

Program of Construction Technology & Management

Undergraduate Program

BSc. Thesis Proposed on: Effectiveness of Supply Chain Management in Ethiopian Construction Industry

(The Case of real estate developers based in Addis Ababa)

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# **Chapter One: Introduction**

## **Background of the study**

The evolving construction industry has showed a great evolution through the past two, three decades in respect to different aspect including the technological advancements. This evolution led the industry to be one of the hugest and complex sectors in one country. This sector will greatly affect one’s country political, economic and social aspect. Nation government’s contracts with Construction Industry to develop infrastructure related to health, transport as well as education sector. For prosperity of any nation, Construction Industry is quintessential. This sector is also a way to create employability at a country for different professionals, skilled labors and indirect key player. The sector also addresses different stakeholder both locally and internationally which directly contribute to one’s country economic growth and individual work growth.

The construction nowadays simply expect the best practice in three major points. The cost, time and quality of a project. Some scholars add the scope of the project as the fourth constraint. It is very important to address all these constraints into a given project in order to successfully finish and hand-over the project within the estimated cost, within the deliverable time and within the specified quality specification by sticking its project scope.

The evolving real estate industry is one entity in construction industry that solves different gaps in the housing and business demand in our country. The real estate industry consist of residential real estate (including constructing new houses and resale them), commercial real estate (which serves for commercial purpose) and industrial real estate. The direct benefits of a real estate development can be helping the country’s economy with direct and indirect way, solving the key housing problem in a given country and meeting clients need for high satisfaction and high delivery output.

The supply chain management concept comes here for the project successfulness. As there are many success criteria’s, one of the major key criteria’s are the three basic constraint of a project that are mentioned above. Having an efficient construction supply chain will help I succeeding one specific project.

Supply chain management in the construction industry is the relationship between the suppliers and the contractors involved in the overall project. This integrated approach is the foundation of success whereby all the stakeholders have a full understanding of the resources, logistics; the people involved to ensure the project and program are delivered on time and budget. Knowing that all, effective supply chain management in the real estate industry is crucial for the successfulness of the projects.

Effectiveness in construction is defined as the capability of producing a desired result or the ability to produce the stated outputs. When the construction is effective, it means that it has an intended or expected outcome, or produces a deep, vivid impression. However, the effectiveness of the construction industry is faced with different challenges and bottlenecks. Having the knowledge of these challenges will guide through solving the problems and maximizing the effectiveness of the industry in particular the supply chain management.

Some of the challenges faced in the construction supply chain management in Ethiopia, which will make a question to the effectiveness of the sectors are-

* The increased cost throughout the construction supply chain. This can result in raising the cost of materials, high labor costs from suppliers and manufacturers and complex logistics.
* Construction supply chain complexity due to multiple channels to market. The multiple channels in the market is a high affecting cause for the construction supply chain management. As the routes to market increase, the underlying supply chain must adapt.
* Consumer demands drive need for improved speed, quality and service in delivering the construction project.

The general supply chain management process passes five basic process stages whether it is applied on the construction industry or other sector. These are

1. Demand management that focuses on the process of forecasting demand to make sure products can be reliably delivered.
2. Supply management is aimed at to balance supply and demand in a manner that achieves the financial and service objectives of the enterprise.
3. Sales and operations planning (S&Op) aims at empowering leadership to focus on key supply chain drivers, including sales, marketing, demand management, production, inventory management, and new product introduction.
4. Product portfolio management. This stage includes new product introduction, end-of-life planning, cannibalization planning, commercialization and ramp planning, contribution margin analysis, portfolio management and brand & platform planning.

The problems that comes with the poor management of the construction supply chain will affect the client, the contractor, the consultant and other main stakeholders of the construction like the material suppliers, financial institutions and even the community. The late delivery of materials due to poor managed supply chain can make delay in the project so that client is directly affected by this problem, which will result in cost overruns and loss of time. In addition, the consultant can face problems due to difficulty in coping up with technological advancements that comes with advanced construction technology. This will take time and will surely result in activity delays.

If those potential problems remained unsolved, various effects will start to rise in different perspectives. Those are;

* Delays in delivery
* The rising logistics cost due to poor management of the logistics
* Poor customer experience due to unsatisfied customers
* Poor inventory management
* The high financial cost as an individual project and country
* The unachieved customer satisfaction
* The compromised quality deliverance
* The high project overruns
* The claims between the parties involved in the project

## **Statement of the problem**

Proper supply chain management make the difference on a given proposed construction project. Understanding the basic benefits of effective supply chain management and assessing the industry practice on the effectiveness of construction supply chain management is the aim of this study, specifically on real estate developers in Addis Ababa, Ethiopia. In addition, it aims at answering how the supplier/partner relationship management affects the overall projects. It also addresses the current practice of the construction supply chain management applied in the real estate developers in Addis Ababa.

