at a single point in time from different individuals to understand their experiences and practices related to purchasing CAR insurance within the construction industry.

3.5 Population of the study and study area

In the research study, a focused sampling approach was chosen in Addis Ababa instead of a nationwide sampling of all registered contractors in Ethiopia due to practical reasons. Addis Ababa was selected as the primary city for the study because it houses most contractors and major construction companies, making it an ideal location to gather insights into construction insurance practices from knowledgeable professionals like project directors and contract managers. The study aims to ensure comprehensive representation by targeting individuals with experience in construction insurance purchasing within the construction industry in Addis Ababa.

3.6 Sampling Technique

Snowball sampling technique was employed to select participants for assessing factors influencing CAR insurance purchasing behavior among contractors specifically based in Addis Ababa. During the study, out of a total of 20,867[1] nationally registered suppliers, there were 1,070 registered contractors. To obtain sufficient data, the survey specifically targeted railway, road, bridge and building contractors in Addis Ababa who are mainly involved in mega projects, which numbered approximately 115. In order to determine the sample size (n), the formula recommended by Kothari (2004) can be used. The formula for the sample was given at the confidence level of 95% with 0.05 margin of error.

The sample size formula is:

$$n = \frac{N}{1+ (N. e^{2})}$$

Where N = 115 (population size), e = 0.05 (margin of error) and n = Sample size, by Substituting into the formula the sample size becomes 89. Thus, with a margin of error of 5%, a sample size of approximately 89 contractors was needed to achieve a 95% confidence level. Finally, a total of 89 questionnaires were sent out and 69 completed questionnaires were returned resulting in an approximate response rate of 77.5% indicates that the sample size was sufficient.

[1] From all 20, 867 national registered suppliers, there are 1170 Registered Contractors https://production.egp.gov.et/egp/suppliers

In the study, quantitative data was gathered through a questionnaire survey involving 69 project directors, managers, and contract managers and others such as site engineers and Deputy Directors involved in the construction industry in Addis Ababa. These professionals were selected for their involvement or familiarity with construction insurance purchasing or management.

Snowball sampling[2], also referred to as chain sampling or respondent-driven sampling, is a non-probability sampling technique particularly effective for researching hidden or hard-to-reach populations. This method initiates with a small group of participants who meet the study criteria, and these individuals subsequently refer additional participants, thereby creating a self-perpetuating chain of referrals. This approach not only mitigates issues related to low response rates and unreliable data inherent in traditional random sampling but also facilitates access to populations that are often difficult to identify and engage through conventional methodologies, as highlighted by Salganik and Heckathorn (2004), who demonstrated that unbiased estimations can be derived from such samples.

3.7 Data Processing

The method of data processing in this study is both manual and computerized system. In the Processing procedure editing, coding, classification, and tabulation of the collected Data was used. The researcher edited the data which was collected from each respondent to detect errors, omissions, checking that whether each questions answered or not.

3.8 Questionnaire Design

The questionnaire design[3] involved the meticulous development of measurement scales for various constructs related to the Theory of Planned Behavior (TPB), such as attitude, perceived behavioral control, subjective norm, risk perception, past experience, and purchasing intention.

[2] Salganik and Heckathorn (2004) https://doi.org/10.1111/j.0081-1750.2004.00152.x

[3] The questionnaire design derived from Liu et al. (2018) in their study on why Chinese contractors are hesitant to purchase construction insurance, adopts an extended Theory of Planned Behavior model. https://doi.org/10.1108/ECAM-08-2016-0186

Measurement Method: The design of the questionnaire

- Purchasing intention (PI): Asking respondents whether they have plan and willingness to purchase CAR insurance.
- Attitude (AT): Asking the respondents' overall attitude toward insurance purchasing, insurance service quality and the evaluation of its usefulness to weigh their attitude toward CAR insurance
- Subjective norm (SUN): Asking the respondent's social pressure they can feel from the environment, local Ethiopian Laws and regulations, contract requirements, company policies, market guides and other similar projects'.
- Perceived behavioral control (PBC): Asking the respondents' ability for CAR insurance purchasing, insurance management and claim for compensation.
- Risk perception (RP): According to the respondent's understanding of their projects and risks, asking the risk probability and influence they feel
- Past experience (PE): Based on their experience, asking respondents whether they were satisfied or not by the CAR insurance providers and based on their past experience whether they are willing to buy CAR insurance in the future or not.

