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The Effect of Construction Chemical Companies' Marketing Mix Strategy on Customer Perception: The Case of Mega Construction Projects in Ethiopia

A Thesis Submitted to Addis Ababa University College of Business and Economics, Graduate Studies in Partial Fulfillment of the Requirements for the Degree of Master of Business Administration, Specialization in Management

By: Wasihun Namssi

Advisor: Dr. Ethiopia Legesse

Addis Ababa University

College of Business and Economics

Addis Ababa

June 2024

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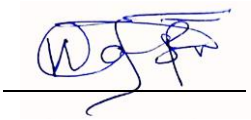
Declaration

I, Wasihun Namssi, hereby declare that the thesis entitled **The Effect of Construction Chemical Companies' Marketing Mix Strategy on Customer Perception: The Case of Mega Construction Projects in Ethiopia** is my own original work and has not been submitted for any degree in any other university. It is offered for the award of the degree of Master of Business Administration in Management from Addis Ababa University.

Name: Wasihun Namssi

Signature: 

Date: June 9, 2024

Advisor Name: Dr. Ethiopia Legesse

Signature: 

Date: June 9, 2024

Statement of Certification

This is to certify that the thesis prepared by Wasihun Namssi entitled: **The Effect of Construction Chemical Companies' Marketing Mix Strategy on Customer Perception: The Case of Mega Construction Projects in Ethiopia** and submitted in partial fulfillment of the requirements for the degree of Master of Business Administration specialization in management complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

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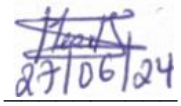
Internal Examiner: Dr. Meskerem Mitiku Signature:  Date: 27/6/24

External Examiner: Dr. Getie Andualem Signature:  Date: 26/6/2024

Advisor: Dr. Ethiopia Legesse Signature:  Date: 28/6/2024

Chair of Department of Graduate Program Coordinator

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Contents

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Acronyms

ANOVA	Analysis of Variance
ERP	Enterprise Resource Planning
RMC	Ready Mix Concrete
SAP	Systems, Applications and Products
SPSS	Statistical Software Packages for Social Science

Abstract

This study is focused on the marketing mix model used by construction chemical companies on mega construction projects in Ethiopia. Marketing mix model is strategy used by companies to formalize their approach to customers to meet their demands. With marketing mix evolution from the formally known 4Ps strategy to the new SAVE model, the study makes theoretical as well as empirical study to build on the concept development. To understand the practicality of SAVE model by construction chemical companies in mega construction projects, the study engaged 205 questionnaires collected from different projects. These questionnaires were analyzed by SPSS V29 to understand the relationship between the marketing mix models and the customer perception. From the correlation analysis, it is discovered that the relationship between the customer perception and the SAVE model elements is strong. The regression result show that 86.8% in the variation of the customer perception is explained by the SAVE marketing mix model while the remaining 13.2% is related with other factors. From each hypothesis tested, solution, access, value, and education have been found to have direct and significant impact on the customer perception. Seeing the elements effect, Solution has been the most impacting on the customer perception followed by Access, Education and Value. The study's findings demonstrate that implementing the SAVE model improves customer perception, and feedback from customers on various projects indicates that the SAVE model used by construction chemical companies is beneficial.

Key words: *Marketing Mix Model, 4Ps Model, SAVE model, Customer perception, Construction chemical companies, Mega projects, Construction chemicals.*

Chapter One- Introduction

1.1. Background of the study

Through the technological advancement and globalization, customers have now more chance to get products and services from different companies. They can easily access and find details of products, uses and applications without even consulting a seller or visiting brick and mortar stores. Such cases require companies to invest more to create satisfied customers with seamless experience over entire operation. Satisfied customers mean repetitive purchase and more reference towards the companies' products and services (Ali et al., 2015). Understanding this crucial aspect, researchers proposed a more formal and organized approach for companies to follow. This organized approach has been termed as marketing mix model. According to Singh (2012), marketing mix model is set of variables used by companies to give their customers with an access to products and services. The term was more formalized in the 1960s and since the initial development, marketers used its elements to approach customers and meet requirements.

The last six decades has seen evolvement in the marketing mix model. In the 1960s, the most widely known 4Ps model was formulated by E. Jerome McCarthy. This model consisted of Product, Price, Place and Promotion. Since the model is widely used for the products sector, the service sector required a modified version of this in which Booms and Bitner came up with the 7Ps model that added People, Process and Physical Evidence on the original 4Ps. Other marketing models such as the 4Cs and 4Es were introduced in the 1990 and 2009 to further develop the marketing mix concept and shape it in a way the focus can be based on the customer as well as technological development. The most recent development in the marketing mix model is the SAVE model which was developed by Richard Ettenson and his colleagues in the 2013 (T. Wani, 2013b). The model has been formulated to be taking the previously known 4Ps in new dimension. According to Ettenson (2017b) the SAVE model is more of customer centric, and it consists of Solution, Access, Value and Education which is expected to replace Product, Place, Price, and Promotion respectively.

Through the years of the marketing models evolution, different researchers studied the 4Ps and the 7Ps by relating with customer satisfaction and loyalty. The application and impact are different from sector to sector. Ataman et al. (2010) study in France resulted that promotion and price have

higher effect when considering long term time span while price has been effective in short term span. Widyastuti et al. (2020) made study on the 4Ps impact on the buying behavior in which product and place were found to be positively impacting while price and promotion were seen not impacting the purchase decisions. The study made by Al-Fadly (2022) focused on the 7Ps application in the construction sector in gulf countries and the result show that the customers perception was high for promotion, physical evidence, and people.

In Africa, a study made by Thwala and Slabbert (2018) confirmed that product and place are the top two elements in the VAAL region of South Africa on which they studied the guesthouse industry. Further studies were also conducted in Ethiopia in different sectors. Eshete et al. (2020) studied the 7Ps model impact on ecotourism and the findings showed that physical evidence is the most contributing. Gebremichael and Dhillon (2022) focused on the 7Ps model in hotel industry and the result show that marketing mix has strong relation with customer loyalty, but they failed to explain the relation with customer satisfaction.

Though these and other studies differ in sector and in region, they conclude that the marketing mix model has significant impact on customer satisfaction and customer loyalty and companies should adopt the models to build their competitive advantage.

Building upon these findings, the goal of this research is to identify the real-world implications of construction chemical companies' marketing mix model application on mega construction projects found in Ethiopia. The focus of the study will be on understanding how it affects customers' perceptions. Construction chemical companies employ strategies to outcompete their competitors in the market, and this study shed light on the strategies' effectiveness from the perspective of their customers.

Additionally, by utilizing the recently developed SAVE model, whose applicability has not been examined in earlier studies, the research will provide a practical aspect and point of reference for subsequent investigations.

1.2. Statements of the Problem

Customers are advancing in their requests and are requiring companies to shift their gear. Customers are requiring having solution for their problems, an easy access, an added value, and ways to learn on systems and products. Companies are required to exceed expectation to win the competition and be the selected supplier and long-term partner. An integrated strategy is expected to result satisfied customers. These dynamism from the customers as well as the strong competition in the market has forced companies to look for the right marketing mix strategy for sustainable development. Such things made the study of the impact of marketing models on customer perception interesting and highly demanded.

Although researchers find ways to evaluate the practicality of the marketing mix models, there are still gaps in depth of research specially in the newly developed SAVE marketing model. Analysis was conducted by T. Wani (2013) to determine how the newly created SAVE model differed from earlier, well-known models. Even though his research demonstrated the superiority of the SAVE model, he concluded that empirical research was still necessary to demonstrate its effectiveness. This made it more difficult for the SAVE model to remain practical and for the 4Ps model to be successfully replaced in the market. Therefore, to aid companies in understanding the concept and impact of SAVE model, practical research has to be conducted.

The relation between marketing mix model and customer behavior has been one of the most important studies in the marketing world. The study made by Sudari et al. (2019) resulted that marketing mix model positively impacts customer satisfaction. Gebremichael and Dhillon (2022) made analysis that executed in strong relation between marketing mix and customer loyalty. However, the research failed to explain the relation with customer satisfaction. Studies had also different outcomes when evaluating individual elements of the marketing mix models. For Thwala and Slabbert (2018), product and place were most impacting whereas for Rachmawati et al. (2019) location/place/ was found to be most impacting. For Widyastuti et al. (2020), product and place had significant impact while price, promotion, and service were not impacting. Seeing the customer perspective, Al-Fadly (2022) suggested that promotion, physical evidence, and people are top impacting factors. A study conducted by Wardhana et al. (2023) discovered promotion to be the most influential strategy for sales growth. These studies demonstrated that the impact as a

model and magnitude of individual element's impact varied, indicating the need for additional research in various fields.

While studies regarding marketing model are various, little is made on the construction chemical sector. One such study made revolving around the concept was by Wardhana et al. (2023) who viewed the three years SAP data to deduct the impact of the 4P elements on sales growth of PT. Nipsea Paint and Chemicals company which resulted promotion to be identified as the most influential element. The lack of such studies on construction chemical sector indicate that the sector can be further explored.

Given the gaps mentioned above, this study aims to understand how the marketing mix model of construction chemical companies affects customer perception. This study will assess the SAVE model's practicality from the customer's point of view. The study will examine how each component affects customer perception and draw conclusions to provide more insight into the SAVE model.

1.3. Research Questions

The study focuses on the effects of construction chemical companies' marketing mix strategy on customer perception in mega construction projects in Ethiopia. Based on the problem stated in the above section, the research intends to give response to the following questions:

- What is the effect of SOLUTION-marketing mix element on creating positive customer perception?
- What is the effect of ACCESS-marketing mix element on creating positive customer perception?
- What is the effect of VALUE-marketing mix element on creating positive customer perception?
- What is the effect of EDUCATION-marketing mix element on creating positive customer perception?

1.4. Objectives of the study

1.4.1. General Objectives

The general objective of this study is to understand the effect of construction chemical companies' marketing mix strategy on customers perception in mega construction projects in Ethiopia.

1.4.2. Specific Objectives

- To determine the effect of SOLUTION element on creating positive customer perception.
- To determine the effect of ACCESS element on creating positive customer perception.
- To determine the effect of VALUE element on creating positive customer perception.
- To determine the effect of EDUCATION element on creating positive customer perception.

1.5. Research Hypothesis

The marketing mix strategy has evolved through the years tending to answer the questions of customers. As marketers look for solutions to meet customer demands, their strategies also go through changes to fit the time and the dynamics of the market.

Hence, making the investigation on the recent marketing mix strategy, this study will try to test the following hypothesis using empirical data and the appropriate analytical tools.

Solution: In today's world, customers are looking to solve their problems. Hence, construction chemical companies must look in the direction of solving rather than focusing on products. The change in focus will result in satisfied customers eventually growing the relation to partnership level. Hence, the following null and alternate hypothesis will be taken as the first to be tested for the impact of solution on customer perception:

H_{0a}*: There is no significant relationship between solution and customer perception.*

H_{1a}*: There is statically significant direct effect of solution on creating positive customer perception towards construction chemical companies (*$\alpha \leq 0.05$*).*

Access: Customers used to visit usual brick and mortar stores to get products and services from suppliers. But with advancement in technology, customers are looking for an ease in access. They want to get their requirements close as their devices in their hands. Hence, the second hypothesis will evaluate the following null and alternate hypothesis regarding the impact of access on customer perception:

H_{0b}*: There is no significant relationship between access and customer perception.*

H_{1b}*: There is statically significant direct effect of access on creating positive customer perception towards construction chemical companies (*$\alpha \leq 0.05$*).*

Value: Customers are changing their views on prices. Although this is hard to do in low-income countries, customers are looking to invest more and more on a solution that can last long rather than buying a cheaper price product only. Customers are looking for well recognized brands as the risks of using the low-priced products is increasing. Hence, the third hypothesis will test the following null and alternate hypothesis regarding the impact of value on customer perception:

H_{0c}: There is no significant relationship between value and customer perception.
H_{1c}: There is statically significant direct effect of value on creating positive customer perception towards construction chemical companies ($\alpha \leq 0.05$).

Education: Promotions used to be leading customers to know certain brands and attract into purchasing. But the development in the media and internet has been a revolution for customers as the can easily search and get information as much as needed. So, companies must focus on how to educate their customers to build a successful brand with strong partnerships. Hence, the fourth hypothesis will examine the following null and alternate hypothesis regarding the impact of education on customer perception:
H_{0d}: There is no significant relationship between education and customer perception.
H_{1d}: There is statically significant direct effect of education on creating positive customer perception towards construction chemical companies ($\alpha \leq 0.05$).

Hence, this study will try to take and examine the above four hypothesis to answer the four research questions.

1.6. Significance of the Research

As the study focus on the construction chemical companies' marketing mix strategies, it will give a good insight to the companies and their decision makers what customers are highly valuing from the elements of the marketing mix. This will help the companies in adopting the new SAVE marketing mix strategy and find ways to strongly bond with customers. It will also further give an insight for companies who are looking to enter the market by showing the recent trend in customer needs from the Ethiopian market perspective.