## **Research Question**

Research questions are formulated as follows:

1. What are the benefits and processes in construction supply chain management?
2. What is the effect of effective supply chain management process on the overall building projects?
3. What are the major supplier/partner relationship management does the real estate companies incur to manage with their suppliers and partners?
4. How does the real estate developers manage the supply chain management practice currently?

## **Objective of the study**

### **General objective**

The main goal of this research is to address the effectiveness of construction supply chain management in the real estate developers in Addis Ababa and the major effects laid on consequence of the ineffectiveness of the construction supply chain and the process that go through the project.

### **1.3.1 Specific Objective**

The specific objectives are as follows:

* Identify the key benefits and process in the construction supply chain management.
* Address the difference on the effectiveness of construction supply chain in the construction industry.
* Assess the key practices of supplier/partner relationship management.

## **Scope of the research**

This research deals with the effectiveness of construction supply chain management in privately owned real estate developers specifically in the residential real estate development firms in Addis Ababa, Ethiopia. The real estate agents and developers who sell ready houses after the construction phase are not included in the study.

## **Limitation of the study**

The effectiveness of supply chain management in real estate developers is wide and broad topic. This research is delimited to the real estate developers in residential housing development projects based in Addis Ababa. Limitation of time due to crushed schedule of the semester is mentioned as the delimitation of the research.

## **Research Motivation**

Real estate development as a business venture dates back about quarter of a century in Ethiopia and the industry is suffering from various difficulties due to different factors. The motivation for this research is mainly to address the existing gap of studies in the construction supply chain management, specifically on the real estate developers.

## **Structure of the Proposal**

Chapter 1- Provide a brief background about the study with basic elements on the study. It also covers the statement of the problem that the study will entirely focus on. The objective of the study (the general objective) and the scope & delimitation of the study is covered. It also list the research question and the research motivation, why it is initiated to make a research. Finally, the structure of the proposal is stated in order to overlook the whole component of the proposal.

Chapter 2- Gives brief overview of the literature that are available in different books and sites. It touches the general overview on the SCM literature. It also covers the history of supply chain management and the definition respectively. In addition to this, the real estate developers is highlighted. It also give emphasis on the benefits and challenges of the construction supply chain management.

Chapter 3- It mainly covers the research methodology to be used for the study purpose. It tells the research approach, the source of the data that we are going to collect, the sample design, the methods of data analysis and collection are broadly covered. It also checks the data quality assurance. The data gathering tools and ethical consideration is also covered in this section.

Chapter 4- Contains the work plan and schedule of the study.

Chapter 5- It covers the overall necessary budget for the research to be successful and put an impact in the sector.

# **Chapter Two: Literature Review**

## **2.1 General**

According to the PMBOK® Guide—Fourth edition (PMI, 2008a, p. 434) the definition of a project is “a temporary endeavour undertaken to create a unique project service or result.” Projects are temporary and close down on the completion of the work they were chartered to deliver.

The definition of a program given in The Standard for Program Management—Second edition (PMI, 2008b, p. 312) is “a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. Programs may contain elements of work outside of the scope of the discrete projects in the program.”

A **construction project**, sometimes just referred to as a ‘[project](https://www.designingbuildings.co.uk/wiki/Project)’, is the organized process of [constructing](https://www.designingbuildings.co.uk/wiki/Constructing), [renovating](https://www.designingbuildings.co.uk/wiki/Renovating), [refurbishing](https://www.designingbuildings.co.uk/wiki/Refurbishing), etc. a [building](https://www.designingbuildings.co.uk/wiki/Building), [structure](https://www.designingbuildings.co.uk/wiki/Structure) or [infrastructure](https://www.designingbuildings.co.uk/wiki/Infrastructure). The [project](https://www.designingbuildings.co.uk/wiki/Project) process typically starts with an overarching requirement, which is developed through the creation of a [brief](https://www.designingbuildings.co.uk/wiki/Briefs), [feasibility studies](https://www.designingbuildings.co.uk/wiki/Feasibility_studies), option studies, design, financing and construction. This project falls into three basic constraints over its lifetime. Those are the project budgeted cost, allocated time for completion and the quality required. This factor greatly indicates the success of the construction project.

The successful completion of construction projects is achieved by well-oriented management process and successful integration of skilled labours with the industry in order to achieve the sustainable and developmental goal of the construction industry. It also depends on the efficient construction sector capable of sustaining growth and development in order to meet with the requirement of social and economic development and to best use the latest technological advancement in planning and execution phase of the project.

## **2.2 History of supply chain management concept**

SCM, as a term, first appeared in the early 1980s to describe the range of activities coordinated by an organization to procure and manage. Supply chain management is a concept originating from the supply system used by Toyota to coordinate its supplies and reduce its inventory (Womack, et al., 1990). After its emergence in the Japanese automotive industry as part of a production system, the concept of SCM has been evolved as an industrial management theory and a distinctive subject of scientific research (Bechtel, et al., 1997; Cooper, et al., 1997).