Constructs and Scale Items: The questionnaire consisted of eight sections and 20 scale items designed to measure variables including attitude, subjective norm, perceived behavioral control, past experience, and risk perception. Each construct, such as purchasing intention (PI), attitude (AT), subjective norm (SN), perceived behavioral control (PBC), risk perception (RP), and past experience (PE), was assessed using specific questions tailored to measure aspects such as willingness to purchase insurance, social pressure, ability for insurance management, risk perception, and past insurance purchasing behavior.

Rating Scale: Respondents were required to rate each item on a Likert scale based on their involvement in a completed project, providing insights into their perceptions and behaviors related to CAR insurance. The Likert scale consisted of five points, with 1 representing the lowest level, 3 indicating a medium level, and 5 signifying the highest level.

Significance: By incorporating established theoretical frameworks and tailoring questions to specific constructs, the study sought to gather reliable and insightful data on the factors influencing individuals' decisions regarding CAR insurance purchase.

3.9 Ethical Considerations in Survey Data Collection

When surveying data, it's crucial to uphold ethical standards to ensure the well-being and rights of the participants. Here are some ethical considerations to keep in mind:

Informed Consent: Ensure that participants are fully informed about the purpose of the survey, how their data will be used, and their rights as participants. Obtaining their informed consent before data collection is essential.

Anonymity and Confidentiality: Guarantee the anonymity of participants and their responses are kept confidential and are only used for this research purposes.

Voluntary Participation: Participants willingly choose to take part in the survey without any form of coercion or pressure. They will be aware that they can withdraw from the survey at any time without consequences.

Data Security: The collected data will be securely store and protected to prevent unauthorized access or breaches that could compromise participants' privacy.

Avoiding Harm: The survey questions and the research process do not cause any harm, distress, or discomfort to the participants and the community.

Respect for Diversity: The diversity of the participants will be respected and the survey is inclusive and sensitive to different cultural, religious, and social backgrounds.

Compliance with Regulations: Adhere to legal and ethical guidelines, data protection laws, and professional codes of conduct.

CHAPTER 4: - DATA PRESENTATION, ANALYSIS AND INTERPRETATION

The analysis and interpretation of this study is based on the data collected from 69 Contractors working as a Project Directors, Project Managers, Contract Managers and others such as Deputy Directors and site engineers in the Construction Industry in Addis Ababa. The data was collected through survey questionnaire. The data gathered were organized and analyzed in a manner that enables to answer the basic research questions raised at the beginning of the study.

This chapter is broadly categorized in to three sections. The first section explores the respondent's profile. The second section deals with reliability and multicollinearity analysis which shows if the measurements are dependable and whether an overlap or sharing of predictive power of independent variables is observed or not. The third section shows a brief description of the regression output and hypothesis testing result.

4.1 Review of Respondent's Profile

The demographic characteristic consists of Job role in the Construction Industry, Educational background, Years of Experience in the industry, Involvement in CAR insurance and familiarity with CAR insurance. This aspect of the analysis deals with the personal data which is briefly described through the bar chart and tables found below.

Table 4.1 1 The Respondents Profile: Current Job Role

Current Job Role

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Project Manager	22	31.9	31.9	31.9
	Other	20	29.0	29.0	60.9
	Contract Manager	14	20.3	20.3	81.2
	Project Director	13	18.8	18.8	100.0
	Total	69	100.0	100.0	

As shown above in Table 4.1.1, a total 22 respondents, are Project managers and Directors which comprises the largest number which is cumulatively 31.9% of the total, and the second largest number of the population which is 20 (29%) is made up respondents who are others such as site engineers and Deputy Directors. The third largest population of the respondents which consist of Contract managers accounted for 20.3 % of the total number of respondents.

Table 4.1 2 The Respondents Profile: Work Experience

Years of work experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	5 to 10 years	28	40.6	40.6	40.6
	11 to 15 years	24	34.8	34.8	75.4
	Greater than 15 years	9	13.0	13.0	88.4
	Less than 5 years	8	11.6	11.6	100.0
	Total	69	100.0	100.0	

With regard to the experiences the respondents had in the construction industry, Table 4.1.2 shows that 28 respondents at 40.6% of the total have 5 to10 years. And those who served between 11 to 15 years 24 in numbers and this made it 34.8% of the total. Respondents who have served in the construction projects for more than 15 years made 13 % of the total respondents.