1.7. Scope of the Research

The study will focus on the construction chemical companies in Ethiopia and their marketing mix strategy. It assesses the effects of these companies' strategy on the perception of the customers found in the mega projects, excluding the road and railway mega projects. It will study from the customers perspective to understand the customers' needs in the marketing strategies.

1.8. Definition of Key Terms

Access: It is set of ways on which customers can get the companies' products and/or services.

Construction Chemical Companies: These are companies manufacturing different chemicals that are used in the construction sector.

Construction Chemicals: These are chemicals that are utilized in constructions. The chemicals will have definite ways of use and give customers additional benefits to meet their different requirements.

Customer Perception: It is the opinion, feelings and beliefs customers have regarding companies. Companies use different strategies to create a positive atmosphere for the customers and the resulting feeling will be termed us the customer perception.

Education: It is system of transferring companies' knowledge to customers. This knowledge will help customers know further about products, uses, application methods, related risks, and mitigation measures.

Marketing Mix Strategy: It is a strategy used by companies to meet the requirements of their customers in efficient and effective way. The strategy combines different elements (defined by different scholars in different times) and allows companies to create the best experience to their customers.

Solution: It is set of actions taken by companies to solve the problems of their customers.

Value: It is the worth or the additional uses of the products and/or services given by companies. This is the base why customers purchase by paying beyond what they planned to pay for.

1.9. Organization of the Thesis

This study will have five chapters. The key contents of each chapter are as listed below:

Chapter One: This chapter contains the introduction part. It explains the background to the study, the research problem, the objectives, the scope, and the organization of the study.

Chapter Two: This chapter reviews different literatures released before and discusses the theoretical review and empirical evidence around Marketing Mix Strategy. Furthermore, it covers the evolution of the concept from the previously known 4P's strategy to the new concept of SAVE. It is finalized by plotting the conceptual framework which was built based on the reviews made.

Chapter Three: This chapter discusses topics such as research design and approaches taken to make the study. It focuses on the target population, the sample size, the sampling technique, methods of data collection and the data analysis methods. In addition, this chapter explains the variables' validity and reliability as well as the ethical consideration.

Chapter Four: This chapter focus will be on findings of empirical data analyses. This chapter also presents detail discussions on the data analyses.

Chapter Five: In this final chapter, a discussion will be made on the research discoveries and conclusion that are driven from the findings. Furthermore, it gives recommendations as well as the contribution of the study. Finally, it explains the limitation of the study and it gives direction to future research to be done on the area of the study.

Chapter Two- Literature Review

2.1. Introduction

In this section, a brief discussion will be made based on the reviewed literatures. The section starts by theoretical review related to the different concepts of the study area. It reviews the definitions set by different authors and the evolution of concepts through time. The theoretical review is followed by the empirical review on which the concept relationship is seen from different authors point of view. In final section of the chapter, the conceptual framework will be designed on which the total research will be based on.

2.2. Theoretical Literature Review

2.2.1. Concept of Customer Perception

One of the important things' companies look from their customers is their perception about the products and/or services provided. Customers will make comparisons and conclusions between different businesses and products. These takeaways can be constructive if the customers had a positive experience during their purchase history or destructive outcome if they had a bad experience. The perception of these customers will be crucial and game changer in the competitive market. According to Villegas (2023):

> Customer perspective is an analytical framework that considers an organization from the perspective of the people who buy and use its products. Financial achievement as well as sales of the products is based on the company's customer base.

A customer may enter a shop and ask for specific product he may know or ask the people around for solution to his problem. The decision of the purchase will be made then comparing different products and brands. After purchase, the customer will evaluate if the solution solved the problem or not. Furthermore, the customer might look for the after-purchase supports received which help him in understanding the application and usages of products, in knowing what procedures to follow and how to avoid any related risks. The overall process will make him develop a perception. This will be base for further recommendations given to others as well as the repetition to use the brand again. Basically, the perception the customer develop will be crucial for:

- Building brand image
- Influence purchase decisions

Overall, companies are looking for affirmative insight which is resulted by the best experience and this affirmative reaction is called positive customer perception.

2.2.2. Concept of Marketing Mix Strategy

Before the development of modern-day currency, people used to exchange goods and services with others by bringing something that can interest others to exchange while the other person also do the same. They come into contact in marketplaces to make these exchanges. Furthermore, to win the desire of the people coming to exchange, they will make sure their products/ services have quality that others need. They try to use higher officials and/or people respected and heard to transfer information into the target people. Though this trade seems to be just a fair exchange, the modern-day marketing concepts were being applied.

After the modern-day currency is developed, trading looks to get into shape. The exchange become the currency for products. This has impacted both sides: seller and purchaser. With experience of spending, the purchasers start to be cautious on getting the best quality products with lower price possible. This impacted the sellers to start looking for ways of producing products as effective and as efficient as possible while keeping the profitability on the sales. With growing market trends, the sellers also faced competition in which new sellers arrive in the market with better pricing and quality of products. Winning this competition required efficiency and effectiveness in production as well as in product delivery. Seeing these things, different scholars try to come with the structured marketing concept.

Marketing mix is a concept developed through the 19th and 20th centuries to describe the set of actions companies should take into consideration while trying to meet the requirements of their customers. Companies need understanding their business area and the customers standing so that their products can reach the target customers and be profitable. And the concept to shape this approach is called Marketing Mix. According to Rafiq & Ahmed (1995) Borden in 1965 claimed to be the first to have used the term “Marketing Mix” but to him it simply consisted of important ingredients or elements making up a marketing program. After initial development of the concept,

the term later incorporated by different authors giving different definitions. Išoraitė (2016) tabulated the different definitions given by different authors as shown below:

Table 1: Authors and Definitions of Marketing Mix

Author	Definition
Goi (2009)	The single P (price) of microeconomic theory is the basis of the marketing mix (Chong, 2003). McCarthy (1964) proposed the "marketing mix," also known as the "4Ps," as a way to put marketing strategy into action (Bennett, 1997). The marketing mix is a conceptual framework (not scientific theory) that outlines the key decisions managers make when tailoring their offerings to meet the needs of customers. Both short-term tactical programmers and long-term strategies can be developed with the tools (Palmer, 2004).
Riaz (2011)	A company uses the marketing mix, which is a collection marketing tools which are controlled, to gain the desired response from the target customer. A group of these instruments are commonly known as the "4Ps of marketing," which stand for "Product, Price, Promotion, and Place."
Rad, Akbari (2014)	To affect the demand and increasing it, Jonathan Ivy (2008) suggested that the tool is marketing mix which can be controlled. The term "compound," "mix," or "combination" refers to the idea that in order for the four Ps—product, price, promotion, and place—to effectively convince customers, they must follow a planned, systematic approach. In other words, customers' perspectives are served by a well-priced, suitable product that is also supported by effective distribution and the application of suitable communication strategies.
Singh (2012)	The mix of marketing decision variables that a company uses to present customer with its products and services is known as the marketing mix. The next step in market programming is to determine the tools and strategy to meet customer needs and competitors' challenges after identifying the market and obtaining basic information about it. It provides the best possible blend of all marketing components to help businesses achieve

	their objectives, including profit, sales volume, market share, return on investment, and so forth. Four components make up the marketing mix: product, price, place, and promotion.

In conclusion, marketing mix strategy is a strategy with set of elements on which companies can base their systems on to get the best customer experience while maintaining an effective and efficient way of producing their products to meet target requirements.

2.2.3. Evolution of Marketing Mix

According to Kalyanam & McIntyre (2002), the marketing mix is an assembly of thousands of tiny components grouped together to make management tasks easier. In the 1960s, Borden popularized the term "marketing mix" and included a variety of ingredients. The following components are included: product, distribution channels, branding, pricing, planning, packaging, display, servicing, physical handling, fact-finding, and analysis; personal selling; advertising; and promotions. Though he brought the idea and listed the ingredients, it was E. Jerome McCarthy that put a light on the famously known 4Ps model. This model was used widely for the last 64 years. The model combined the different ingredients from Borden. The 4Ps are Place, Price, Product and Promotion. Hence, these basic marketing mix elements contain sub-elements that further explains the focus of each.

Though McCarthy's model had strong acceptance, the development of service sector made others to look for models that can further represent their respective sectors. Taking an example of banks, banks can provide saving accounts, business loans, payroll services, debit and credit cards and related. These services can be treated as products. Hence, the service sector required an advancement in the marketing model and one of these new models is the 7Ps. T. Wani (2013) states that in order to improve the 4Ps model for the services sector, Booms and Bitner (1980) suggested adding three more Ps. Acknowledging the unique qualities of the services as goods, they illustrated the significance of environmental elements (material proof), impacting the sense of quality. They added the participants (employees and clients) and the delivery process as extra marketing mix components. Consequently, the 4Ps (Product, Price, Place, and Promotion) were supplemented with 3Ps (People, Process, and Physical Evidence). Though this model is developed for the service

sector, others argued that the additional three Ps can be incorporated into the 4Ps as the likes of Physical evidence can be covered by Product and Promotion.

Additional models developed related to marketing mix are the 4Cs and the 4Es. The 4Cs model developed by Lauterborn (1990) is a more consumer-oriented version of the four Ps. T. Wani (2013) discusses the 4Cs model in the following ways:

> In the 4Cs model, "Consumer" takes the place of "Product," moving the emphasis to meeting the needs of the customer. "Cost" takes the place of "Price," representing the entire cost of ownership. "Communication" takes the place of promotion since it denotes a wider focus and all forms of communication between the company and the customer. Place is substituted with "Convenience," which considers how simple it is to locate, purchase, and obtain information about a product, among other things.

The 4Es model was developed by Fetherstonhaugh in 2009. The model has been associated with the recent technological developments in the world. Fetherstonhaugh thought that with the emerging world trend, the 4Ps need a change to meet the technological touch of the time. With the internet and related accesses advancement, customers can easily get the information they required in one click which makes them more informed and intelligent. T. Wani (2013) further summarizes the model as:

- **Experience-** It's not what the product does, but how it makes us feel.
- **Everyplace-** New distribution channels will be examined.
- **Exchange-** Cost will not be base for Price, rather Value will be considered.
- **Evangelism-** Focus will be finding products last impression and sharing this impression.

After lasting long years of use, the market has been seen to develop and marketers evaluated that the above models need some modification. This is fueled by the rising competition as well as the innovation of the internet, especially the social media advancement, which drastically changed the human interaction. A more suitable model was required which focuses on addressing the customer needs through proper channels. The latest SAVE model addition was described by T. Wani (2013):

> The Harvard Business Review's January–February 2013 issue featured an article titled "Rethinking the 4Ps," which brought it to light recently. This B2B marketing model, which

replaces the 4Ps, was proposed by authors Richard Ettenson, Eduardo Conrado, and Jonathan Knowles. All the ingredients appear to be in place for this model to take the place of the 4Ps in all marketing forms. By moving the focus from Products to Solutions, Place to Access, Price to Value, and Promotion to Education, the SAVE model provides a new platform for markers.

In subsequent sections, the major models (4Ps, 7Ps and SAVE) will be explained.

2.2.4. The 4Ps Marketing Mix Model

The 4Ps marketing model consists of Product, Price, Place and Promotion.

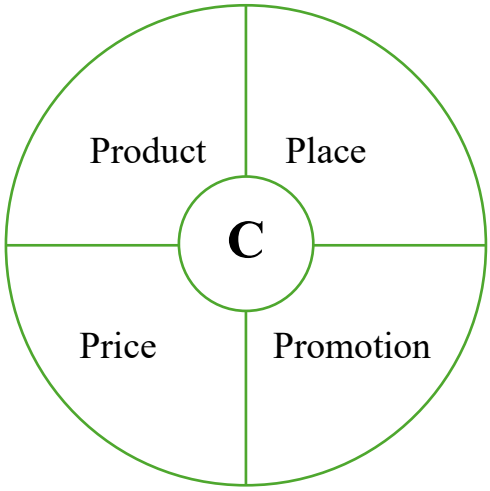

Figure 1: 4Ps Marketing Model

Product

1st P is Products- often explained as goods that are going to be provided to customers. The concept later was widened to explain that P also stand for services provided by companies. Taking Ethio Telecom as example, Ethio Telecom provide mobile phones and SIMs which can be considered as goods while it gives airtime and internet access which can be taken as services.

Companies should be aware of the products quality they are producing and the technological transition it provides. In addition, the companies must design products on which customers accepts and packaging easily usable according to the target market.

Price

2nd P is Price- which focus on how much to offer for customers. The customers usually have some range considered to be paid for some products. Therefore, the value of each product is determined by what customers are prepared to spend.

The price factor depends on different aspects of companies and customers relations. Companies should provide competitive prices but also profitable. Though certain qualities of product may be different from competitors, companies should still take into consideration the price to be given is attractive to the customers. A product that is rarely found in the market but having high value might have higher price. But if a product is produced in mass in the market with local available products, then the strategy may require selling in bulk with lower price setting. In addition, penetrating of the market with new product may require promotional price to make customers attracted for trail.