It was indicated that the evolution of supply chain management theory is driven by rapid changes in global business practice (Harland, 1996). They argued that the worldwide recession of the late 1980s and early 1990s forced companies to re-examine, at a strategic level, the ways in which they aimed to add value and reduce costs throughout their business. Initially, the term referred to an internal focus bounded by a single organization and how that organization sourced and procured supplies, managed their internal inventory and moved goods onto its customers. It was recognized that this understanding was inadequate and that the reality of managing supplies meant that supply chains extended beyond the purchasing organization and into its successive lower tiers - suppliers and their suppliers ‘suppliers (Christopher, 2005).

Supply chain management and other similar terms, such as network sourcing, value chain management and value stream management have become the subject of increasing interest after the 1990s (Christopher, 1998; Hines, 1994; Lamming, et al., 1996; Saunders, 1995). Supply chain management has been labeled as the single most wide-ranging approach when considering how organizations utilize their suppliers‘ processes, technology and capability to enhance competitive advantage (Houlihan, 1985; Cooper, 1993; DTI, 1995).

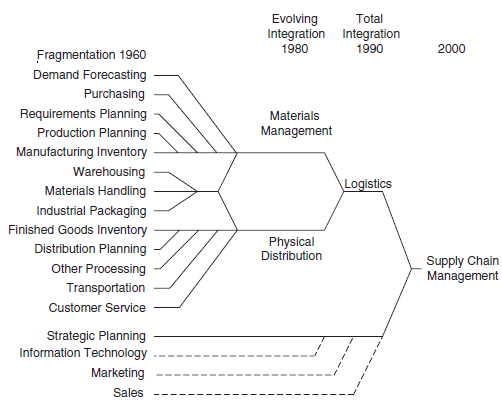


Fig 1: Evolution of Supply Chain Management

## **2.3 Definition of supply chain management**

Different scholars have different looks on supply chain management definition. With that in consideration, there are list of definitions given for ‘supply chain management’.

Chopra and Meindl (2007, p.3) believes that “a supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. Within each organization, such as a manufacturer, the supply chain includes all functions involved in receiving and filling a customer request. These functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service”.

Chen and Paulraj (2004) stated that a typical supply chain is a network of materials, information, and services processing links with the characteristics of supply, transformation and demand, as you can see in the figure below (Figure no.2):

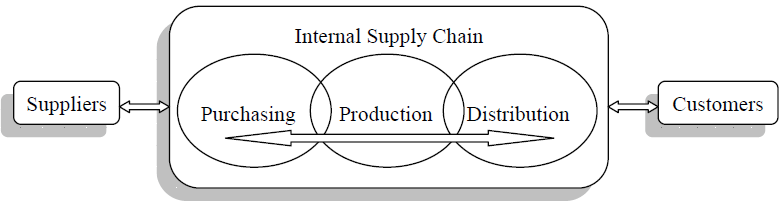


Fig 2: An illustration of a company’s supply chain (Source: Chen and Paulraj (2004))

The global Supply Chain Forum identified eight key processes that make up the core of supply chain management (Cooper, et al., 1997):

* Customer Relationship Management: the structure for how the relationship with the customer is developed and maintained.
* Customer Service Management: the single source of customer information, such as product availability, shipping dates and order status.
* Demand Management: includes forecasting demand and synchronizing it with production, procurement, and distribution.
* Order Fulfillment: integration of the firm‘s manufacturing, logistics and marketing plans.
* Manufacturing Flow Management: deals with making the products and establishing the manufacturing flexibility needed to serve the target markets.

The Supply Chain Council, an independent non-profit organization, has developed a SCM maturity model (McCormack *et al*. 2004). The model defines the following SCM maturity levels:

* *Level one* – *Ad hoc* – The supply chain and its practices are unstructured and ill defined. Processes, activities and organizational structures are not based on horizontal processes, while process performance is unpredictable. SCM costs are high, customer satisfaction is low, functional cooperation is also low.
* • *Level two* – *Defined* – Basic SCM processes are defined and documented, but the activities and organization remain traditional. SCM costs remain high; customer satisfaction has improved, but is still low.
* *Level three* – *Linked* – This level can be considered a breakthrough where cooperation between company departments, vendors and customers is established. SCM costs begin decreasing and customer satisfaction begins to show a marked improvement.
* *Level four* – *Integrated* – The Company, its vendors and suppliers co-operate on the process level. Organizational structures are based on SCM procedures; SCM performance measures and management systems are applied. Advanced SCM practices, like collaborative forecasting with other members of a supply chain, form. Consequently, SCM costs are dramatically reduced.
* *Level five* – *Extended* – Competition is based on supply chains. Collaboration between companies is on the highest level, multi-firm SCM teams with common processes, goals and broad authority form.