Table 4.1 3 The Respondents Profile: Level of Education

Highest level of education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Degree	43	62.3	62.3	62.3
	Masters	24	34.8	34.8	97.1
	Diploma	2	2.9	2.9	100.0
	Total	69	100.0	100.0	

As indicated in Table 4.1.3, a significant number of the respondents which 43 (62.3%) have earned their first degrees, and also a significant number of the total of 24 respondents (34.8% of the total respondents) did their second degrees.

Table 4.1 4 Involvement in purchasing of CAR

Involvement in purchasing of CAR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	45	65.2	65.2	65.2
	No	24	34.8	34.8	100.0
	Total	69	100.0	100.0	

Notably, a higher 65.2% of total respondents involved in Purchasing and managing CAR insurance than not involved in purchasing and managing CAR insurance.

Table 4.1 5 Familiarity with CAR

Familiarity with CAR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	54	78.3	78.3	78.3
	No	15	21.7	21.7	100.0
	Total	69	100.0	100.0	

From all the respondents 78.3% of respondents are familiar with CAR insurance policy cover. As can be seen from the above tables, this part of the questionnaire dealt with respondents‘ Job position, educational status, Years of Work experience in the construction industry, Involvements in purchasing and managing CAR insurance, and Familiarity of respondents‘ in CAR insurance.

4.2 Reliability and Multicollinearity Analysis

4.2.1 Reliability Testing

Cronbach's Alpha test is a statistical measure used to assess the internal consistency or reliability of a set of items in a questionnaire (Hair et al. 2010). A Cronbach’s Alpha value of 0.7 or higher indicates that the items are reliably measuring the same underlying construct, meaning they produce consistent results. In this study, since all Cronbach’s Alpha results presented in Table 4.2.1 meet or exceed this threshold (≥0.7), it suggests that each item in the questionnaire has an acceptable level of reliability and can be confidently used for research purposes.

Table 4.2. 1: Summary of Reliability of Variables

Items	No. of Items	Cronbach's Alpha
Attitude	**3**	**0.9**
Subjective Norm	**4**	**0.75**
Perceived Behavioral Control	**4**	**0.76**
Perceived Behavioral Control	**4**	**0.76**
Risk Perception	**4**	**0.7**
Past Experience	**5**	**0.86**

4.2.2 Test for Multicollinearity

Before running a regression model, it's crucial to check for multicollinearity among independent variables. When multicollinearity is present, the variances of the parameter estimates become inflated, making them unstable and difficult to interpret. To detect multicollinearity, the inverse of the correlation matrix is used. The diagonal elements of this matrix are known as Variance Inflation Factors (VIF).

A high VIF value indicates that an independent variable is highly correlated with one or more other independent variables in the model. A VIF greater than 10 suggests problematic collinearity. In the analysis, since all calculated VIF values for the independent variables are low (below 10), it indicates that there is no significant issue with multicollinearity in the data. This means that it is able to proceed confidently with the regression analysis without concerns about unreliable parameter estimates due to collinear predictors. In Figure 2 it is shown that the variance inflation factor for each variable does not exceed the value of 10.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-.700	.319		-2.191	.032	-1.338	-.062		
	AT	.208	.054	.460	3.849	<.001	.100	.316	.716	1.396
	SUN	-.133	.065	-.283	-2.059	.044	-.263	-.004	.541	1.849
	PBC	.155	.072	.318	2.161	.034	.012	.299	.472	2.118
	RP	.125	.077	.183	1.622	.110	-.029	.280	.802	1.247
	PE	-.003	.055	-.005	-.047	.963	-.112	.107	.773	1.294

a. Dependent Variable: PI

Figure 2: Test for Multicollinearity

Descriptive Statistics of the independent variables in the study

As it is shown in the table 4.2.2 below attitude was identified as the most critical factor influencing contractors' purchasing intentions for CAR insurance, with a mean value of 4.11 and a standard deviation of 0.996. The perception of risk within the construction industry ranked second, showing a mean value of 3.93 and a standard deviation of 0.657 in its impact on purchasing intentions for CAR insurance among contractors. And also, perceived behavioral control emerged as the third critical factor affecting these purchasing intentions, with a mean value of 3.36 and a standard deviation of 0.921.