Place

3rd P is Place- which mainly focus on access on which customers get companies products. A physical store or an internet access can be route for customers finding the products. Distribution channels such as retailers or direct sales can be another route to be considered in purchase of products.

With the technological advancement seen around the world, consideration must be given to be engaged in multiple channels so that customers have the best experience and easily get products.

Promotion

4th P is Promotion- which mainly focuses on the strategies used by companies to communicate with customers. Companies may use physical papers such as brochures and leaflets or advertisements through different media outlets. Company strategy of promotion must be very critically seen to give clear and concise information that catches the attention of the customers. As a point where buyers can switch their decision, promotion should give customers reason for the switch. Promotion is like an awareness creation for the customers in order to get their decision in the company's way.

There are sub-elements for each of the Ps mentioned above that aid in understanding each of the marketing mix model's main elements. As Singh (2012) stipulated, the sub-elements of the 4Ps are shown below.

Table 2: the 4Ps model with sub-elements

The 4Ps			
Product	**Price**	**Place**	**Promotion**
- Design - Technology - Usefulness - Value - Convenience - Quality - Packaging - Branding - Warranties	- Strategies - Skimming - Penetration - Psychological - Cost-Plus - Loss Leader	- Retail - Wholesale - Internet - Direct Sales - Peer to Peer - Multichannel	- Special offers - Endorsements - Advertising - User Trails - Direct Mailing - Leaflets/ Posters - Free Gifts - Competitions - Joint Ventures

2.2.5. The Additional 3Ps in the 7Ps Model

The services sector provides intangible goods that can be offered by companies to the customer as products. The development in the service sector has pushed marketers to look for additional elements to be included in the 4Ps marketing mix model. The additional Ps used in this model are listed below:

People

The fifth P is People- which basically is the people who are in contact with customers of the company. Companies should make sure the people who are the faces of the company are in accordance with their standards. Customers will be satisfied when the way of presentation, handling, greeting, and communication are as good as the companies' products and services qualities. When a person goes into restaurant, he will be basically happy and recommend the restaurant to others if the serving people took care of him in addition to the quality meal he has.

Companies should make sure the people in contact with their customers have the proper understanding of the values and principles set. The standards of the people should be able to match the quality of products and services given by the companies. The people need to have proper trainings and guidance to develop their basic skills. The people need to be evaluated. Companies that are hiring people must search for people that further strengthen the standards set.

Process

The sixth P is Process- which basically focus on the procedures and steps set by companies to provide products and services. One of the important points in positive customer experience is the process taken to get the products or services. Customers want processes to be easy and flowable. For example- a person visiting woreda administrations for ID card should know where to fill the form, where to pay, where to follow then to collect the card.

Most companies try either to put front desk receptions to explain the process or they put a billboard of the procedures around entrances. However, the information required to be communicated must be put in easily understandable way. For example- a person using airport services would require information be presented at least in a language he understands so that he wouldn't miss his flights.

Physical Evidence

The seventh P is Physical Evidence- which basically focus the tangible part of companies' products or services. When a person visits pharmacy, he may not know which product to choose or what to use for certain pain. Although the pharmacist present different alternatives, the customer won't have the confidence to use the given options. So, in this case, testimonials of other customers might be an important factor to make the purchase decision.

In addition, physical evidence can build trust for companies. Example is taking a company vowing to work on clean environment. If the offices are not clean and neat, it will cause doubts in customers mind and delay the opportunity to partner with.

Companies try to get their customers testimonials to include it as reference on their websites, brochures, and other communications. Customers can check this information validity to make their own decision.

In summary, the 7Ps of model with their sub-elements are given below:

Table 3: The 7Ps model with sub-elements

The 7Ps	Product	- Design - Technology - Usefulness - Value - Convenience	- Quality - Packaging - Branding - Warranties
	Price	- Strategies - Skimming - Penetration	- Psychological - Cost-Plus - Loss Leader
	Place	- Retail - Wholesale - Internet	- Direct Sales - Peer to Peer - Multichannel
	Promotion	- Special offers - Endorsements - Advertising - User Trails - Direct Mailing	- Leaflets/ Posters - Free Gifts - Competitions - Joint Ventures
	People	- Individuals on marketing activities - Customer contact personnel - Recruitment	- Trainings - Skill development - Culture
	Process	- Customer focus - IT-supported - Design features	- Research and development - Business-led
	Physical Evidence	- Sales/ Staff contact experience - Product packaging	- Online experience - References and testimonials

2.2.6. The SAVE marketing model

SAVE is the new era marketing model which is expected to shift the well-known 4Ps model in the marketing environment. SAVE stands for Solution-Access-Value-Education. The idea is to transform the 4Ps one by one to the new model. The first P which stand for Products will shift to Solution. Second P- Place goes to Access. Third P- Price will move to Value while the last P- Promotion changes to Education.

The need for the new SAVE model is caused by the growing trend in the market. Since the inception of the internet and social media, the platform to get information has widened. Customers do not necessary visit brick and mortar stores to get information they required about products usage. Customers do not necessarily have to look for certain person support to apply products. Customers do not necessarily have to visit offices and suppliers to get information regarding certain products. They have all the information required on a click away. They can open their PCs or mobiles and make searches for things they require.

The internet has also been an additional reason for the growing number of competitors. Although it was considered a reason for existence of small competitors, it has widely helped customers in seeing multiple alternatives from different companies.

The growth in these two points have pushed the popular 4Ps model to be reshaped and reformed. The direction now has shifted from product-oriented to customer-oriented. Companies should base their focus on what customers require rather than creating a platform for the products they produced. They must understand what the missing link is and what benefits they can give rather than bringing some products to offer. The SAVE model is designed in this direction.

S for SAVE

Through the human history, companies produced products and find a market then. They send their sells reps to convince and make customers purchase their products. Companies put much in product creation and try to push the market to accept what they produced. Successful companies work in opposite to this.

Successful companies start their basic focus to understand the problems of the customers. Customers will not care about the best features companies' products have. They care more on certain solution solve their problems. So, a sales rep with an incredible presentation and sales pitch won't catch the attention of the customer. Beside the customer can get the information about the different products from the websites he visited. Rather, the customer will likely be triggered if the sales rep starts the discussion from the problems the customer faced. Starting from the problem, companies can make evaluations and investments to come up with solutions.
Hence, Solution can successfully replace Product by making the focus on the customer.

A for Access

With the development in the world, customers have a lot of things on their plate that keep them busy. So, contacting through phone calls and brick store visits seem to be passing. Customers want an easy way of access to the products. With the technology advancement, getting access to products and features has been easy.
Companies should also modify their strategy in this direction to win competitions. Having an address at some place or a phone number won't cut it anymore. The time is to use multichannel in order to be effectively available for anyone needing the products or services.
Hence, Access can successfully replace Place by giving the customer a way to get to the products easily.

V for Value

Everybody can't give cheapest price to create satisfied customers which can buy the products. A company may not always have to go down on the pricing to win the competition and be a supplier to certain customers. Prices are also subjective on which a price set for some product may be viewed differently from customer to customer. Some may think it's expensive while on the contrary others may think it as cheap.
So, what will win the competition if a company can't provide the cheapest price is the additional value the product will give to the customer. This element basis itself from the first element of the model Solution. Understanding the problems will make companies provide solutions. But in additional to the direct solutions, companies can provide additional benefits with their products. For example, a construction chemical selling company can provide a product that reduces water

and increases workability of the concrete. Water reduction will bring additional benefits to the customer such as reduction in water to cement ratio and eventually leading to optimization of the mix which means cost saving for the customer. As there are ranges of products, then the customer can pay more to get more cost saving.

Another example to look here is range of cars available in the market. There are different car types in the market, but the usual cars used by public can be considered a means of transportation from point A to point B. So, the question here lies what differ one from another and why do customers have to pay more for one car than the other? Here the extra benefit will be the one differentiating reason to paying more. One care may give better fuel saving, have better engine, have comfortable seats, have strong body, have additional camera features and so on. Therefore, seeing these additional benefits, customers will opt the products with higher price.

Hence, Value successfully replace Price by showing customers the additional benefits rather than the direct cost impact.

E for Education

In old times, the likes of TVs and Newspapers were used by companies for promoting their products. People used to go through this and know about products. But the internet come up with another complication. Customers can not be forced to see things as they can go to internet and browse what they want. Customers don't want to be told to buy this product or that product. They get countless information from the internet. They more likely be interested if they are learning. Rather than a direct advertisement, they want to understand what techniques solve something they faced. People want to have some tips in using a product for themselves. For example, a customer might look for a waterproofing product. He might see different advertisements about different brands and products. But the more important will be how he can apply the product and solve his problem. So, a company who can educate him about how to waterproof will likely get his appreciation and build trust on the brand. The learning part of the company shifted the balance in the customer thoughts.

Hence, Education successfully replace Promotion by being learning point for customers.

In summary, the SAVE model successfully upgrades the widely known 4Ps by turning the focus from product to the customer.

2.3. Empirical Literature Review

2.3.1. Studies on Marketing Mix Strategy Impacts in Different Fields

From manufacturers to service providers, from construction sector to communication sector, from private companies to public entities, every company to be mentioned has one major target- creating satisfied customers with positive perception towards the companies. Satisfied customers can be a source of reference. Satisfied customers can be a source of repetitive income. Satisfied customers overall can be long-lasting partners and help in companies' development. Thus, companies should adopt different strategies that allows them to create partnership and be base for sustainable development. One of such strategies is marketing mix strategy. Different researchers studied the marketing mix strategy and the impacts from different perspectives.

Thwala and Slabbert (2018) conducted research on the guesthouse industry's effectiveness in utilizing the marketing mix strategy. They used 451 questionnaires filled by the guests of the guesthouses in the region of VAAL (Gauteng- South Africa). They used descriptive as well as inferential statistics to determine the relationship. According to their conclusion, although these businesses underestimate the value of the marketing efforts, guests responded that product and place are the top two elements in the marketing mix strategy.

Gebremichael and Dhillon (2022) studied by directing their focus on marketing mix and customer satisfaction effects on customer loyalty on the hotel industry in Ethiopia. As they focused on the service industry, they made their basic concept on the 7P model. Study was made on 387 participants who were staying in selected 3-star hotels. The structural analysis resulted in strong relationship between the marketing mix and customer loyalty. However, they concluded that their study failed to explain the relation between marketing mix and customer satisfaction.

Widyastuti et al. (2020) focused their investigation on how the marketing mix affects customers' decisions to buy on the minimarket in Banyumas Regency, Indonesia, which features campus brands. The study was based on the 4Ps, and service was also added as factor to understand the impact. Responses were taken from 100 respondents and analysis was done by multiple linear regression. According to this study, the overall marketing mix factors as a group impacted the purchase decisions of customers. But the individuals' results showed that product and place were

the variables with positive impact while the price, promotion and service were seen not impacting the purchase decisions.

A study by Wardhana et al. (2023) examined the influence of the 4P marketing model on the expansion of Marine Paint Products' marketing at PT. Nipsea Paint & Chemicals in Surabaya, Indonesia. The study focused on the factual data collected from the company's SAP ERP system while the sales data was collected for the time span from 2020 to 2022. According to this study, although the product, place and price were applied, the influential element in shifting the trajectory and show sales growth is due to the proper implementation of the promotional strategies.

While most research focus on price and advertising promotion, Ataman et al. (2010) studied in the direction of the marketing mix cumulative effect on the long-term performance of established brands. In France, the study was conducted on 70 brands and 25 product categories. They applied a model analysis to five years of advertising and scanner data. Their results show that considering long term effect, elements such as product and place holds higher effect than promotion and price. Price specially related to discounting is seen to have higher impact on short term.

Jain and Han (2012) made a study that is intended to help startup companies find an easy method of applying marketing mix strategy. They made their study based on the PPE (Personal Protective Equipment) manufacturers. Although respondents were very small from the initial plan, the researchers concluded that the marketing mix elements, Product, Price, Place and Promotion are essential factors in the PPE business.

Al-Fadly (2022) conducted research on the marketing mix's experience in Kuwait's construction sector. The study considered the supplier as well as the customer, with 210 individuals in each case. The study also focused on the 7Ps while a structural equation modeling (SEM) established to understand the perception. The results have been found interesting for the construction companies as they could understand the difference between their perspectives from their customers. Many suppliers believed that their place, process, price, and product met the needs of their customers. Customers perception was high for promotion, physical evidence, and people and even valued the people factor as high when considering the suppliers' marketing mix strategy.

Rachmawati et al. (2019) made a study in Selangor, Malaysia by distributing questionnaire for randomly selected 312 respondents which are in process of owning residential property. The study focuses on measuring the effect of factors such as quality, price, location, promotion, and corporate image on decision making of customers. They used descriptive analysis and multiple regression analysis. In determining the influence, the authors find that all mentioned factors have important influence on purchase decisions of customers. During this study, the authors found that location is the most impacting factor. The likes of price, quality and corporate image follow location to impact the decision making. The last of the factors was found to be promotion.