The five stages of maturity show the progression of activities toward effective SCM and process maturity. Each level contains characteristics associated with process maturity such as predictability, capability, control, effectiveness and efficiency.

## **2.4: Real estate Development**

As Khedekar and Dhawale (2015) put it, the term real estate stands as land, including the air above and the ground below it and any buildings or structures on it. It covers residential housing, commercial offices trading spaces such as theatres, hotels and restaurants, retail outlets, industrial buildings such as factories and government buildings (Khedekar & Dhawale, 2015). Real estate involves the purchase, sale, and development of land, both residential and non-residential buildings. The main players in real estate market are the developers, builders, real estate agents, tenants, buyers, etc. (Khedekar & Dhawale, 2015). Isaac, Balchin and Chen (2000: 320) define development with respect to real estate or property as “a process of conversion (development or redevelopment) of land from one use to another.” (Truneh, 2013).

Real estate development is linked with specialization in the sense that a person develops land and property for sale or rent (Truneh, 2013).

## **2.5: Effectiveness of Construction Supply Chain Management**

### **2.5.1: Definition of effective**

Different sources state the definition of effective. Some of the definitions are stated here below.

* Effective means being able to achieve a desired outcome or end result of an intended need.
* It is about producing a definite or desired result that is efficient.
* It is all about having an effect on something and/or producing a result.

Measures of Effectiveness (MOE) are measures designed to correspond to the accomplishment of mission objectives and the achievement of desired results. They quantify the results to be obtained by a system and may be expressed as probabilities that the system will perform as required.

## **2.5.2: Benefits of effective supply chain management**

Locally and internationally, it is believed that the supply chain management concept have greater impact on the success of a given project. As a key index, SCM is necessary now to deliver a project on time, budget and quality.

The most effective benefits of supply chain management are-

* Better collaboration- Nowadays, information is the major problem amongst companies. According to Oracle, an American multinational computer technology corporation, 76% of companies lack an automated flow of information across the supply chain, and half of companies say fragmented information results in lost sales opportunities. Integrated automated software’s allows every user an efficient and fast information access and lets the game to be changed. Because of this sufficient information exchange platforms, supply chain leaders have the information they need, in context, to make informed decisions.
* Improved quality control- Companies that have greater control over not only their direct suppliers but also their suppliers’ suppliers benefit from improved quality control. Implementing standard minimum quality criteria, for instance, enables direct suppliers to identify and collaborate with secondary suppliers that meet those requirements. Likewise, process guidelines can help suppliers comply with your company’s quality requirements. Some companies go beyond simply providing criteria, conducting periodic audits or requesting documentation verifying suppliers’ compliance steps.
* Higher efficiency rate- companies should always work on improving and boosting their effectiveness as well as their efficiency. Nowadays being effective is not the only expectation but also being efficient will increase productivity as well as project successfulness.

Having real-time data on the availability of raw materials and manufacturing delays allows companies to implement backup plans, such as sourcing materials from a backup supplier, preventing further delays. Without real-time data, companies often do not have time to initiate plan B, [resulting in issues](https://6river.com/biggest-challenges-of-supply-chain-management/) such as out-of-stock inventory or late shipments to end consumers.

* Reduced overhead costs- due to improper supply chain management, the overhead costs including the accounting fees, advertising, insurance, interest, legal fees, labor burden, and rent will increase at a high rate. So managing the supply chain is not a time given issue.

With more accurate demand predictions, companies can reduce the overhead costs associated with storing slow-moving inventory by stocking less low-velocity inventory to make room for higher-velocity, revenue-producing inventory. [Warehouse fulfillment costs](https://6river.com/best-ways-to-control-reduce-warehouse-fulfillment-costs/) contribute significantly to overhead. Reduce these costs by optimizing your warehouse layout, adopting the right [automation solutions](https://6river.com/how-automated-robots-are-changing-the-face-of-warehousing/) to improve productivity and implementing a better inventory management system.

In addition to this, supply chain management has greater importance on two basic perspectives.

* Reduced purchasing costs- decreased purchasing and production costs
* Improved customer services- right quantity and quality, on-time delivery and improved service.

## **2.6: Supplier-Partner Relationship Management**

Supplier relationship management (SRM) is the systematic approach to evaluating vendors that supply goods, materials and services to an organization, determining each supplier's contribution to success and developing strategies to improve their performance.

Supplier Relationship Management (SRM) is **the systematic approach of assessing suppliers’ contributions and influence on success**, determining tactics to maximize suppliers’ performance, and developing the strategic approach for executing these decisions. As part of [vendor management](https://www.prokuria.com/post/vendor-onboarding), supplier relationship management is where companies segment their suppliers and determine important supply categories, in order to devise strategies capable of managing their suppliers and supplies more effectively.