Table 4.2. 2: Descriptive Statistics

Descriptive Statistics

	N	Mean	Std. Deviation
AT	69	4.1111	.99618
RP	69	3.9275	.65740
PBC	69	3.3551	.92196
SUN	69	3.2790	.95730
PE	69	3.0319	.94597
Valid N (listwise)	69		

4.3 Model Specification Estimation and Interpretation

4.3.1 Model Specification

The dependent Variable in the model is Purchasing intention (PI)

Independent variables in the model are Attitude (AT), Subjective norm (SUN), Perceived behavioral control (PBC), Risk perception (RP), and Past experience (PE)

The research used multiple regression analysis (i.e. a popular and widely used analysis that is similar to linear regression analysis except that the outcome is dichotomous (i.e. Purchase or Not purchase) for analyzing the factors affecting CAR insurance demand.

The dependent variable (i.e. Purchase Intention) is a function of independent variable dimensions.

The equation is:

Equation 1: $PI = \beta 0 + \beta 1\ AT + \beta 2\ SUN + \beta 3\ PBC + \beta 4\ RP + \beta 5\ PE + U$

Where - PI is the measured value of CAR insurance purchasing intention

- β_0 is constant term

- β_1, β_2, β_3, β_4, β_5 are coefficient of the variables

- AT, SUN, PBC, RP, and PE represent the independent variables: Attitude, Subjective Norm, Perceived Behavioral Control, Risk Perception, and Past Experience respectively

- Ui is the error term

This model can then be estimated using a logistic regression model to analyze how these factors influence contractors' intentions to purchase Contractors All Risk insurance.

4.3.2 Model Estimation

In the model, the dependent variable is a binary variable, which takes the value of one if Contractors have CAR insurance purchasing intention and zero Contractors have no purchasing intention of CAR insurance. Since dependent variable can only take two values here, it is unable to use simple OLS but rather it is used binary discrete choice modeling methodology. Here the observed dependent variable is discrete. An appropriate estimator in this case is either the probit and logit[4] maximum likelihood estimator.

Specifically, this study utilizes Logit model to analyze the purchasing intentions of the Contractors. For econometric analysis of the data, Stata 2017 version was used to estimate the parameters and to test the validity of the estimated results. Logistic regression analysis for variables of theory of planned behavior (TPB) related to CAR insurance Purchasing intentions of Contractors as follows in figure 3 and figure 4.

```
. logistic PI AT SUN PBC RP PE

Logistic regression                             Number of obs     =         69
                                                LR chi2(5)        =      29.63
                                                Prob > chi2       =     0.0000
Log likelihood = -25.794532                     Pseudo R2         =     0.3648

------------------------------------------------------------------------------
          PI | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
          AT |   4.496369   2.070924     3.26   0.001     1.823132    11.08934
         SUN |   .3717542   .1908547    -1.93   0.054      .135912    1.016843
         PBC |   4.115454   2.597729     2.24   0.025     1.194341    14.18102
          RP |   3.676752   2.413124     1.98   0.047     1.015791    13.30836
          PE |   .8763988   .3776678    -0.31   0.759     .3766104    2.039441
       _cons |   .0000213   .0000743    -3.09   0.002     2.32e-08    .019627
------------------------------------------------------------------------------
Note: _cons estimates baseline odds.
```

Figure 3: Logistic Regression results

[4] The probit and logit model are indistinguishable from each other except for their tails where logit has fatter tails Gujarati, D. (2003). Basic Econometrics. New York, Mc Graw Hill.

Since LR chi-squared statistic of 29.63 with a corresponding p-value close to zero 0 .000 this strongly suggests that at least some of the independent variables contribute meaningfully to explaining variations in the dependent variable. In practical terms, it implies that the logistic regression model provides significant predictive power compared to using no predictors at all.

Pesudo R-squared: are designed for models with binary or categorical outcomes and provide an indication of how well the independent variables explain variations in the dependent variable. A pseudo R^2 between 0.20 and 0.40 is often considered indicative of a good fit for logistic regression models. Pesudo R-squared = 0.3648 suggests that about 36% of the variation in the outcome can be accounted for by predictors included in the model.