Through customer satisfaction, Sudari et al. (2019) investigated what will be the effect of marketing mix on customer loyalty. Their investigation focused on beverages and food items produced by Malaysian SMEs. After engaging 300 people in questionnaire, the researchers used the path analysis and Sobel test to analyze the data. The study's findings indicate that a marketing mix can positively impact customer satisfaction and foster customer loyalty.

Other researchers (i.e. Ismail et al. (2015) Verma and Singh (2017)) made conclusions that strengthen the above studies. Although the fields of the studies were different, the conclusion was that marketing mix has positive and significant results in creating satisfied customers. The relation was also seen to impact the partnership of the companies and the customers. The studies resulted in strong customer loyalty after marketing mix strategy positively impacted the customer satisfaction.

2.3.2. Summary of the Empirical Literature Review

In the above sections, a review was made regarding the empirical studies done on marketing mix strategy and customer buying behaviors as well as their satisfaction. Some of them measured the individual elements of the different marketing mix models impact and show the magnitude of impact while others show the individual as well as integrated impact of the elements. In most studies, descriptive as well as multiple regressions were used to study the impact.

As the different elements have different impact based on the companies and the product to be provided, it was observed that the elements' effects varied depending on the study. For example, when considering owning residential property, location seem to be the most important while considering the sales growth of chemical company, promotion appears to be vital. Most studies suggested for additional studies to be made as geographical area, culture of customers and other factors may also affect the customer satisfaction and purchase decision making.

In respective to this, this study will focus on the construction chemical sector and make studies to determine the effect on customer perception in Ethiopia construction projects. As most of the above studies made on the relation of marketing mix and customer perspective focus on the 4P and 7P marketing mix models, this study will bring a new dimension by studying the newly developed SAVE marketing model.

2.4. Conceptual Framework

This study conceptual framework is drawn after the theoretical and empirical reviews were made in the above sections. The framework will show the different variables involved in this study and gives an insight what to be proofed in the subsequent chapters. The SAVE marketing mix model and its elements will be taken as independent variables and used with the customer perception which is the dependent variable to evaluate the hypothesis formulated in chapter 1.

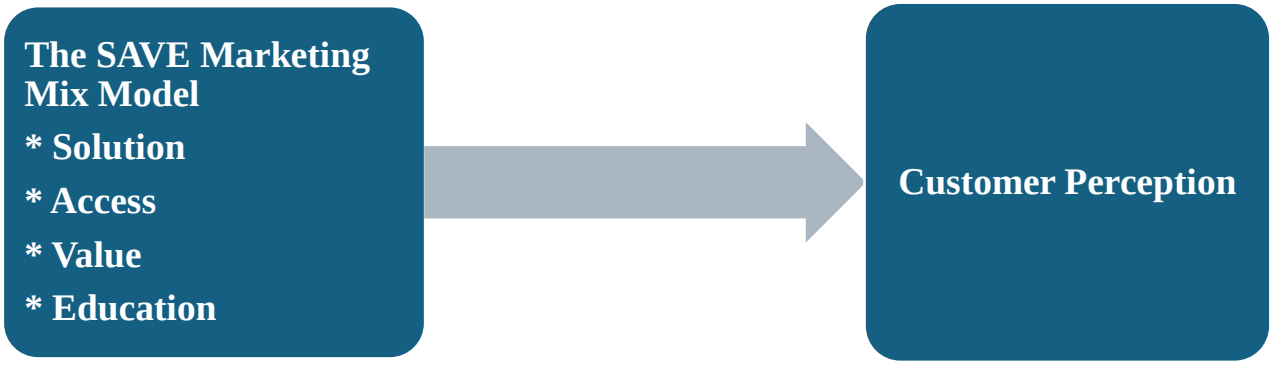

Figure 2: Conceptual Framework

Source: Modified version from the previous models between the 4Ps and customer satisfaction (Kotler & Keller, 2009; Nuseir & Madanat, 2015; Widyastuti et al., 2020b)

Chapter Three- Research Design and Methodology

3.1. Overview

This section will provide a brief overview of the research design and methodology to shed light on the buildup. The section will start by running through the research methodology, which will be followed by an explanation of the data sources and instrument types used in the study. The sample size and the sampling procedure are then covered in the section that follows. Next, the model specification will be briefly explained. The reliability, validity, and ethical considerations will be demonstrated as the chapter ends.

3.2. The Research Approach

This study is made by using quantitative research method. Quantitative research is a type of research which is dependent on the numerical data and has an objective nature. In this type of research, the data will be analyzed to determine the relationship between the variables and provide an explanation for a particular result. A conclusion regarding the impact of the marketing mix model on customer perception was attempted to be drawn from this study. Hence, for this study, the quantitative researching method is effective.

3.3. The Research Design

The general research design for this study is observational study. Zegeye et al. (2009) described organizational study as type of study where researchers detect the different scenarios and draw conclusions from the recordings taken. With cross-sectional data observed, the study engages an analytical study type and make analysis to understand the effect of the marketing model on the customers perception.

3.4. Sources of Data Collection

Data from primary and secondary sources were the collection methods used to get enough information regarding the study area. Primary data are those that are gathered from the source directly and are unique in nature. They can be gathered through questionnaires, interviews, or observation (Kothari, 2004, p. 95). Secondary data are data already gathered and examined by another party; they can be either published or unpublished (Kothari, 2004, p. 111). No method is

better than another in every circumstance, so choosing the best approach will rely on the type, scope, and goal of the study as well as the time, money, and precision needed for it.

This study engaged both data collection categories. A primary data was collected from customers found on different projects. These customers differ in age, educational background and related. Customers were directly contacted, and they were requested to participate in the study. Likert scale questionnaire was sent to collect the first-hand information from the customers directly. A 5-point Likert scale was used to simplify and allow the customers respond easily. Also, this questionnaire was engaged due to its simplicity and to avoid any respondents tiring and not finishing the given questions. Using secondary data from the various sources identified during the literature review strengthened the study even more. The publications and articles written by the various authors were examined, and additional data was found by browsing the internet.

3.5. Research Instrument

In business research, one of the well-known methods to use is the survey design using questionnaire, which is most often used to address the who, what, where, how much, and how many questions (Saunders, Lewis & Thornhill, 2009, p. 175). By sample examination, it provides a quantitative or numerical analysis of the trends, attitudes, or opinions of the population (Creswell, 2009, p. 146).

This study deployed a 5-point Likert scale questionnaire to collect the necessary information from the respondents on the different projects. The questionnaire was selected to understand the pattern in the responses so that a conclusion can be drawn. The 5-point Likert scale is selected as it takes moderate timing for respondents to give their responses and it is easily accessible through mobile phones for online questionnaire filling when comparing with higher point Likert scales.

3.6. Procedures and Method of Data Collection

The 5-point Likert scale questionnaire was prepared using google form and the link was shared to the identified sample members in the different mega projects. After continuous follow-up and number of responses received, the google form was closed and the summary of the responses was collected for further review and analysis.

3.7. Sample Size and Sampling Method

A construction project is an activity related to building structures that must be completed within the specified time frame to achieve the specified goal (Afanda et al., 2023). Construction projects differ in type, size, and value. From residential buildings of single family to high rise buildings, from tunnels to hydropower dams, from roads to wind farms, from commercial to religious buildings, from health care facilities to manufacturing plants, all are different types of construction project.

Although it's hard to make classification and unique separation between projects, numerous studies make classification based on the different aspects. Some studies focused on the rule of thumb classification as singular and complex while others try to go with functional classifications on which the project definition is dependent on functionality after project completion. Safa et al. (2015) gave the groups according to functionality and one example can be Group A which consists of roads, bridges, tunnels, railroads and rapid transit.

Another method of classification is the supply chain classification. This classification was incorporated by Safa et al. (2015) and the classification is summarized as below:

- Class I (Mega Projects) ... Projects value > $1B and require planning over three years.
- Class II (Large and Unique) ... Projects value > $100M and require planning over 2 years.
- Class III (Complex) ... Projects value between $10M and $100M and require planning one to three years.
- Class IV (Basic and Normal) ... Projects value < $10M and about one year planning.

In Ethiopian construction sector, although the term Mega project is repetitively heard, there is no manual or standard to classify projects in such way. Most projects will be termed as Mega project based on the project value (financial wise) or taking the value it has for the wider population (social impact wise). This has made determination of population and sample size difficult. However, an identification of selected mega projects was later made by using internet sources such as GlobalData and Construction Review, news outlets like Fana Broadcasting and the websites of different projects and parties involved in the different projects.

According to the summary of the information found from these different sources, the total mega projects ongoing without considering the road and railway projects is 58 projects. Hence, for these projects, data was collected for the numbers of contractors, consultants and clients and further assumptions were made after feedback was taken from the projects on the other related parties such as applicators, sub-contractors, RMC suppliers and distributors to obtain the total population size and calculating the sample size requirement.

The data collection showed that the population size is 440 (as stipulated on Table 4 below). Then, the sample size was derived using the Yamane formula. This formula is taken as the population is finite population and the population size is known. The Yamane formula for determining the sample size is given by:

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

Where

- n= corrected sample size,
- N = population size, and
- e = Margin of error (MoE), e = 0.05 for this research at confidence level of 95%.

For this study case, the population size (which is represented by N in the above formula) is 440. Hence, the sample size can be calculated as follows:

$$n = \frac{440}{(1 + 440 * 0.05^2)} \approx 210$$

From this formula, we find that the sample size is 210.

This research is done by applying the simple random sampling method. According to Noor et al. (2022), the simple sampling method is favorable for population with similar classifications. Furthermore Acharya et al. (2013) added that in this method, every individual member has equal selection chance. After the questionnaires were deployed to the different parties in the projects, 205 questionnaires were responded on, and 5 questionnaires were not responded at all.

Table 4: Project Parties, Population and Sample Size

Project Parties	Population	Sample Size	Non-Responsive	Received Responses
Main Contractors	58	28	-	28
Sub-Contractor	58	28	-	28
Applicator	116	55	-	55
Consultant	58	28	-	28
Client	34	16	4	12
RMC Suppliers and Distributors	116	55	1	54
Total	440	210	5	205

Source: GlobalData, Construction Review, News outlets, Websites of different customers

3.8. Research Model

Based on the conceptual model and hypothesis stated, the following linear regression model was developed. This regression model is based on the sample regression formula stated below:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \cdots + \beta_n X_{ni} + \varepsilon_i$$

Where Y_i is dependent variable for the i^{th} observation:

$X_i$is the independent variable for the i^{th} observation:

$\beta_0$is the intercept:

β… are regression coefficient:

$\varepsilon_i$is the error term for the i^{th} observation:

The modified formula that represents this study work is as follows:

$$CP = \beta_0 + \beta_1 S + \beta_2 A + \beta_3 V + \beta_4 ED + \varepsilon_i$$

Where CP represents Customer Perception:

S represents the Solution in SAVE model:

A represents the Access in SAVE model:

V represents the Value in SAVE model:

ED represents the Education in SAVE model:

3.9. Data Analysis Technique

The data from the responded questionnaires was filled in the analysis application software SPSS V29. The analysis was done for correlation and regression. The correlation was performed to understand the connectivity between variables using Pearson's Correlation method. The regression was performed to understand how much percent of the dependent variable is explained by the independent variable and to validate the model developed in the above section to reach on conclusion. Following the completion of the analysis, the data is displayed using tables, charts, and diagrams. The findings will be discussed in the upcoming chapter, and the conclusion will appear in the last chapter.

3.10. Measurement of Variables

Table 5: Measurement of Variables

	Variables	Measures	Scale	Source
Dependent Variable	Customer Perception	Question no 5.1 up to 5.5	5-point Likert scale (from 1 Strongly Disagree to 5 Strongly Agree	Modified from previous studies: Al-Fadly (2019), Buttle and Maklan (2015), Kotler and Armstrong (2012)
Independent Variables	Solution	Question no 1.1 up to 1.8		
	Access	Question no 2.1 up to 2.8		
	Value	Question no 3.1 up to 3.8		
	Education	Question no 4.1 up to 4.8		

3.11. Validity and Reliability

Taherdoost (2016) recalled previous papers and suggested that validity test is necessary to determine the extent of the construct's measurement compared to the reality. The author also presented four main types of validity naming the face validity, construct validity, content validity and criterion validity.

This study was tested using face validity as it is fast way of measuring validity. The developed questionnaire was first reviewed by my advisor and improvements were done based on the feedback received. Then, pretest was made on 10 people and observation was made when they complete the questionnaire. The overall reaction was that the questionnaire is easy to understand and each question in the section measures the variables. Hence, this research is valid.

Another method incorporated to measure how well it has been measured is by checking the reliability of the research. Reliability measures the consistency of the measurement. This means if the research is repeated under the same condition, it will result the same outcome. For this research, the internal reliability was measured using Cronbach's alpha coefficient to measure if the constructs in this study are consistent. Lee Cronbach developed the method in 1951. The method tests are measured between 0 and 1 while the lower the value shows inconsistency while the higher value indicate higher correlation which indicates reliability of the constructs.

