YANGON UNIVERSITY OF ECONOMICS

DEPARTMENT OF MANAGEMENT STUDIES

MBA PROGRAMME

EFFECT OF SERVICE QUALITY, BRAND IMAGE AND TRUST ON CUSTOMER SATISFACTION AND CUSTOMER LOYALTY TOWARDS WATERWORKS ENGINEERING GROUP SERVICES CO., LTD.

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EMBA II – 68

EMBA 20th BATCH (ONLINE)

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ACADEMIC YEAR (2023-2025)

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This thesis is submitted to the Board of Examiners in partial fulfilment of the requirements for the degree of Master of Business Administration (MBA).

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ACCEPTANCE

This is to certify that the thesis entitled **"Effect of Service Quality, Brand Image and Trust on Customer Satisfaction and Customer Loyalty towards Waterworks Engineering Group Services Co., Ltd."** has been accepted by the Examination Board for awarding Master of Business Administration (MBA) degree.

Board of Examiners

(Chairman)

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Rector

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ABSTRACT

The objectives of this study are to examine the influencing factors on service quality, to analyze the effect of service quality, brand image and trust on customer loyalty, brand image and trust, to analyze the mediating effect of customer satisfaction on the relationship between service quality, brand image, trust and customer loyalty towards Waterworks Engineering Group Services Co., Ltd. Total population is 162 and the sample size is 115 customers by using Raosoft sample size calculator. Simple random sampling method is applied to select the respondents. Primary data are collected online survey method. Through the structured questionnaire with 5-point Likert scale. Secondary data are gathered from relevant text books, papers, websites, international dissertations and other MBA research papers from the library. Descriptive statistics and regression analysis are used to analyze the collected data. According to regression results, firstly the results show that both technical quality and functional quality have significant and positive effect on service quality. Secondly, the price has a significant and positive effect on brand image. Thirdly, ability and integrity have positive and significant effect on trust. Fourthly, service quality and trust have significant and positive effect on customer loyalty. Fifthly, there is the mediating effect of customer satisfaction on the relationship between service quality and customer loyalty. Finally, there is the mediating effect of customer satisfaction between trust and customer loyalty. Based on these findings, the company should prioritize enhancing service quality, strengthening brand reputation, and building deeper customer trust in order to improve satisfaction and foster long-term customer loyalty.

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CHAPTER 1

INTRODUCTION

The construction services industry is a cornerstone of infrastructure development, particularly in emerging markets like Myanmar, where rapid urbanization and economic growth drive demand for reliable water supply, sanitation, and building infrastructure. This sector encompasses a wide range of activities, including design, installation, consulting, and quality testing, all critical for ensuring regulatory compliance and public safety. In Myanmar, the industry has experienced significant growth since 2010, fueled by government reforms and foreign investment, which have spurred construction projects across residential, commercial, and industrial domains. Companies in this sector must navigate challenges such as maintaining high-quality standards, adopting advanced technologies, and building trust with clients amidst increasing competition.

As the industry matures, there is an increasing need for construction firms to integrate professional services such as engineering consulting, quality inspections, and laboratory testing to support regulatory compliance and quality control. The growing complexity of infrastructure projects combined with heightened expectations from investors and public stakeholders demands stronger technical standards and transparent service delivery. Reliable construction testing laboratories now play a key role in minimizing project risk and assuring material performance. In emerging markets, construction firms to integrate professional services need is magnified by the limited capacity of state monitoring agencies, placing greater responsibility on private sector actors to uphold standards (Ling & Oyedele, 2017). Moreover, the success of these services increasingly depends on firms' ability to balance technical accuracy with efficient client communication, which has become a decisive factor in competitive construction service delivery (Perera et al., 2019).

According to Rahman et al. (2012), service quality refers to a customer's judgment of the overall excellence of a service, encompassing both what is delivered and how it is delivered. It includes technical quality, which is the actual outcome of the service, and functional quality, which involves the process of service delivery. According to Parasuraman et al. (1988), service quality is composed of five dimensions: tangibility, reliability, responsiveness, assurance, and empathy. These dimensions are central in

evaluating how well services meet customer expectations. High service quality plays a crucial role in building customer satisfaction and long-term loyalty. By consistently providing high-quality service, businesses can enhance trust, satisfaction, and retention among customers.