Probability (mfx) Interpretation of the logit model

```
. mfx

Marginal effects after logistic
      y  = Pr(PI) (predict)
         =  .83767918
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
AT	.2044038	.06615	3.09	0.002	.074749	.334059	4.11111
SUN	-.1345481	.07469	-1.80	0.072	-.280946	.01185	3.27899
PBC	.1923674	.08152	2.36	0.018	.032595	.35214	3.35507
RP	.1770406	.08837	2.00	0.045	.003835	.350247	3.92754
PE	-.0179394	.05873	-0.31	0.760	-.133058	.097179	3.03188

Figure 4: Marginal Effects after Logistic Regression

4.3.3 Logit Model Diagnostic Tests

The following are diagnostic tests used to evaluate the performance and validity of the above logit regression results.

Multicollinearity Test: (VIF): is used to assess whether independent variables in a regression model are highly correlated with one another. High multicollinearity can inflate the variance of coefficient estimates, making them unstable and difficult to interpret.

```
. vif
```

Variable	VIF	1/VIF
PBC	2.12	0.472073
SUN	1.85	0.540956
AT	1.40	0.716494
PE	1.29	0.772555
RP	1.25	0.801828
Mean VIF	1.58	

Figure 5: Variance Inflation Factor results for Variables

Since the Mean VIF > 10 there is no perfect multicollinearity between independent variables.

Heteroscedasticity Test: (hettest): This test checks for heteroscedasticity, which occurs when the variance of errors varies across observations rather than being constant. Heteroscedasticity can lead to inefficient estimates and affect hypothesis testing.

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of PI

         chi2(1)      =     9.25
         Prob > chi2  =   0.0024
```

Figure 6: Heteroscedasticity Test

The test revealed that the variance of the errors across observations remains constant. Therefore, there are no concerns regarding heteroscedasticity.

Model Specification/Omitted variable Test: evaluates if the model is specified correctly by checking if there are omitted variables that should be included in the model or if it has been formulated incorrectly.

```
. linktest

Iteration 0:   log likelihood = -40.607858
Iteration 1:   log likelihood = -26.971284
Iteration 2:   log likelihood = -25.790962
Iteration 3:   log likelihood = -25.771638
Iteration 4:   log likelihood = -25.771595
Iteration 5:   log likelihood = -25.771595

Logistic regression                             Number of obs     =         69
                                                LR chi2(2)        =      29.67
                                                Prob > chi2       =     0.0000
Log likelihood = -25.771595                     Pseudo R2         =     0.3654

------------------------------------------------------------------------------
          PI |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        _hat |   1.055526   .3767197     2.80   0.005     .3171694    1.793883
      _hatsq |  -.0288433   .1336924    -0.22   0.829    -.2908755     .233189
       _cons |   .0292827    .401616     0.07   0.942    -.7578701    .8164355
------------------------------------------------------------------------------
```

Figure 7: Model Specification/Omitted variable Test

The insignificant hat square shows that the model has no error on its formula and no omission of significant variable.

Standardized Pearson residual test: it is a tool used to assess the fit of a logistic regression model. It identifies how well the model predicts outcomes for individual observations and highlights potential outliers.