In Cronbach's alpha, measurement above 0.7 is usually accepted by analysts and is serving as benchmark in most research. Consequently, this study has checked the value and the result show satisfactory for all items measured. The result for this study is as stated below:

Table 6: Reliability Statistics Test

Cronbach's alpha	Cronbach's alpha	Number of Items
Customer Perception	0.932	5
Solution	0.894	8
Access	0.776	8
Value	0.703	8
Education	0.887	8

3.12. Ethical Considerations

Engaging with companies and participants requires careful consideration of ethical issues. Saunders et al. (2016) argued that researchers should not subject participants to the risk of embarrassment or any harm. To gain the trust of research parties, it is crucial to uphold a specific ethical standard when interacting with participants. As a result, anonymity was guaranteed because the questionnaire sheet contained no questions that would allow the researcher to determine a participant's identity. In addition, participants received an update on the scope of the data collection and were offered the choice to proceed with the study or not, and the same was made sure when shared the google form link in addition to the availability of the information on the questionnaire. Moreover, they were assured with confidence that their input would be utilized solely for academic purposes and would never be disclosed to any other party. To strengthen this, the respondents were notified that even researcher wouldn’t know who filled what and the link used to fill the questionnaire was disabled for collection of email of respondents.

Chapter Four- Data Analysis and Interpretation

4.1. Overview

This chapter presents the analysis, results, and discussions on the effect of the construction chemical companies' marketing mix strategy on customer perception in the different mega construction projects in Ethiopia. The chapter will be built on the last chapter reliability and validity checking which confirmed that the research can be carried out. As a result, the analysis can continue, and the outcomes can be examined.

The demographic and educational backgrounds of the respondents are presented at the beginning of the chapter, providing additional insight into their experience in the construction and construction chemicals industries. To give more insight, the descriptive statistics result is presented which is followed by the correlation and regression analysis. This will assist in determining whether the hypothesis should be accepted to reach a conclusion in the last chapter.

4.2. Questionnaire and Response Rate

As shown in the third chapter, there were total of 210 questionnaires issued to the different segments in the mega projects. From these 210 questionnaires, 205 respondents filled and returned the questionnaire which was used for the analysis. The response rate was 97.6%. The rest 5 respondents which is about 2.4% were not willing to fill the form.

Table 7: Response Rate

Category	***Response Rate***	***Percentage***
Questionnaire returned	205	97.6%
Questionnaire not returned	5	2.4%
Total=	***210***	***100%***

Source: Collected questionnaire, 2024

4.3. Respondents Demographic and Experiences

The demographic details of the respondents who took part in the study are covered in this section. This section presents the following characteristics: gender, age group, educational background,

and construction industry experience. Furthermore, this section covered the years of knowledge regarding construction chemicals.

The study sought to establish the gender distribution of the respondents. From the findings below, the female respondents are 28.8% and male respondents are 71.2%. The distribution of gender presented in Table 7.

Table 8: Gender Information of Respondents

Gender of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	59	28.8	28.8	28.8
	Male	146	71.2	71.2	100.0
	Total	205	100.0	100.0	

Source: Collected questionnaire, 2024

The age distribution of the respondents was categorized in to five ranges. From these ranges, the frequency of the age group ranges 25 and below is 4 (4.9%), 26-35 is 125 (61%), 36-45 is 55 (26.8%), 46-55 is 13 (6.3%) and 56 and above have a frequency of 2 (1%). Hence the majority numbers of respondents were 26-35 years, and the list number of respondent age group is 56 and above. The distribution of age group presented in Table 8.

Table 9: Age Group of Respondents

Age of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	25 and Below	10	4.9	4.9	4.9
	26-35	125	61.0	61.0	65.9
	36-45	55	26.8	26.8	92.7
	46-55	13	6.3	6.3	99.0
	56 and Above	2	1.0	1.0	100.0
	Total	205	100.0	100.0	

Source: Collected questionnaire, 2024

The study also sought to establish the levels of education attained by the respondents. From the findings shown in Table 4.3. 81 (39.5%) respondents have Masters' degree, 119 (58%) have first degree and 5 (2.4%) have diploma. Given that majority of respondents have advanced degrees and are highly educated, it is expected that they filled out the form carefully and responsibly, which will support the study's validity. Furthermore, due to their increased level of expertise, the respondents were able to comprehend the questionnaire with ease and relate their responses to their field of work. Nevertheless, the study did not capture the specific field of courses the respondents have undertaken. The distribution of level of education presented in Table 9.

Table 10: Respondents Level of Education

Level of Respondents Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	5	2.4	2.4	2.4
	Bachelor's Degree	119	58.0	58.0	60.5
	Masters' Degree	81	39.5	39.5	100.0
	Total	205	100.0	100.0	

Source: Collected questionnaire, 2024

As shown in the table below majority of the respondents that is 126 (61.4%) of the respondents had more than 7 years' experience in the construction field. 28 (13.7%) of respondents had work between 5-7 years, 36 (17.6%) had work 3-5 years, and 15 (7.3%) respondents between 0-3 years. The results of the study indicate that majority of respondents have more than three years of experience. This further strengthens the study's validity because, because of their increased industry experience, the respondents were better able to recognize market realities and provide insightful feedback that was utilized in the research. The distribution of work experience is presented in Table 10.

Table 11: Work Experience of Respondents

Experience of the respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 3 Years	15	7.3	7.3	7.3
	3-5 Years	36	17.6	17.6	24.9
	5-7 Years	28	13.7	13.7	38.5
	More than 7 Years	126	61.4	61.4	100.0
	Total	205	100.0	100.0	

Source: Collected questionnaire, 2024

The respondents' knowledge regarding construction chemicals was examined, as the table below demonstrates. The data indicates that 128 (62.4%) of the respondents have been familiar with construction chemicals for more than five years, while 43 (21%) have been familiar with them for three to five years, 24 (11.7%) from one to three years, and ten (4.9%) have been familiar with them for less than a year. This demonstrates that majority of respondents (95.1%) have known about the chemicals for more than a year, which supports the idea that their responses are based on personal experience with the topic.

Table 12: Years of knowing construction chemicals.

Knowledge regarding construction chemicals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than a year	10	4.9	4.9	4.9
	1-3 years	24	11.7	11.7	16.6
	3-5 years	43	21.0	21.0	37.6
	More than 5 years	128	62.4	62.4	100.0
	Total	205	100.0	100.0	

Source: Collected questionnaire, 2024

4.4. Descriptive Statistics

The article by Mishra et al. (2019) suggest that mean and standard deviation are some of the basic parts explained in descriptive statistics. The mean tells us where the answer lies whereas the standard deviation how far our data set is from the mean. There are rule of thumb criteria set by different researchers to determine the value ranges as shown below.

Table 13: Interval for 5-point Likert Scale

MEAN INTERVAL	OPINION
1 – 1.80	Strongly Disagree
1.81 – 2.60	Disagree
2.61 – 3.40	Neutral
3.41 – 4.20	Agree
4.21 – 5	Strongly Agree

Source: S. Bukhari (2023)

For standard deviation, general requirement is for the value to be closer to zero to say that the value doesn't lie far from the mean. A general guide is for standard deviation to be in between ±2SD on which 95% of the responses will be placed (Acceptable Standard Deviation (SD) - LabCE.com, Laboratory Continuing Education, n.d.).

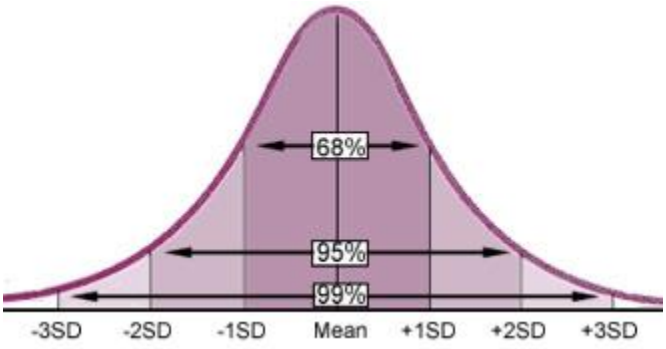

Figure 3: Acceptable Standard Deviation

In this regard, this study was checked for both the mean and standard deviation and the SPSS results is as shown in the table below.

Table 14: Mean and Standard Deviation Results

Statistics

		Customer_Perception_Mean	Solution_Mean	Access_Mean	Value_Mean	Education_Mean
N	Valid	205	205	205	205	205
	Missing	0	0	0	0	0
Mean		3.83	3.59	3.43	3.53	3.37
Std. Deviation		.640	.783	.640	.517	.749

The responses result show that customers responded agree for the variables: customer perception (3.83), solution (3.59), access (3.43) and value (3.53). Customer perception has the highest agree answer as the mean is the highest. The response also show that responses were natural in average for education (3.37).

The standard deviation results also show that the values are in the range with maximum value of 0.783 (solution) and minimum was 0.517 (Value). This result show that the responses are mostly concentrated around the mean responses and value has the highest closeness to the mean response.

4.5. Analysis of Data

4.5.1. Correlation analysis between SAVE model and customer perception

To put it simply, correlation analysis is the process of determining the relationship between variables so that its direction and magnitude can be further investigated. Correlation was first discovered by Galton in 1888 according to Curran-Everett (2010). Further explanation was provided in this article, indicating that while Galton originated the idea, Karl Person improved and clarified it.

One can interpret correlation as positive, negative, or null. This illustrates how the variables relate to one another. When two variables have a positive correlation, the other variable will always rise as the first one does. The movement is moving in the same direction. Conversely, a negative correlation indicates the opposite side of the relationship between the variables. As a result, there is a constant decrease in the other variable when one increases. Null correlation means there is no relationship between the variables. The Pearson correlation method can be used to determine the

correlation between the variables, and the interpretation will be based on the data gathered from the analysis.

For positive correlation, Asuero et al. (2006) developed the table to discover the correlation's strength, citing M. F. Zady, Correlation and Simple Least Squares Regression (October 2000). The table is as follows:

Table 15: Size of r and Correlation Interpretation

Size of r	Interpretation
0.90 to 1.00	Very high correlation
0.70 to 0.89	High correlation
0.50 to 0.69	Moderate correlation
0.30 to 0.49	Low correlation
0.00 to 0.29	Little if any correlation

In this study, the SPSS analysis gives us the result for the correlation coefficients to understand the relation between the SAVE model elements and the customer perception.

Table 16: Peason's Correlation Coefficient

Correlations

		Customer_Perception_Mean	Solution_Mean	Access_Mean	Value_Mean	Education_Mean
Customer_Perception_Mean	Pearson Correlation	1	.894**	.669**	.640**	.713**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	205	205	205	205	205
Solution_Mean	Pearson Correlation		1	.543**	.561**	.616**
	Sig. (2-tailed)			.000	.000	.000
	N		205	205	205	205
Access_Mean	Pearson Correlation			1	.536**	.604**
	Sig. (2-tailed)				.000	.000
	N			205	205	205
Value_Mean	Pearson Correlation				1	.505**
	Sig. (2-tailed)					.000
	N				205	205
Education_Mean	Pearson Correlation					1
	Sig. (2-tailed)					
	N					205

**. Correlation is significant at the 0.01 level (2-tailed).

The result show that Solution ($r=0.894$, $p<0.01$) and Education ($r=0.713$, $p<0.01$) high/strong correlation with the dependent variable customer perspective. On the other hand, Access ($r=0.669$, $p<0.01$) and Value ($r=0.640$, $p<0.01$) has moderate correlation with the study dependent variable, customer perception.

In addition to this, the result found are all positive which indicate that whenever there is increase in the independent variables (Solution, Access, Value and Education), the dependent variable (customer perception) will also increase in the same direction.

Construction chemical companies can easily interpret this result by assuming that every time they invest in improving their marketing mix model, their customers' perceptions will also improve. Positive customer perception can develop if a company increases its marketing strategy.

However, though the above correlation result shows us the directions and tell us the magnitude of the relationship between our variables, many researchers indicate that correlation coefficient has limitations in failing to describe the cause and effect of the variables. For our case, Solution with r=0.894 show strongest correlation with customer perception. However, here it misses to explain if Solution or Customer Perception is the dependent variable and vise-verse.
Therefore, now that we have established a strong correlation between the variables, we can proceed to the regression analysis to determine which factors will influence what and how is the direction of the effect will be. We will overcome the limitation of Pearson correlation result by using the regression analysis.

4.5.2. Diagnostics of Assumptions in Regression

Before making a regression analysis, researchers should make check if their data meets the important assumption required. In this regard, relationship between the independent variables themselves and how fitting is the sample taken from normally distributed population will be evaluated. Hence, for this research, the normality, homoscedasticity, autocorrelation and multicollinearity will be evaluated, and results will be examined to proceed to the regression analysis.

4.5.2.1. Normality

The study starts by checking the normality of the sample. According to Ghasemi and Zahediasl (2012), researchers usually think their samples taken are normally distributed. Errors in research are basically caused when the studies are determined to be based on the normally distributed data. This show that the normality of the sample will be one of the responsible in drawing a conclusion that is reliable. In their study, Ghasemi and Zahediasl (2012) further explained that the normality problem will be high in very limited sample size, and it will be lesser in higher number of sample size.