Supplier relationship management is comprised of three main steps as follows:

[**Supplier segmentation**](https://www.prokuria.com/post/how-to-perform-supplier-segmentation)**:** This is about differentiating suppliers as a means of identifying risks and opportunities.

1. **Supplier strategy development:** Devising an optimal way to interact with suppliers based on business goals and needs.
2. **Supplier strategy execution:** Executing the designed strategy, at the previous step, in an effective way to obtain desired results in line with the company's goals.

### **2.6.1: Benefits of an Effective Supplier-Partner Relationship Management**

Modern construction works have a wide range of suppliers while their supply chains are becoming increasingly complicated. The increased need to cut prices for the consumer also means that margins need to be tightened by as much as possible. To maintain profitability of the construction sector and drive efficiency, construction companies need to turn to effective supplier-partner relationship management as a controlled and systematic approach to sourcing the goods and services needed to run their business.

Some of the benefits of supplier/partner relationship management in the supply chain of a construction is that:

* **An optimized procurement process**
* **Reduced costs**
* **Reduced waste and minimized price volatility**
* **Improved efficiency**
* **A strengthened supply chain**

# **Chapter Three: Research Methodology**

## **3.1: Research Approach**

The study adopted empirical investigation with descriptive research design since the major focus of the research is the ‘The Prospect of Supply Chain Management in Ethiopian Construction Industry ' in the Case of Contractors based in Addis Ababa.

Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, where, when and how [questions](https://www.scribbr.com/research-process/research-questions/), but not why questions. A descriptive research design can use a wide variety of [research methods](https://www.scribbr.com/category/methodology/) to investigate one or more [variables](https://www.scribbr.com/methodology/types-of-variables/). Unlike in[experimental research](https://www.scribbr.com/methodology/experimental-design/), the researcher does not control or manipulate any of the variables, but only observes and measures them. Descriptive research is an appropriate choice when the research aim is to identify characteristics, frequencies, trends, and categories. Surveys, observations and case studies are used in the descriptive research methodology.

Studies concerned with specific predictions, with narration of facts and characteristics concerning individual, group or situation are all examples of descriptive research studies (Kothari, 2004, p37).

The independent variable refers to the antecedent phenomenon, while the dependent variable relates to the consequent phenomenon. Therefore, in order to accurately describe the effect & relationships between the independent variables and the dependent variable Descriptive research studies are employed.

## **3.2: Sources of Data**

The required data for the study collected using both primary and secondary data collection methods

The **Primary data :-** is a data collected from employees of the company by using a self-outlined questionnaire that consist both open and more of closed ended questions that is designed to collect responses for qualitative and quantitative analysis respectively.

The **Secondary data:-**The source of secondary data for this research is annual report of the companies and journals as a stepping board for the research.

## **3.3. Sample Design**

### **3.3.1 Target Population**

The target population is said to be a specified group of people or object for which questions can be asked or observed made to develop required data information. Therefore, for this study, the target populations are the employees of the construction companies, which are employed at the current research year of 2021 GC and are currently active in the work force, are the target of the study.

## **3.4 Methods of Data Analysis**

The major data collected through different questionnaires presented in table form and descriptive statistics is employed in this study.

Descriptive statistics is used to describe a set of data in terms of its frequency of occurrence, its central tendency, and its dispersion. Descriptive techniques often include constructing tables of means and quartiles, measures of dispersion such as variance or standard deviation, and cross-tabulations or "crosstabs" that can be used to examine many disparate hypotheses.

The sample for this study is relatively small. As a result, the analysis had combined all groups of respondents (clients, consultants, contractors) in order to obtain significant results. The study used relative importance index (RII) method to ordinals arranges variables in terms of importance and agreement and it is calculated as follows (Aibinu and Jagboro, 2002).

RII = ∑i=1fiwi

N (A)

Where: N = Total number of respondents

wi = the variable expressing the frequency of the ith response.

fi= frequency or count of variables

A= the maximum scale

## **3.5 Method of Data Collection**

The data collection method here in the descriptive research methodology is using specific methods like observational method, case study method and survey method. Between these three, all the primary [data collection methods](https://www.questionpro.com/blog/data-collection-methods/) are from employees of the company by using a self-outlined questionnaire and the secondary data’s are from the annual report of the companies and journals, which render sufficient information to the study.

## **3.6 Data Quality Assurance**

Here in the study, the quality of the data are highly focused to maintain it’s originality and quality in terms of different aspects. The study uses the following data quality ensuring.

1. Are the requirements known?
2. Is the process well designed?
3. Is the process well documented and communicated timely?
4. Is the process well implemented?
5. Are the data’s verified and compared with the checklists?
6. Are the data appropriately analyzed and reported?