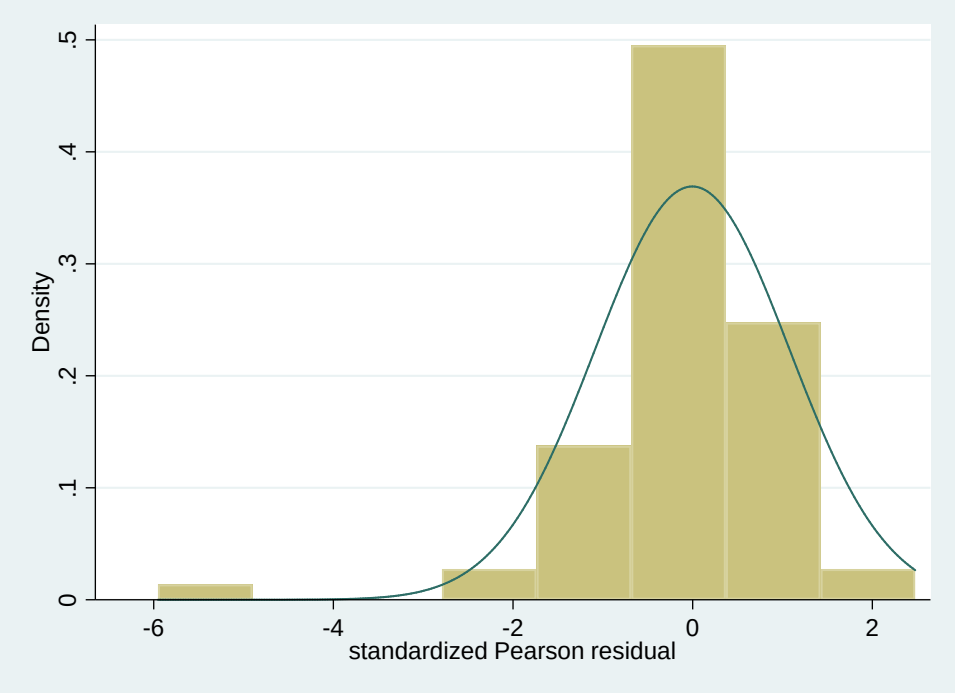

Figure 8: Standardized Pearson residual

As it is seen from the above figure 8, smaller positive or negative values typically less than 2 or 3 in absolute terms suggest that those specific predictions have no significant deviations from what was expected under the model.

Since all the diagnostics above gives favorable results, it provides confidence in both robustness and interpretability regarding findings derived from the logit regression analysis.

4.3.4 Interpretation

Three independent variables Attitude, Perceived Behavioral Control, and Risk Perception show a significant association with the purchase of CAR insurance, as indicated by their p-values being less than 0.05. Conversely, Subjective Norm and Past Experience will be excluded from consideration since their p-values exceed 0.05. Consequently, the following hypotheses are accepted or rejected based on these findings.

1. **Attitude:** The result suggests that fostering a favorable attitude among contractors can significantly enhance their intention to buy this type of insurance.
2. **Perceived Behavioral Control**: The result indicates that when contractors believe they have more control over the decision-making process regarding buying CAR insurance, they're more likely to purchase it.
3. **Perception of Risk**: The result implies that as awareness or concern about risks associated with construction projects grows among these professionals, so does their inclination toward securing appropriate coverage through CAR insurance.

Overall, these findings highlight key psychological and situational factors influencing contractor behavior regarding investment decisions related to risk management via CAR insurances.

4.3.4 Analysis of the Hypothesis

Table 4.3.4 1: Analysis of the Hypothesis

Hypothesis	Beta Coefficient (dy/dx)	Significant (P<0.05)	Decision
H1: Attitude has a significant impact on Contractors' Purchasing intention of CAR	0.2044	0.002	Accepted
H2: Subjective Norm has a significant impact on Contractors' Purchasing intention of CAR in Addis Ababa	-0.1345	0.072	Rejected
H3: Perceived Behavioral Control has a significant impact on Contractors' Purchasing intention of CAR in A.A	0.1923	0.018	Accepted
H4: Risk Perception has a significant impact on Contractors' Purchasing intention of CAR in Addis Ababa	0.1770	0.045	Accepted
H5: Past Experience has a significant impact on Contractors' Purchasing intention of CAR in Addis Ababa	-0.0179	0.760	Rejected

Discussion

The results of the hypothesis testing (refer to Table 4.3.4.1) reveal that attitude (β_1 = 0.2044, P = 0.002), Perceived Behavioral Control (β_3 = 0.1923, P = 0.018), and Risk Perception (β_4 = 0.1770, P = 0.045) have positive and significant impacts on insurance purchasing intention, thereby supporting hypotheses H1, H3, and H4.

Attitude significantly affects contractors' intentions to purchase insurance; this finding aligns with previous research conducted by Taylor and Todd (1995), Ibrahim et al., (2021), and Liu et al., (2018). Additionally, perceived behavioral control is identified as a significant predictor of insurance purchasing intention; but this result contradicts with the findings of Liu et al., (2018). Risk perception also plays a crucial role in influencing contractors' intentions regarding insurance purchases. This finding is also supported by prior research including Liu et al. (2018).

On the other hand, the hypothesis testing results indicate that Subjective Norms (β_2= -1345, P=0.072) and Past Experience (β_3= - 0.0179, P=0760) do not significantly impact intentions for purchasing insurance which leads to reject hypotheses H2, and H5. This outcome contradicts the findings from previous studies such as those conducted by Ibrahim et al., (2021), Liuet.al, (2018) & Petroliaet.al, (2013).