For this study, the normality of the study data was checked, and the results are shown below.

- We can assume that the histogram is symmetrical around the center point (0) from the first figure. The dome shape curve shows that the study's data set is normally distributed.

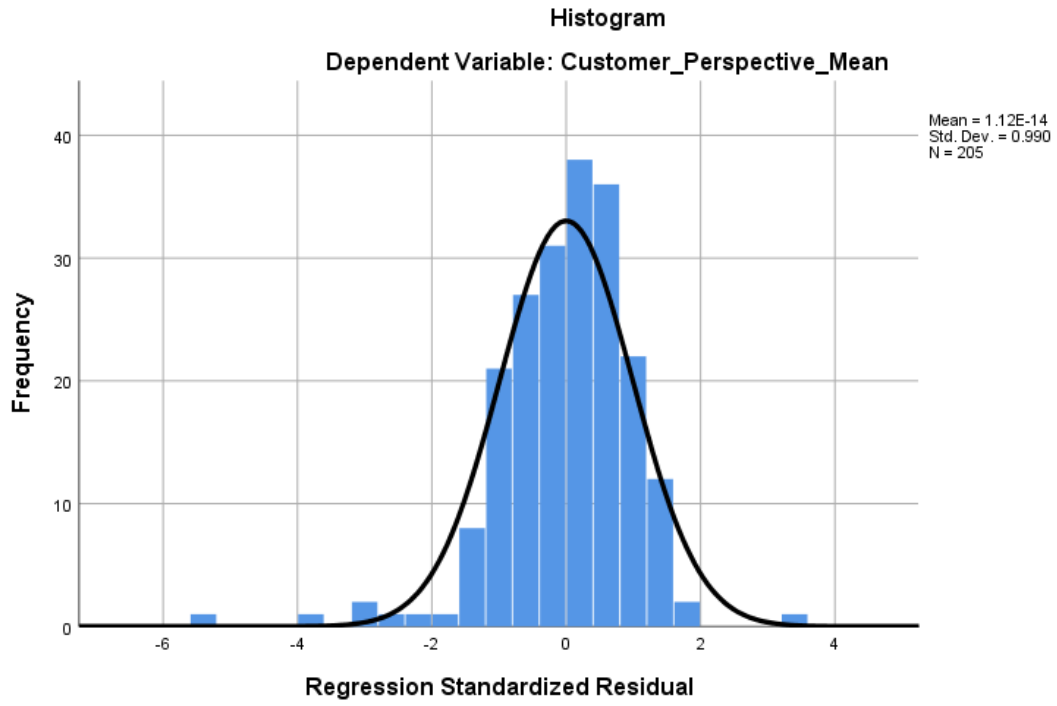

Figure 4: Normality check with Histogram

Source: Own Survey, SPSS Results

- Considering the normally distributed conclusion from the first figure, we will plot the normal probability plot in the second figure below and see if we can infer an approximate level of normality from the diagram. To represent normally distributed data, this P-P plot should show the dots that are closer to the diagonal line. This was verified in the study case using the diagram below, and it's safe to say that the data points are drawn extremely near to the diagonal line.

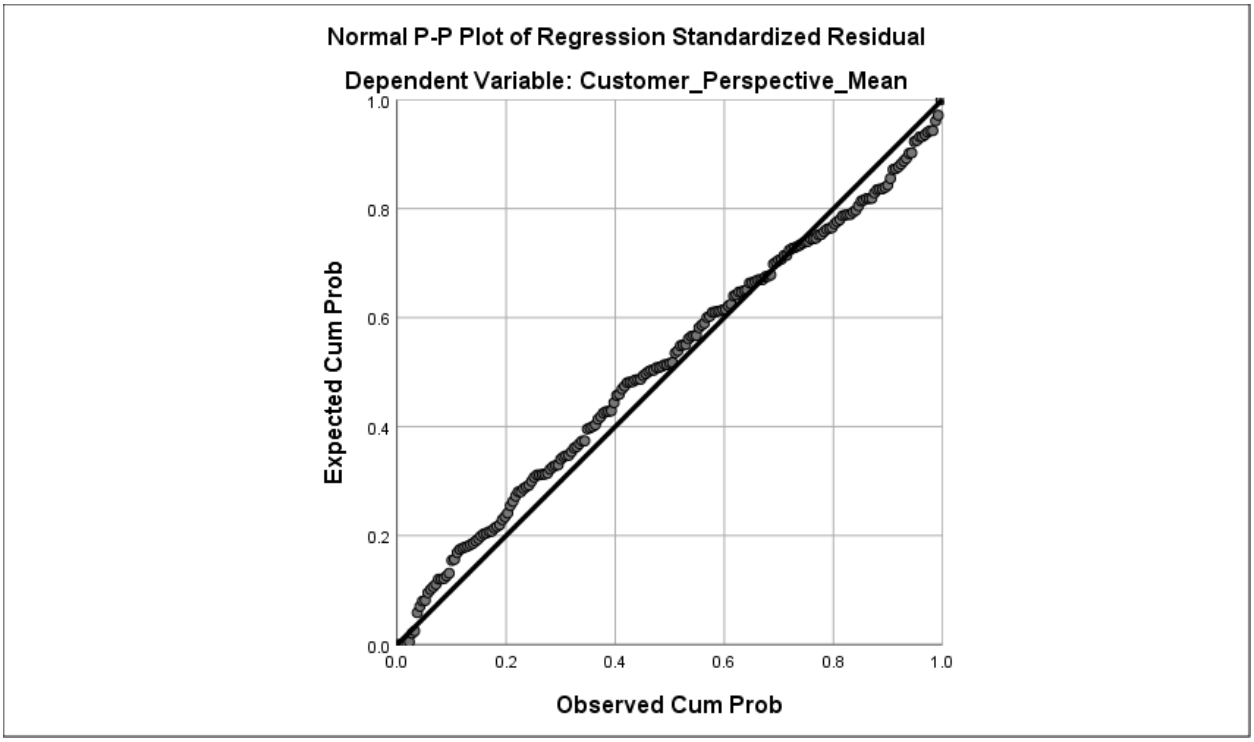

Figure 5: Normality check with P-P plot

Source: Own Survey, SPSS Results

Thus, based on the above findings, we can say that the study's normality assumption is satisfied.

4.5.2.2. Homoscedasticity

The homoscedasticity is the term that explains what is like the distribution in the variance of the dataset. With further explanation to this concept, Djalic and Terzic (2021) said that there should be constant and equal variation otherwise it will be called heteroscedasticity. This can be checked by scatter plotting the variation of the residuals. If the diagram shows a certain type of cone shape distribution pattern, then it will be termed as heteroscedasticity. The violation of this assumption will make our linear regression not appropriate, so we follow to check the homoscedasticity check for this study.

In our study case, the homoscedasticity has been checked after plotting the below diagram and the result showed that this assumption can be passed for this case as there is no visible pattern creation on the diagram.

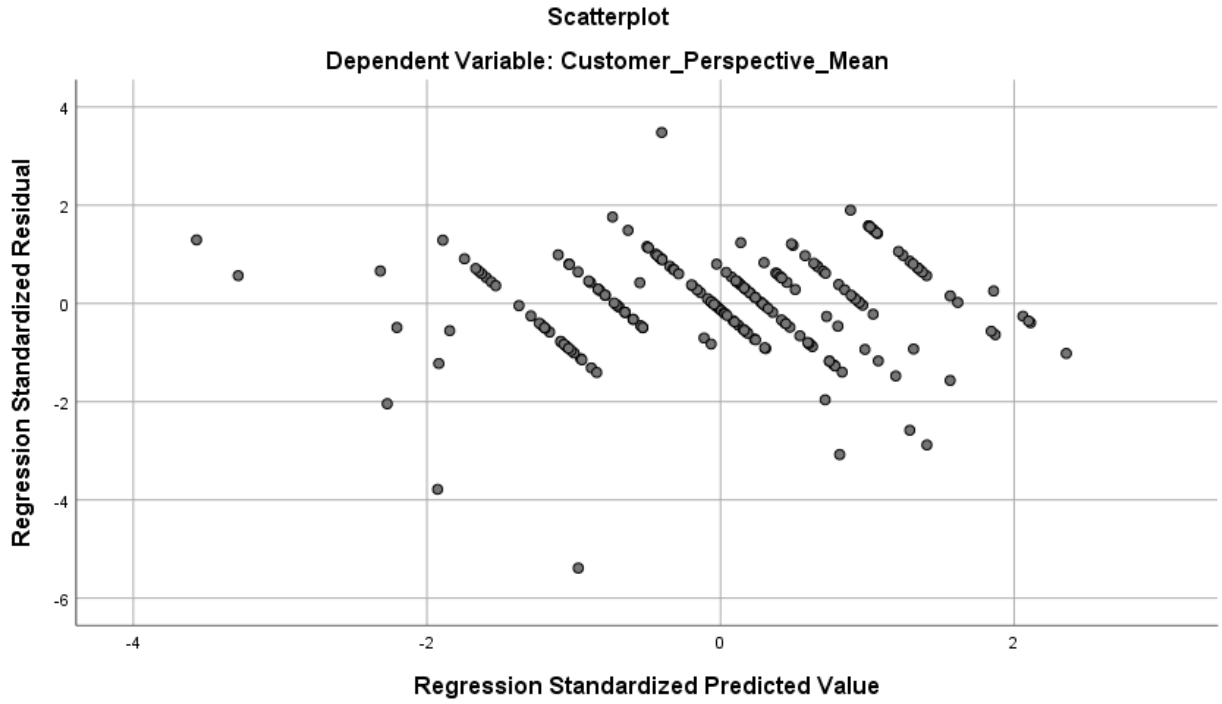

Figure 6: Homoscedasticity check with scatterplot

Source: Own Survey, SPSS Results

4.5.2.3. Autocorrelation

We will examine the correlation between the values of the residuals under this assumption. These residuals will be referred to as autocorrelated if there is any kind of correlation between them (Brooks, 2014). A relationship between the residuals is undesirable as it could result in regression data that is not accurately represented. Autocorrelation typically occurs in time-series data when there is a suspicion that the data from the past, present, and even future are correlated. Several researchers have suggested that autocorrelation may arise for a variety of reasons, as noted by Praetz (1981). The assumption needs to be verified because the overall impact could influence our decision on the regression's results.

There are several methods for performing an autocorrelation check; in this instance, the Durbin-Watson test is used (Durbin and Watson, 1951). The widely used DW-test has made it simple to interpret by examining the SPSS result. The range of values is 0 to 4. With 2 denoting no

autocorrelation, values closer to 0 tells us that there is positive autocorrelation, and values closer to 4 tell us that there is negative autocorrelation. However, most researchers suggest accepting values in the range of 1.5 to 2.5 when assuming no autocorrelation.

In our case, the DW result show that it is in the range mostly advised which means we have no autocorrelation and good to go with the regression interpretation.

Table 17: Model Summary- DW result

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.933[a]	.871	.868	.232	1.686

a. Predictors: (Constant), Education_Mean, Value_Mean, Access_Mean, Solution_Mean

b. Dependent Variable: Customer_Perception_Mean

Source: Own Survey, SPSS Results

4.5.2.4. Multicollinearity

Another problem in misrepresented regression value is the case of strong relationship between the independent variables. According to Brooks (2014), multicollinearity is not considered when discussing the relationship between the dependent and the independent variables. Either in perfect multicollinearity or in near multicollinearity, the relationship evaluation is between the independent variables. In simple terms, the existence of multicollinearity means two variables might be explaining the same thing and this will inflate the R^2 result. Daoud (2017) suggested that this strong bond will create wrong conclusion on the regression model as we might have double counting of the same variable.

Hence, for this study, we are going to check the multicollinearity between the variables by checking the VIF values. VIF is the Variance Inflation Factors (VIF) which was invented by Cuthbert Daniel in 1961 (Snee, 1981). This factor is used to identify how much inflated is our variances. The measure has low boundary of 1 which means VIF=1 shows no correlation while VIF values from 1 to 5 shows moderately correlated and values more than 5 shows high correlations (Daoud, 2017b). Related to the VIF, another checking is using the tolerance value

which is the reciprocal of the VIF value. The tolerance value is between 0 and 1 with number closer to 1 show there is no correlation between the variables. Numbers closer to 0 indicate there is strong correlation which leads to multicollinearity. Our accepted value for VIF is 1 to 5 hence the tolerance acceptance will be between 0.2 and 1.

As seen from the SPSS analysis below, the tolerance values are all above 0.5 and the VIF values are all below 2. Hence, we can safely say our dataset can pass for this assumption and the regression can be proceeded.

Table 18: Tolerance and VIF Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.436	.117		3.728	.000		
	Solution_Mean	.527	.029	.645	18.305	.000	.521	1.918
	Access_Mean	.163	.034	.163	4.748	.000	.547	1.827
	Value_Mean	.135	.041	.109	3.322	.001	.599	1.669
	Education_Mean	.138	.030	.162	4.544	.000	.509	1.963

a. Dependent Variable: Customer_Perception_Mean

Source: Own Survey, SPSS Results

4.5.3. Regression Analysis and Interpretation

From the above section, we have understood that the assumptions were satisfied, and our regression can be proceeded to analyze the results.