Technical quality refers to the outcome aspect of a service, representing what the customer actually receives (Grönroos, 1984). It includes performance accuracy, consistency, and safety of the service delivered. In technical fields like laboratory or engineering services, it reflects compliance with industry standards. High technical quality leads to increased trust and satisfaction (Rahman et al., 2012). It is a fundamental factor in perceived service value.

Functional quality is how the service is delivered to the customer, including responsiveness, politeness, and communication (Grönroos, 1984). It emphasizes employee behavior, convenience, and customer interaction. Positive functional quality enhances customer experience even when technical aspects are equal. Rahman et al. (2012) noted that functional quality plays a crucial role in shaping overall service perception. It directly influences satisfaction and loyalty.

Brand image refers to the perception and set of associations held by consumers based on their experiences, beliefs, and exposure to brand messaging (Ashraf & Niazi, 2018). A positive brand image strengthens customer preference and emotional connection to the brand. It also functions as a signal of product or service quality, reducing perceived risk in customer decision-making. According to Keller (2013), brand image arises from brand associations that are strong, favorable, and unique in customers' memory. A well-managed brand image can improve satisfaction and foster loyalty by reinforcing credibility and value. There are many factors that shape the brand image. Among them, pricing and promotional strategies play a crucial role, as they directly influence how customers perceive the brand’s value and positioning in the market. Consistent and value-aligned pricing can strengthen brand credibility and trust.

Price is the amount a customer pays for a product or service, reflecting both financial cost and perceived value (Kotler & Keller, 2016). It plays a crucial role in shaping purchase decisions, particularly in competitive markets. According to Al-Salamin and Al-Hassan (2016), fair pricing directly affects customer satisfaction, trust, and loyalty. Transparent pricing can also strengthen brand image.

Price promotion is a short-term marketing strategy aimed at increasing sales and encouraging product trials by offering discounts, coupons, or bundled deals (Kotler & Keller, (2016). These tactics influence consumer purchasing behavior by enhancing perceived value and creating a sense of urgency. According to Yan et al. (2017), price promotions can significantly impact consumer decision-making by appealing to both utilitarian and hedonic motivations. However, excessive reliance on price promotions can undermine brand loyalty if not carefully managed. A balanced promotional approach helps achieve both immediate sales growth and sustained brand equity.

Trust is defined as the customer's confidence in the brand's ability, integrity, and reliability to deliver consistent service and meet expectations (Kohn et al., 2021). It is essential for developing and maintaining long-term customer relationships. When trust is present, customers are more likely to forgive service failures, engage repeatedly, and recommend the brand to others. Singh and Sirdeshmukh (2000) explained that trust is developed through competence, fairness, and consistent interaction with customers. Trust reduces perceived risk and strengthens emotional bonds. Among the key factors influencing trust, ability and integrity are especially critical, as they shape customer perceptions of competence and ethical behavior. When a brand consistently demonstrates both, it enhances credibility and deepens customer trust.

Ability refers to the skills, knowledge, and competence of an organization or its personnel to perform tasks effectively and reliably (Gefen et al., 2003). In the context of trust, ability is a key component customers consider when evaluating whether to rely on a brand. High ability builds credibility and enhances customer confidence in the service provider. It also significantly influences both trust and satisfaction, contributing to stronger customer relationships (Mayer et al., 1995).

Integrity refers to the alignment between an individual's or organization's actions and a set of ethical principles, including honesty fairness, and transparency (Engelbrecht et al., 2017). In organizational contexts, integrity is a foundational dimension of trust, influencing perceptions of credibility and moral character. Rifai and Mardijuwono (2020) further emphasized that integrity is essential for maintaining accountability, especially in roles involving oversight and governance. Integrity through consistent ethical behavior not only strengthens internal trust but also enhances external stakeholder confidence, supporting long-term organizational success.

Customer satisfaction is the customer's emotional response resulting from a comparison between expected and actual performance of a product or service (Akbar & Parvez, 2015). It reflects how well a company meets or exceeds customer expectations during and after the buying process. High satisfaction indicates that the customer perceives value, which can lead to repeat purchases, positive word-of-mouth, and brand loyalty. Furthermore, Prayag et al. (2017) highlighted that customer satisfaction is not only influenced by tangible service outcomes but also by perceived service quality, emotional experience, and relationship quality. In competitive markets, maintaining high levels of satisfaction is essential for sustainable growth and long-term customer retention.