CHAPTER 5: CONCLUSION AND RECOMMENDATION

5.1 Conclusion

In conclusion, this study seeks to address a critical gap in the Ethiopian construction industry by investigating the factors influencing contractors' intentions to purchase CAR insurance in Addis Ababa City by employing the Theory of Planned Behavior as an analytical framework. The main objective of this study is to identify factors which affect the purchasing intentions of CAR insurance in Addis Ababa.

The following conclusions are derived from the findings of the research. Based on the samples analyzed attitude, Perceived Behavioral Control and Risk Perception have a significant strong positive relationship with the purchasing intentions of CAR insurance in Addis Ababa. This result is the same as the research done by adoption of CAR Takaful insurance in Maldives (Ibrahim et al. 2021). But Subjective Norm and Past Experience have insignificant negative relationship with contractors' purchasing intentions of CAR insurance in Addis Ababa.

Contractors with high positive attitudes about CAR insurance are found to be particularly attracted to it which then triggered intention to purchase CAR insurance. Therefore it is concluded that Attitude plays a significant role in influencing Contractors' purchasing intention of CAR insurance. Perceived Behavioral Control has the second highest significant factor affecting purchasing intention of CAR insurance and Risk Perception is the third significant factor affecting Contractors' purchasing intention of CAR insurance.

5.2 Recommendation

Based on the findings of the research regarding factors influencing purchasing intentions for CAR insurance in Addis Ababa, here are some recommendations for insurers, policymakers, and construction stakeholders:

Recommendations for Insurers:

1. Enhance Positive Attitudes: By developing suitable marketing strategies that focus on educating contractors about the benefits and importance of CAR insurance, they are able to raise positive attitudes towards purchasing CAR insurance. This could include success stories or testimonials from satisfied clients.

2. Simplify Access: Improve accessibility to information about policies by providing clear guidelines and support services that help contractors understand their options better.
3. Focus on Perceived Behavioral Control: Offer tools or resources that empower contractors to assess their needs effectively and make informed decisions regarding coverage options.
4. Targeted Communication Strategies: Use targeted communication campaigns aimed at addressing specific concerns related to risk perception among potential buyers, highlighting how CAR insurance mitigates those risks.

Recommendations for Policymakers:

1. Awareness Campaigns: Implement public awareness campaigns focused on promoting understanding of CAR insurance's value within the construction industry through workshops or seminars tailored specifically for contractors.
2. Regulatory Support: It is advisable to establish regulations that promote and require the purchase of CAR insurance, ensuring strict adherence by contractors. This will help ensure that they obtain CAR insurance for the safety and success of their projects.
3. Incentives Programs: Introduce incentives such as tax breaks or subsidies aimed at encouraging more widespread adoption of CAR insurance among construction firms operating in Addis Ababa.
4. Research Funding: Allocate funds towards further research into contractor behavior concerning various types of insurances which may lead toward improved product offerings aligned with market needs.

Recommendations for Construction Stakeholders:

1. Training & Education: Provide training programs focusing not only technical skills but also financial literacy around managing risks associated with projects including understanding insurances like CAR Insurance.
2. Collaboration Opportunities: Foster partnerships between insurers, policymakers, and industry associations ensuring all parties work together towards common goals enhancing overall safety standards while increasing CAR purchasing.

Recommendation for Future Research

1. This study collected a total of 69 completed questionnaires, which may not be sufficient to accurately represent the broader population of contractors. To enhance the reliability and generalizability of future research findings, it is recommended that subsequent studies increase their sample size to include a larger number of contractors. A more extensive sample will provide a more comprehensive view and yield less biased data for analysis.
2. Additionally, this research was limited to data gathered from Addis Ababa alone. To further minimize potential biases in results and improve both accuracy and reliability, future investigations should consider expanding their focus beyond just one city. By including participants from other cities across Ethiopia, researchers can capture diverse perspectives within the construction industry as well as varying regional practices regarding CAR insurance adoption. In summary, increasing the sample size and broadening geographic coverage are essential steps toward obtaining robust insights into contractor behaviors related to CAR insurance in Ethiopia's construction sector.

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Appendix

Questionnaire for Understanding Contractors All Risk Insurance Purchasing Behavior

Introduction for the Questionnaire

Dear Participant, as part of the requirements for my MBA graduation, I am conducting a study to explore the factors influencing Contractors All Risk insurance purchasing behavior within the construction industry.