We start by defining how much of the dependent variable is defined by the independent variables. For this we use the adjusted R square value. Adjusted R square value defines how much of the dependent variable variation is explained by the independent variables. Adjusted R square is form developed to combat the limitation of R square. According to Brooks (2014), whenever there is a variable added on the model, the R square value will be higher which doesn't tell the real effect whether the added variable has true impact on the dependent variable of not. This has been improved with the adjusted r square.

Hence, proceeding to the regression with our dataset using SPSS, the result is put as follow:

Table 19: Model Summary- Adjusted R-square Result

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.933[a]	.871	.868	.232	1.686

a. Predictors: (Constant), Education_Mean, Value_Mean, Access_Mean, Solution_Mean

b. Dependent Variable: Customer_Perception_Mean

Source: Own Survey, SPSS Results

- ⇨ Adjusted R Square=0.868.

  This result means that the four independent variables cause 86.8% of the variation in customer perception. The customer perception could be changed due to these variables change. The remaining 13.2% change in customer perception is caused by the factors that are external to this study.

Further check has been done by ANOVA to test the model significance. ANOVA stands for Analysis of Variance and used to understand the variation between given data. Higher F value indicates there is higher difference. Here we check for the difference between the regression and the residual and see if there is significant difference.

Table 20: ANOVA for regression and residuals

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	72.733	4	18.183	336.755	.000[b]
	Residual	10.799	200	.054		
	Total	83.532	204			

a. Dependent Variable: Customer_Perception_Mean

b. Predictors: (Constant), Education_Mean, Value_Mean, Access_Mean, Solution_Mean

Source: Own Survey, SPSS Results

The result clearly indicates there is high value of F (336.755). The significant level (0.000) is also less than 5% which means that the model is significant.

From this, we can conclude that the dependent variable (customer perception) and the four independent variables (solution, access, value, and education) have a positive and significant relationship, and that the regression model adequately explains majority of the factors that affect the dependent variable.

4.5.4. Testing the Hypothesis

Recalling chapter 3, we have come up with the below linear regression model:

$$CP = \beta_0 + \beta_1 S + \beta_2 A + \beta_3 V + \beta_4 ED + \varepsilon_i$$

Where CP represents Customer Perceptions:

S represents the Solution in SAVE model:

A represents the Access in SAVE model:

V represents the Value in SAVE model:

ED represents the Education in SAVE model:

In this section, the SPSS result will be examined, and the results will be interpreted so that the hypothesis constructed on chapter-1 can be accepted or rejected. The SPSS result has given the following values:

Table 21: Beta values for each independent variable

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.436	.117		3.728	.000
	Solution_Mean	.527	.029	.645	18.305	.000
	Access_Mean	.163	.034	.163	4.748	.000
	Value_Mean	.135	.041	.109	3.322	.001
	Education_Mean	.138	.030	.162	4.544	.000

Source: Own Survey, SPSS Results

4.5.4.1. Hypothesis testing- Solution

H_{0a}: There is no significant relationship between solution and customer perception.

H_{1a}: There is statically significant direct effect of solution on creating positive customer perception towards construction chemical companies ($\alpha \leq 0.05$).

From the above table, we have found that the β value for Solution is 0.527 and the significant value is 0.000. This indicates that holding the other factors constant, when solution is increased by 1%, the customer perception on average will be increased by 0.527% and the relationship is significant at 5% significance level. Hence, we reject the null hypothesis and accept the alternate hypothesis.

$\therefore$ H_{1a} is accepted.

Discussion: From the different research reviewed on literature review part, product was assumed to have a good impact on creating customer satisfaction and customer loyalty. This marketing element has been affecting the customers perception positively. The acceptance of the above hypothesis will support this idea in advanced way. Though solution has been part of the new marketing mix model, it still has positive and significant impact on the customer perception.

In summary, companies that produce construction chemicals should adopt solution in their marketing model to create a positive customer perception.

4.5.4.2. Hypothesis testing- Access

H_{0b}: There is no significant relationship between access and customer perception.

H_{1b}: There is statically significant direct effect of access on creating positive customer perception towards construction chemical companies ($\alpha \leq 0.05$).

From the above table, we have found that the β value for Access is 0.163 and the significant value is 0.000. This indicates that holding the other factors constant, when access is increased by 1%, the customer perception on average will be increased by 0.163% and the relationship is significant at 5% significance level. Hence, we reject the null hypothesis and accept the alternate hypothesis.

∴ H_{1b} is accepted.

Discussion: Through the years, researchers indicated place factor is important for customer satisfaction. The reality of place effect is mainly seen when considering purchase of residential houses. People look for places with more resources or prospective of future development to decide on the house to purchase. However, the experience and customer satisfaction are not only attached to direct concept of place. Customers are looking for more than the brick wall shops. They are eager on the access to get the products and services. The acceptance of the above hypothesis supports this idea. Access plays a direct, positive, and significant role in customer perception.

In general, construction chemical manufacturers should add access in their marketing model to create a positive customer perception.

4.5.4.3. Hypothesis testing- Value

H_{0c}: There is no significant relationship between value and customer perception.

H_{1c}: There is statically significant direct effect of value on creating positive customer perception towards construction chemical companies ($\alpha \leq 0.05$).

From the above table, we have found that the β value for Value is 0.135 and the significant value is 0.001. This indicates that holding the other factors constant, when value is increased by 1%, the customer perception on average will be increased by 0.135% and the relationship is significant at 5% significance level. Hence, we reject the null hypothesis and accept the alternate hypothesis.

∴ H_{1c} is accepted.

Discussion: Different researchers have shown that price part of marketing model affects the customers purchase decision and the satisfaction level which in turn change them to be loyal customers or purchase and disappear. However, people are not only considering the lower price, or the lower pricing doesn't country companies to make continuous sales. Customers are looking on what value does the product or service adds to their lives. The hypothesis accepted in above

supports this concept. Value has a direct, positive, and significant impact on the customer perception.

This can be summarized as construction chemical producers should for ways to add value to the customers rather than relying on lower pricing when they offer their products or services.

4.5.4.4. Hypothesis testing- Education

H_{0d}: There is no significant relationship between education and customer perception.
H_{1d}: There is statically significant direct effect of education on creating positive customer perception towards construction chemical companies ($\alpha \leq 0.05$).

From the above table, we have found that the β value for Education is 0.138 and the significant value is 0.000. This indicates that holding the other factors constant, when education is increased by 1%, the customer perception on average will be increased by 0.138% and the relationship is significant at 5% significance level. Hence, we reject the null hypothesis and accept the alternate hypothesis.

∴ H_{1d} is accepted.

Discussion: The innovation that led to internet has paved the way for the customer experience to develop further. Through the years, promotion was seen impacting on the customers buying behavior. Different researchers have shown that promotion is one of the marketing elements that play role in customer satisfaction and purchase decisions. However, since the invention of the internet, people have different ways of getting information, so they are not spending time sitting at home watching promotional activities on TV. Hence, the requirement for advanced approach in the marketing model was necessary and this was done by SAVE model education element. The acceptance of the above hypothesis suggest that education plays a significant role. It has a direct and positive impact on customers perception.

In summary, companies which produce construction chemicals should adopt education as part of their marketing mix model to create a positive customer perception.

4.5.4.5. β_0 Interpretation

From the above table, we have found that the β value for the intercept is 0.436 and the significant value is 0.000. The indication of this is even if companies doesn't have the save marketing model elements, the customer perception will not disappear. According to the result, when all independent variables are zero, the customer perception on average will be 0.436%.

This result help us the model we used is unbiased however the practical interpretation will be most important for independent variables which can become practically zero. For our case, the marketing mix elements cannot be zero one way or the other hence the value of the intercept will help our model to be unbiased.

4.5.4.6. Regression Model with Values

Following the hypothesis acceptance in the above sections, the linear regression model will be updated as follow:

$$CP = 0.436 + 0.527S + 0.163A + 0.135V + 0.138ED + \varepsilon_i$$

This regression model is significant at 5% significant level and the model is also unbiased in explaining the dependent variable.

4.5.5. Summary Hypothesis Testing

After the hypothesis testing for each element was done in section 4.5.4 and each was discussed, here below are the summarized accepted hypothesis. The table also includes the β value as well as the significant value that are crucial in the accepting of the hypothesis.

Table 22: Summary of Hypothesis Testing

	Hypothesis	β	Sig.	Decision
H_{1a}	*There is statically significant direct effect of Solution on creating positive customer perception towards construction chemical companies ($\alpha \leq 0.05$).*	0.527	0.000	Accepted
H_{1b}	*There is statically significant direct effect of Access on creating positive customer perception towards construction chemical companies ($\alpha \leq 0.05$).*	0.163	0.000	Accepted
H_{1c}	*There is statically significant direct effect of Value on creating positive customer perception towards construction chemical companies ($\alpha \leq 0.05$).*	0.135	0.001	Accepted
$\boldsymbol{H_{1d}}$	*There is statically significant direct effect of Education on creating positive customer perception towards construction chemical companies ($\boldsymbol{\alpha \leq 0.05}$).*	0.138	0.000	Accepted

Source: SPSS data, own interpretation of results

Chapter Five- Conclusions and Recommendations

5.1. Overview

Following the conducting of the survey and analysis of the dataset, this chapter will bring the study into conclusion. The chapter start by summarizing the research findings. It then follows to make conclusion on the research findings. In the final section, it highlights the major limitations and outlines a recommendation for future studies.

5.2. Summary of Findings

The purpose of this study was to assess the effect of the construction chemical companies' marketing mix strategy on customer perception in the case of mega construction projects in Ethiopia. The study focused on engaging the newly developed SAVE model which is replacing the widely known 4Ps model. Although the practice is developing, the study tries to assess how is the customer feedback on the practicality of the model.

The study was made by deploying 210 questionnaires to get primary data on which 205 were returned. These questionnaires had questions regarding demographic, educational background, work experience related to construction and overall construction chemical related experience questions which followed by the 5-point Likert scale questions regarding the marketing mix model and the customer perception (Independent and dependent variables). The study was supported by secondary data found from different authors works in different books, articles, and journals. This was stipulated in the literature review by viewing the theoretical as well as the empirical parts which was base for constructing the conceptual framework.

The returned questionnaires were analyzed by SPSS to get the correlation and regression results which will be base for the model validation and drawing of the conclusion. The dataset results from the demographic view as well as work experience was also summarized. Seeing the respondents from the gender point of view, 28.8% of the respondents were female and 71.2% were male respondents. The age perspective shows that 61% of the respondents were aged from 26-35 years old while the least number of respondents were found on the age 56 and above with only 1% respondents were found. The study also found that 58% of the respondents have bachelor's degree

while 39.5% have masters' degree. The construction work experience displays that in total 92.7% of the respondents have 3 years and more experience which means they can relate to the construction chemicals one way or the other. To support this, data regarding the knowledge of knowing chemical products was collected and the results indicate that 95.1% of the respondents know chemicals for more than one year. These two results show us that the respondents have personal vast experience regarding the topic and the study can be reliable on their responses.

The study then followed to make correlation check by Pearson's correlation coefficient check up and the result gives us that the highest correlation is found between Solution and customer perception ($r=0.894$, $p<0.01$) while Education follows ($r=0.713$, $p<0.01$). Access stand on third ($r=0.669$, $p<0.01$) while Value follows ($r=0.640$, $p<0.01$) with both showing moderate correlation with customer perception. From these results, we can deduct that all have strong correlation with customer perception and the increase in the marketing models can create a more positive customer perception on the construction chemical companies.

The study proceeded to checking the assumption for linear regression is met before interpreting the regression analysis. The normality check has been satisfied as the dataset represented normally distributed data. The homoscedasticity check indicated that there is no visible pattern created on the scattered diagram which means the assumption is satisfied. The autocorrelation check was made by DW test, and the result was 1.686 which indicate that there is no autocorrelation (guide is no autocorrelation between values 1.5 to 2.5). Finaly, multicollinearity was checked to find if there is strong correlation between the independent variables and the check was made by crosschecking the Pearson correlation result as well as the tolerance and VIF results. The tolerance of each independent variable was in the accepted range (0.2 to 1) and the VIF was in the acceptable range (1 to 5) which is satisfactory to say there is no correlation between the independent variables- education was with highest VIF 1.963 and lowest tolerance 0.509. Hence, all the assumptions for regression were satisfied and the linear regression was proceeded.

Linear regression was then performed to determine how much of the dependent variable was defined by the independent variables which then followed by the testing of the hypothesis. The adjusted R^2 result was 0.868 which indicates that 86.8% of the variation in the customer perception

was as result of the marketing mix model while the remaining 13.2% is caused by other external factors. The customer perception variation has been strongly explained by the marketing mix model. This supports our view in that SAVE model has a positive and significant impact on creating positive customer perception. The regression model was also further checked by ANOVA, and it show significant difference between the regression and residuals result and the model was seen significant in 5% significant level (F=336.755, sig=0.000).