## **3.7 Data gathering tools/instruments**

**Questionnaire-**A questionnaire is a research instrument consisting of a series of questions for the purpose of gathering information from respondents. Questionnaires can be thought of as a kind of written [interview](https://www.simplypsychology.org/interviews.html). They can be carried out face to face, by telephone, computer or post. Here a questionnaire is used as the major tool/instrument used for gathering information from the respondents selected from the specified companies.

The research instruments employed in the study mostly are closed questioner survey. Questioner survey is the most preferred choice in logistics and supply chain survey research (Kotzab, 2005). Although, questionnaires have its own inherent limitations, they are particularly relevant in the research of supply chains because it can help collect better information about the realities of supply chains and develop better and more complete theories (Eisenhardt, 1989; Yin, 2003).

To unfold the meanings of peoples‘ responses in an appropriate and more understandable way, themes are identified and categorized based the objectives of the thesis. The following themes are used:

* Part I - General Information,
* Part II - Perception of construction stakeholders on the benefits of SCM,
* Part III - Current practices and challenges in SCM,
* Part IV - Approach of supply chain management
* Part V - Solutions for the challenges in the supply chain network.

The potential suppliers for the study were identified after the response from the public bodies and contractors were received.

Likert’s scale is important to know respondents' feelings or attitudes about something. The respondents must indicate how closely their feelings match with the question or statement on a rating scale. The study employs a five Likert‘s - scale ordinal measures (from 1 to 5) as shown in the following sections.

The scales are:

1. Unimportant/ Negligible/ Not at all
2. Less important/ Low/ little
3. Somewhat important/ Moderate/ average
4. Important/ High/ Greatly
5. Very important/ very high/

A lot The questionnaires are prepared in such a way that detailed information can be gathered in a systematically prepared matrix table.

**Interview** is essentially a structured conversation where one participant asks questions, and the other provides answers. In common parlance, the word "**interview**" refers to a one-on-one conversation between an interviewer and an interviewee. Here, this tool is used to directly gather the information needed to the study. Although the interview is layout first by a paper questions and forwarded for the interviewees in order to gather the data.

**Observation** is way of gathering data by watching behavior, events, or noting physical characteristics in their natural setting. Observations can be overt (everyone knows they are being observed) or covert (no one knows they are being observed and the observer is concealed). Both the overt & covert way of observation is used to reinforce the data gathering in this study.

**Document Analysis** With this data gathering tools, reports, journals and relevant document has been reviewed and gathered from HR department and Marketing & sales. This data gathering tool is used to enrich the data which is obtained through questionnaire method. The permission is first requested by the data collector and confidentiality of the company relevant documents are guarded.

## **3.8 ETHICAL CONSIDERATIONS**

All the research participants included in the study were duly informed about the purpose of the Study and their willingness and agreement was secured before the beginning of filling the questionnaire and conducting interview. Regarding the right to privacy of the respondents, the Study maintained the confidentiality of the identity of each participant. In all cases, names are kept confidential and collective names such as ‘the respondents,’ the participants, the Interviewees etc. were used in the study.

# **Chapter Four: Work Plan and Schedule**

Work plan for the research study including the activities, time frame, persons involved, resource needed, budget, source of fund and the expected output.

Fig 4.1 Work plan and schedule of the study

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ACTIVITIES** | **TIME FRAME** | **PERSONS INVOLVED** | **RESOURCE NEEDED** | **BUDGET** | **SOURCE OF FUND** | **EXPECTED OUTPUT** |
| A) Pre Implementation   * Prepare the action plan and project proposal | Last weeks of July 31st, 2021 | Instructor and chair personnel’s | Paper, reference books and materials | Undefined cost | Self-financed | Submission of the research proposal and approval |
| * Contact with the intended contractor’s for request to help in the study | Mid-August, 2021 | Research worker, company Managers and staff members | Request letter paper | Undefined cost | Self-financed | Approval on the request |
| * Create data collection instruments and data analysis methodology and ensure for trustworthiness | 3rd week of August | Consultant/ research worker | Questionnaires, Journals, checklists | Undefined cost | Self-financed | Prepare data gathering materials |
| * Conduct preliminary surveying | 3rd week of August | Colleagues, company employees and surveyor | Surveying sheets, preliminary questionaries’ and data gathering notebook | Undefined cost | Self-financed | Preliminary surveying collected data’s |
| B) During Implementation   * Conduct the basic study approaches until desired outcomes | 4st weeks of August up to 1st weeks of September | Research worker, company employees, other stakes in the market | Data gathering tools, camera, surveying sheets, questionnaires, checklists, data gathering notebook | Undefined cost | Self-financed | Survey data’s, organized data, company replies, change shortlist (if any) |