Please rest assured that all responses provided in this questionnaire are strictly confidential and will be used solely for the purpose of academic research related to my MBA program. Your participation in this research is invaluable and your input will be instrumental in shedding light on the attitudes, perceptions, and experiences related to Contractors All Risk insurance purchasing, ultimately contributing to the advancement of knowledge in this area.

Your time and thoughtful responses are greatly appreciated. If you have any questions or concerns, please do not hesitate to contact me using the provided contact information.

Thank you for your participation and valuable contribution to this research endeavor.

Sincerely, Sossina Deribssa MBA Candidate Phone 0911 74 83 12
Email sossyante@gmail.com

Demographic Information:

What is your current job role within the construction industry?

☐ Project Director ☐ Project manager ☐ Contract manager ☐ Other

How many years of work experience do you have in the construction field?

☐ >5 ☐ 5-10 ☐ 11-15 ☐ >15

What is your highest level of education?

☐ Diploma ☐ Degree ☐ Masters

Have you been involved in purchasing and managing insurance within the construction industry?

☐ Yes ☐ No

Are you familiar with Contractors All Risk insurance?

☐ Yes ☐ No

Instruction:

Please carefully consider each question and provide your response by rating each item on a scale ranging from 1 to 5. Here's how to interpret the scale:

1: Represents the lowest level

3: Indicates a medium level

5: Signifies the highest level

Your thoughtful and honest responses will greatly contribute to the success of this research.

Purchasing Intention (PI):

Please indicate your level of agreement with the following statements regarding your intention to purchase CAR insurance

1. Do you have plans or intentions to buy Contractors All risk insurance in the near future?

   Yes ☐ No ☐

Attitude (AT):

Please indicate your level of agreement with the following statements regarding your attitude toward purchasing CAR insurance.

1. Please rate your overall attitude toward Contractor All Risk (CAR) insurance purchasing.

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

2. Do you believe that purchasing CAR insurance is beneficial for your business?

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

3. Do you believe Contractors All Risk insurance mitigates the financial impact of risks related to construction that could halt or delay your project?

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Subjective Norm (SN):

Please indicate your level of agreement with the following statements regarding social pressures and norms related to Contractors All Risk insurance

1. To what extent do local Ethiopian laws and regulations influence your decision to purchase Contractors All Risk insurance?

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

2. Do you feel social pressure to purchase CAR insurance from your colleagues or industry peers?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

3. How much does the requirement of insurance in contracts impact your purchasing decision?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

4. Do you believe having Contractors All Risk Insurance enhances your credibility and reputation, demonstrating your commitment to managing risks responsibly?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Perceived Behavioral Control (PBC):

Please indicate your level of agreement with the following statements regarding your perceived ability to purchase Contractors All Risk insurance.

1. How confident are you in your ability to make informed decisions when purchasing Contractors All Risk insurance?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

2. To what extent do you feel equipped to manage and understand the terms and conditions of Contractors All Risk insurance effectively?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

3. How knowledgeable do you believe you are about the potential risks covered by Contractors All Risk insurance?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

4. Do you believe that you can easily afford Contractors All Risk insurance based on your current financial circumstances?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Risk Perception (RP):

Please indicate your level of agreement with the following statements regarding your perception of risk in your projects

1. Do you believe there is a high probability of construction related risks occurring in your projects?

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

2. How significantly do the perceived risks influence your decision to purchase Contractors All Risk insurance?

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

3. Do you think that having Contractors All Risk insurance significantly manages the risks associated with construction work?

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

4. Having Contractors All Risks insurance for your projects enables you to focus on project execution rather than worrying about unforeseen incidents?

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Past Experience (PE):

Please indicate your level of agreement with the following statements regarding your past experiences with construction insurance.

1. Were you satisfied with the customer service you received from your Contractors All Risk Insurance provider?

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

2. How do you rate your satisfaction about the claims process for you Contractors All risk insurance?

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

3. Do you believe the premiums you paid for your Contractors All Risk insurance were reasonable compared to the coverage provided?

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

4. Overall, Do you satisfied with your past experience with Contractors All Risk insurance?

   1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

5. Do you think your past experiences with Contractors All Risk insurance will initiate you to purchase a similar policy in the future?

   Thank you for taking the time to complete this questionnaire!