The testing of the hypothesis was done next by seeing the beta coefficients and the significance level results. In relation to the first hypothesis regarding solution, the result show $\beta = 0.527$ and sig. value 0.000 which rejects the null hypothesis and accept the alternate hypothesis. The result indicates that keeping all other factors constant, a 1% change in Solution will cause 0.527% change in the customer perception. The relationship is significant at 5% significant value which means solution has a direct and significant impact on creating positive customer perception.

Testing of the second hypothesis was done for access and the result show $\beta = 0.163$ and sig. value 0.000. The result has rejected the null hypothesis and accepted the alternate hypothesis, and the relationship was significant at 5% significance level. The result means that keeping all other factors constant, whenever there is change in access by 1%, there will be 0.163% change by customer perception. This conclude that access has direct and significant impact on creating positive customer perception.

The third hypothesis was tested for value impact and the result show $\beta = 0.135$ and sig. value 0.000. Consequently, the null hypothesis was rejected, and the alternate hypothesis was accepted while the relationship was found to be significant at 5% significant level. Keeping all other factors constant, a 1% change in value will cause a 0.135% change on the customer perception. With this, we can say value has direct and significant impact on creating positive customer perception.

The final hypothesis check was done for education impact on the customer perception and the β value show that 0.138 and sig. value is 0.000. The relationship was significant at 5% significance level which consequently rejects the null hypothesis while accepting the alternate hypothesis. The result means that keeping all other factors constant, a 1% change in education will cause 0.138%

change in customer perception. We can conclude that education has a direct and significant impact in creating positive customer perception.

With the four alternate hypotheses accepted, we can deduct that change in the SAVE model elements will cause direct and significant change in the customer perception.

5.3. Conclusion

Different studies done through the previous couple of decades suggested that marketing mix elements were creating customer satisfaction and contributing to the development of customer loyalty. In the study made by Thwala and Slabbert (2018), marketing mix is effective for guesthouses if adopted with customers selecting product and place as the top two elements. Gebremichael and Dhillon (2022) suggested that the customer loyalty and marketing mix have strong relationship while Widyastuti et al. (2020) concluded that marketing mix elements as a group impacted customers purchase decision. Sudari et al. (2019) find out that marketing mix positively impacted customer satisfaction which foster customer loyalty.

Although the nature, field, country of the study as well as the marketing mix element focused were different, the different research under study suggested that the marketing mix elements had a positive customer satisfaction effect which in turn developed the customer loyalty. The magnitude of the effects differs from field to field though the overall impact was seen to be positive one.

The outcome of this research is like those studies made before. As summarized on the previous section, the SAVE marketing mix model explained 86.8% of the variation in the customer perception. With holding high value, the change in the marketing mix model will be very crucial to explaining the changes in the customer perception. Adding to this, the correlation result show that each marketing mix element has strong correlation with the customer perception and the correlation has been found positive. Hence, the increase in each element will result increase in customer perception.

The acceptance of each alternate hypothesis builds up the suggestion that each element has its own impact on the customer perception. Keeping the other factors constant, the highest impact was seen

by Solution element with change in 1% of the element causing 0.527% change in customer perception. Next is Access with 0.163% impact while Education holds 0.138% impact. The lowest impact from the elements was seen by Value which causes 0.135% change in customer perception for every 1% change. Generally, the marketing mix elements tested (SAVE model) has a direct and significant impact on the customer perception. As the impact is positive, we can conclude that the SAVE model will result in positive customer perception.

From the above paragraphs we can come up with the conclusion that the SAVE model adopted by construction chemical companies in construction projects is seen to be effective from the customers' perception. The positive customer feedback as well as the strong correlation found are evidence that the marketing mix strategy is effective.

5.4. Recommendations

This study has been done on the marketing mix strategy of construction chemical companies. The study conclusion suggests that the companies must adopt the SAVE marketing strategy to create the best customer perception. Customer perception effect is not only seen for current purchases but also for future development. It can also be steppingstone to expand the marketing reach. In this respect, the following recommendations are outlined for the construction chemical companies:

1. Companies should adopt the SAVE marketing model to create satisfied customers. As the companies mainly sell products, the competitive advantage in the market will be having an integrated marketing mix model.
2. Companies should make their approach by focusing on getting to know the construction sector challenges as well as the problems faced by the different customer segments. Companies doesn't have to come up with some innovation and expect the market to take it as it is. The innovation and local adoptions should be done by first studying the customer problems. The companies should transform from serving products to creating solutions for customer problems.
3. Companies should work on creating an easy access to their products. For this, companies should adopt multichannel arrangements on which customers can get their products easily. From the brick-wall shops to online stores, from direct supplies to retail sales, the companies should consider making the experience seamless.

4. Though Ethiopian market seem to be price sensitive, the companies should be aware that it is not always the case. Rather than focusing on lower price or beating competition with price, the focus should be given in creating additional benefit to customers. Focus on the customers and come up with the offers on which customers can be confident enough decide it's worth to pay for.
5. Companies should rely on educating their customers and providing relevant information to customers. Customers should know how to use products, what to avoid and certain steps to follow in case of system applications. Customers should get the confidence on the companies and their products. This is done when companies adopt an educational approach. Companies should invest on transferring their expertise to their customers so that customers can develop respect and trust and on top of all familiarity. Short DIY videos, prepare demo trainings can be some strategies to be used by companies to develop the knowledge of their customers.
6. Companies should create top to bottom internal understanding on their marketing approach and develop expertise to meet their customers' requirements. People should get trainings and programs that can build on their skills. For example- people working on the marketing and sales team should know the procedures of approaching customers and understanding requirements. Afterall people in contact are the ones responsible for creating the best or worst customer experience so companies should focus on developing the internal team.
7. Although an integrated approach is recommended, should companies want to invest with priority, they can start by focusing on solution and access elements of the SAVE model. The changes caused by these elements on the customer perception is high so companies should focus on these two.

5.5. Contribution of the research

This study was made on the new SAVE model. This new marketing mix model, though it's been applied by different companies and related theories were studied, research was not found to directly relate the concept with the practicality in the market. Due to this, the study will give an insight for future studies to base on.

In addition, the topic is related to companies that are producing construction chemicals. The study regarding the topic by relating to construction companies globally is limited. However, the sector is showing tremendous development as it is related to the construction industry advancement. In this regard, this study can add further knowledge to researchers interested in studying of construction chemical companies and their marketing model.

5.6. Limitation

Through the course of this study, the following limitations were discovered.

- As the SAVE model was recently developed, empirical studies which are directly related to the topic were not found. The research was completed by comparing with previously done studies on other similar marketing models.
- The study was made on construction chemical companies and studies found on this sector were very limited. In addition, studies in this field from the local perspective were not found.
- Getting an organized data regarding mega projects was difficult and the projects considered in this study needed personal collection one by one from the different sources. This had effect on finding connections for the different parties working on the projects.
- The mega projects considered in this study are exceptional to road and railway projects. The extent of use of construction chemicals on these kinds of projects were not clearly known hence the study didn't consider this area.
- The questionnaire was prepared to be filled online in google forms which saved time. However, it is difficult to conclude what people exactly feel, how they understand each question and how they evaluate the different companies to make a summarized answer.

5.7. Future Research

- The focus of this study was on the effect of the construction chemical companies' SAVE model on the customer perception in mega construction projects in Ethiopia. This study can be taken as a base and further studies can be made on other sectors as the SAVE model can be practical for different companies.
- The study was conducted on sites from the customers perspective. But it is also good to see the companies' perspective and make comparative study between the two.

- The study focuses on making the direct relation study between the SAVE model and the customer perception. However, further studies can be made by considering moderating and mediating factors to understand what kind of factors additional affect the relationship.
- The questionnaire deployed for this study was 5-point Likert scale. Future studies can be repeated by using interviews or open-ended questionnaires to understand the qualitative aspect of the SAVE model and further make the concept well understood.

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Research Questionnaire

QUESTIONNAIRE

Dear Participants,

My name is Wasihun Namssi, a graduate student at Addis Ababa University. I am currently undertaking a study on The Effect of Construction Chemical Companies' Marketing Mix Strategy on Customer Perception: The Case of Mega Construction Projects in Ethiopia.

This questionnaire will only take about 10 minutes. The data you provide will be used only for the purpose of this study and will be kept strictly confidential. Your genuine, and timely response is vital for the success of the study.

Thank you for your participation.

For any further information required, please contact me on email: freewase1@yahoo.com or on phone: +251910575053

Direction:

- Please Use "√" up on given alternatives.
- Please read each item carefully and respond to all statements.

PART I: DEMOGRAPHIC DATA (please put a "√" mark on the box that best describes you)

1. Gender:

Female ☐ Male ☐

2. Age:

25 and below ☐ 26- 35 ☐ 36-45 ☐ 46-55 ☐ 56 and above ☐

3. Educational Background:

Diploma ☐ Bachelor's Degree ☐ Masters' degree ☐

PhD Degree ☐ Others: _____

4. Experience in the construction field:

Less than 3 years ☐ 3 – 5 years ☐ 5 – 7 years ☐ More than 7 years ☐

5. Please indicate which of the followings you are currently working for:

Main Contractor ☐ Sub-Contractor ☐ Applicator ☐

Consultant ☐ Client ☐ Others: _____

PART II: CONSTRUCTION CHEMICALS DATA (please put a "√" mark on the box that best describes you)

6. How long have you known construction chemicals?

Less than a year ☐ 1 – 3 years ☐ 3 – 5 years ☐ More than 5 years ☐

7. How often the company/ projects you are in use construction chemicals?

More than once in a week (Often) ☐ 2 – 3 times in a month ☐

Once in a month ☐ 2 – 3 times in a year ☐

Do not use ☐

PART III: MARKETING MIX STRATEGY DATA

Please select the degree of agreement/disagreement with the following statements associated with the construction chemical companies marketing mix strategy (put a "√" mark on the box that best describes your view).

SOLUTION

The followings are statements about the solutions provided by construction chemical companies. Please mark on your level of agreements or disagreements with the statements provided.

Description	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
The companies approach me first to understand my problem before providing product recommendations					
The companies provide alternative products to solve my problem					
The companies help me identify to make choices between products					
The companies try to find more innovative solutions that can solve my problem					
The companies' products have solved my problems					
The companies helped me to avoid risks by providing the best solutions to my problems					
The companies' marketing approach helped me to choose their products more than their competitors					
I will recommend the companies to others as they have problem solving solutions.					

ACCESS

The followings are statements about the accessibility of the construction chemical companies' products. Please mark on your level of agreements or disagreements with the statements provided.

Description	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
The companies direct approach allows me to easily get their products					

The companies mainly use distribution networks to make it easy for me to access their products					
The companies and their distributors have physical stores relatively in short distance for my reach					
I can easily get detail information by directly contacting the companies					
I can easily get detail information from the companies' website					
I can easily get detail information from the companies' social media activities					
I prefer to use internet access more than a personal visit to find detail information					
I prefer personal visit to find detail information to be able find the right solution for my problem					

VALUE

The followings are statements about the value the construction chemical companies add to your requirements. Please mark on your level of agreements or disagreements with the statements provided.

Description	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
The companies' products add value to my requirements					
The companies' pricing is dependent on the quality of the products they provide me					
The companies help me understand the additional value I get from products for my easy decision					
The companies provide me competitive pricing compared to the competitors' products					
The additional value provided by the companies' products help me reduce my costs					
The companies pricing is higher than what I am prepared to pay					
I am prepared to pay more for extra value I get					

I am willing to pay with normal rate if the companies products met my basic requirement					

EDUCATION

The followings are statements about the educational activities by construction chemical companies. Please mark on your level of agreements or disagreements with the statements provided.

Description	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
The companies' educational approach is based on my current demand					
The companies' educational approach has shown the value they are giving to me					
The companies provide informative materials that I can easily refer to					
The companies communicate upcoming plans and include my needs in the trainings prepared					
The companies prepare trainings to help me understand new technologies and trends in the market					
The companies' social media activities allow me to understand the products and their uses					
The companies provide demo videos that I can easily refer to					
The companies provide enough information that makes my buying decision easy					

PERCEPTION ON OVERALL CONSTRUCTION CHEMICAL COMPANIES' SAVE MARKETING MIX STRATGEY

The followings are statements about your perception on the construction chemical companies SAVE marketing mix strategy. Please mark on your level of agreements or disagreements with the statements provided.

Description	**Strongly Disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**Strongly Agree (5)**
The companies' marketing mix strategy effectively addresses my needs and preferences as customer.					

The companies' marketing mix strategy adds value to me as a customer.					
The companies' marketing mix strategy enhanced my overall experience as a customer.					
How likely are you going to use the companies you are dealing with now in your future construction projects based on the effectiveness of their marketing mix strategy?					
How likely are you going to recommend the companies you are dealing with now to others based on the effectiveness of their marketing mix strategy?					