# **Chapter Five: Budget of the study**

Research Project

Budget

|  |  |
| --- | --- |
| Project Title: | The Prospect of Supply Chain Management in Ethiopian Construction Industry  (The Case of contractors based in Addis Ababa) |
| Project Members: | Natnael Aychew, Yadeta Garedew and Yospeh Alemu |
| Institution: | Ethiopian Institution of Architecture, Building Construction and City Development |
| Total Requested: | 5,140 ETB |

Project Activities (The costs are estimated with a 44-day study period, not including the weekends).

|  |  |  |
| --- | --- | --- |
| **Personnel** | **Description** | **Cost** |
| Principal Researcher Accommodation | Reasonable Lunch, snacks and Tea accommodation | 3,080 ETB |
| Transportation | Reasonable transportation allowance | 880 ETB |
| Others | Any other expenses that will help the research to conduct the study | It will be specified with further discussions with the funding agent. |
| **Total:** | | 3,960 ETB without including other expenses. |

|  |  |  |
| --- | --- | --- |
| **Event Organized** | **Description** | **Cost** |
| Research Meetings | Focus meetings on the research title with the project managers and for whom it is concerned with white papers and pen | 80 ETB (Including white paper and pen for each meeting participants with the maximum number of 10 participants in the meeting) |
| Snack and water for the meetings | Snack and water provided for the meeting participants | 200 ETB |
| Others | Any other expenses that will help the research meeting to conduct the study | It will be specified with further discussions with the funding agent. |
| **Total:** | | 280 ETB without including other expenses. |

|  |  |  |
| --- | --- | --- |
| **Other research activities** | **Description** | **Cost** |
| Data collection & Analysis | Costs associated with field surveying, costs associated with outsourced preparation or analysis of data | 500 ETB |
| Publication Costs | Costs related to the publication of research carried out by the researcher including monographs, articles, and editing services of a native speaker, publisher’s costs, printing costs etc. | 400 ETB |
| Others | Any other expenses that will help the research to conduct the study | It will be specified with further discussions with the funding agent. |
| **Total:** | | 900 ETB |

|  |  |
| --- | --- |
| **Project Expense Total (Excluding others)** | 5,140 ETB |

# **Reference**

Arkebe O., (2015), Made in Ethiopia – Industrial Policy in Ethiopia, Oxford University Press.

William J.O’Brian & Ruben Vrijhoef (2009), construction supply chain management handbook, (1st ed.), CRC press.

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Kothari W., (2004), Research Methodology*,* second Edition, New age international publisher, India

Natnael Gebreyesus May (2016) Employees’ Perception on the Effects of Supply Chain Management Strategy on Firm Performance, The Case of MOHA Soft Drinks Industry S.C. Addis Ababa

Stephon Pryke (2009) Construction on Supply Chain Management: Concepts and Case Studies

Betelhem Kebede May (2017) Assessment of supply chain management in public building construction projects in Addis Ababa

<https://www.turnerandtownsend.com>

<https://6river.com>

# **Appendices**

SURVEY QUESTIONNAIRE ON CONSTRUCTION SUPPLY CHAIN MANAGEMENT PRACTICES.

A STUDY OF REAL ESTATE DEVELOPERS BASED IN ADDIS ABABA

Dear Sir/Madam,

This survey examines various aspects of supply chain management practices in an organization. Your participation is critical to the success of the study. All responses will be kept confidential and will not traceable to individual respondent. There are no right or wrong answer to the following questions. I am only interested in your assessment of your organization’s activities. The study is purely for academic purpose and thus not affects you in any case.

You will be asked questions concerning the company’s current business practice. The questionnaire should take about 20 minutes to complete. Kindly spare a few minutes from your busy schedule to complete the questionnaire as your participation is of value to this study.

Once you have completed the questionnaire, please submit it to the researcher.

Thank you in advance for your cooperation and in case of enquiry, please do not hesitate to contact the researcher.

Natnael Aychew Kebede

Research Team Head

Faculty of Construction Technology & Management

Addis Ababa University

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Email- [natnaelaychew@gmail.com](mailto:natnaelaychew@gmail.com)

Addis Ababa, Ethiopia

The following questions are about how your organization has been implementing supply chain management practices. In general, kindly identify your agreement on the following practices.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Please tick (✔) at the appropriate box/column or write in your answers where appropriate | | | | | | | |
| SECTION 1: SUPPLY CHAIN MANAGEMENT PRACTICES | | | | | | | |
| **Code** | **Description** | **Strongly Agree** | **Agree** | **Neutral** | **Disagree** | **Strongly Disagree** | **Not Applicable** |
| SSP1 | Our organization rely on few dependable suppliers |  |  |  |  |  |  |
| SSP2 | Our organization rely on few high quality suppliers |  |  |  |  |  |  |
| SSP3 | Our organization has continuous improvement programs that include its key suppliers |  |  |  |  |  |  |
| SSP4 | Your organization certifies its suppliers for quality |  |  |  |  |  |  |
| SSP5 | Our organization regularly solve problems jointly with its suppliers |  |  |  |  |  |  |
| SSP6 | Your organization frequently interacts with customers to set its reliability, responsiveness, and other standards |  |  |  |  |  |  |
| SSP7 | Your organization frequently evaluates the formal and informal complaints of its customers |  |  |  |  |  |  |
| SSP8 | Your organization periodically evaluates the importance of its relationship with its customers |  |  |  |  |  |  |
| SSP9 | Information exchange between your organization and its trading partners is reliable |  |  |  |  |  |  |
| SSP10 | Our organization has continuous quality improvement program |  |  |  |  |  |  |
| SSP11 | Our supply chain members have common, agreed to goals for supply chain management |  |  |  |  |  |  |
| SSP12 | Our supply chain members share risks and rewards |  |  |  |  |  |  |
| SSP13 | Our supply chain members help each other finance capital equipment |  |  |  |  |  |  |
| SSP14 | Our supply chain members share research and development costs and results with each other |  |  |  |  |  |  |
| SSP15 | Your organization’s goods are stored at appropriate distribution points close to customers in the supply chain |  |  |  |  |  |  |
| SSP16 | Our organization produces only what has been ordered by customers (pull production system) |  |  |  |  |  |  |

The following questions are about how your organization has been implementing supply chain integration. In general, kindly identify your agreement on the following practices.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Please tick (✔) at the appropriate box/column or write in your answers where appropriate | | | | | | | |
| SECTION 2: SUPPLY CHAIN INTEGRATION | | | | | | | |
| **Code** | **Description** | **Strongly Agree** | **Agree** | **Neutral** | **Disagree** | **Strongly Disagree** | **Not Applicable** |
| SCI1 | Firms in our supply chain establish more frequent contact with each other |  |  |  |  |  |  |
| SCI2 | Firms in our supply chain create a compatible communication and information system |  |  |  |  |  |  |
| SCI3 | Our firm extends its supply chain beyond its customers/suppliers |  |  |  |  |  |  |
| SCI4 | Our firm participates in the sourcing decisions of its suppliers |  |  |  |  |  |  |
| SCI5 | Our firm is guided with the customer satisfaction and the chain desire |  |  |  |  |  |  |
| SCI6 | Our firm has the full documented supply chain integration management plan and it is guided with that document |  |  |  |  |  |  |
| SCI7 | Our firm puts special effort on the integration management to make it more smooth, reliable and fast |  |  |  |  |  |  |
| SCI8 | Our firm have list of suppliers and customers to integrate their needs and orders |  |  |  |  |  |  |
| SCI9 | Our firm has the checklist to make the integration traceable |  |  |  |  |  |  |

The following questions are about how your organization’s supply chain has been performing in comparison to other organizations or firms in the same electronics industry. In general, kindly indicate the performance level of your organization’s supply chain.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Please tick (✔) at the appropriate box/column or write in your answers where appropriate | | | | | | | |
| SECTION 3: SUPPLY CHAIN PERFORMANCE | | | | | | | |
| **Code** | **Description** | **Strongly Agree** | **Agree** | **Neutral** | **Disagree** | **Strongly Disagree** | **Not Applicable** |
| SCP1 | Ability to respond to and accommodate demand variations, such as seasonality. |  |  |  |  |  |  |
| SCP2 | Ability to respond to and accommodate the periods of poor manufacturing performance |  |  |  |  |  |  |
| SCP3 | Ability to respond to and accommodate the periods of poor delivery performance |  |  |  |  |  |  |
| SCP4 | Ability to respond to and accommodate new products, new markets or new competitors |  |  |  |  |  |  |
| SCP5 | Ability to respond to and accommodate the periods of poor supplier performance |  |  |  |  |  |  |

The following questions are about demographic profile of your organization. Kindly identify the appropriate characteristics of your organization or firm.

|  |  |
| --- | --- |
| Please tick (✔) at the appropriate box/column or write in your answers where appropriate | |
| SECTION 4: DEMOGRAPHIC PROFILE | |
| Q1: Numbers of Employees:   * Less than 50 * 50 – 100 * 100 – 250 * 250 – 500 * More than 500 | Q2: Annual sales of this company is:   * Less than 1 million * 1 – 5 million * 5 – 10 million * 10 – 50 million * 50 – 100 million * More than 100 million |
| Q3: Years of operating experience of this company:   * Less than 1 year * 1 – 5 years * 5 – 10 years * 10 – 15 years * 15 – 20 years * More than 20 years | Q4: Number of suppliers   * Less than 50 * 50-70 * 70-100 * 100-120 * More than 120 |

If you have problems in completing this form, please do not hesitate to contact us

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Thank you for your valuable input and kind cooperation

**This is the end.**

**Your kind participation is much appreciated.**

**Thank you**