Customer loyalty is the ongoing preference and repeated engagement of clients with a service provider, reflecting both behavioral and attitudinal commitment (Huang et al., 2017). In testing laboratories—loyalty is largely shaped by consistent service quality, dependable results, and professional responsiveness. Ping-Lung Huang et al. (2017) found that in technology service contexts including calibration labs, high service quality enhances customer satisfaction, which in turn drives loyalty. Thus, loyal clients in such specialized industries often evolve into long-term partners, leading to stable revenue streams, stronger reputations, and improved competitive positioning in the market.

Waterworks Engineering Group Services (WEG) Co.,Ltd. was established in 2004. WEG specializes in delivering high-quality water supply systems, construction services, and material testing laboratories in Myanmar. The company provides comprehensive solutions including water treatment design, bored pile drilling, and laboratory testing services to meet both public and private sector needs. Committed to quality and customer satisfaction, WEG combines technical expertise with modern equipment to ensure reliable project delivery. Over the years, WEG has built a strong reputation for professionalism and excellence across Myanmar's major cities and remote areas. This study explores how the service quality, brand image and trust affect on customer satisfaction and customer loyalty at Waterworks Engineering Group Services (WEG) Co., Ltd.

1.1 Rationale of the Study

The construction sector is a vital driver of economic development in Myanmar, especially as the country undergoes rapid urbanization and infrastructure expansion. With increasing investment in roads, bridges, buildings, water systems, and industrial projects,

the demand for reliable and high-quality construction services has become essential. In particular, the role of supporting services such as construction material testing and environmental quality assessment has gained significance in ensuring compliance with engineering and safety standards. As the industry becomes more competitive and technically demanding, service providers are under pressure to deliver not only accurate and efficient results but also to build lasting relationships with their clients. Strengthening customer connection is therefore essential for long-term business sustainability in the construction services sector.

Customer loyalty is essential for the continued growth and stability of ISO TECH Laboratory, which operates under Waterworks Engineering Group Services Co., Ltd. As a provider of construction material testing and water and wastewater quality analysis, the laboratory serves a wide range of business clients whose projects require consistent and credible results. In this technical service environment, maintaining loyal customers is vital for ensuring sustainable demand, reducing marketing and acquisition costs, and building a strong professional reputation through referrals and repeat engagements. Long-term clients are more likely to rely on standardized procedures, comply with documentation requirements, and trust the laboratory's reporting for regulatory approvals and project decision-making. In order to retain such clients, it is important for the laboratory to focus on the foundational factors that drive loyalty namely service quality, trust, and customer satisfaction.

Customer satisfaction is a significant factor that determines the success and reputation of service-based organizations. For ISO TECH Laboratory, achieving customer satisfaction is essential, as it reflects how well the laboratory meets the expectations of business clients who rely on accurate test results, timely reporting, and professional service. In the construction sector, where clients often work under strict deadlines and compliance standards, satisfaction leads to repeat business, loyalty, and positive referrals all of which are vital for long-term growth and market competitiveness. To reach high levels of satisfaction, service quality and trust must be firmly established.

Trust is a significant factor in the decision-making process of business clients who depend on technical accuracy and professional integrity. In the case of ISO TECH Laboratory, earning and maintaining client trust is essential, as the test results it provides are often used for critical decisions in construction safety, regulatory compliance, and project execution. When clients believe in the competence and consistency of a laboratory,

they are more likely to continue the relationship and rely on its services over time. Trust becomes even more important in the testing industry where clients cannot directly evaluate the service output such as chemical analysis or material durability but must rely on the provider's transparency, certification, and ethical standards. A single breach in accuracy or delay can negatively affect client confidence. Therefore, building strong trust through reliable performance, consistent communication, and adherence to professional standards is vital for the long-term reputation and client retention of ISO TECH Laboratory.

Ability is an essential factor in building trust, particularly in industries that require technical expertise and precision. For ISO TECH Laboratory, ability is demonstrated through the use of certified testing methods, well-trained technicians, and accurate reporting. Clients in the construction industry depend on the laboratory's competence to ensure material reliability, safety, and compliance. When a company consistently performs with technical excellence, it fosters confidence in its capabilities. This confidence plays a vital role in enhancing trust, which is necessary for maintaining long-term relationships with business clients who rely heavily on test outcomes for critical decisions.

Brand image is an important factor that influences how business clients perceive and choose technical service providers. For ISO TECH Laboratory, maintaining a strong and positive brand image is essential in positioning the company as a reliable, competent, and professional testing service within Myanmar's construction sector. A well-established brand image helps attract new clients, retain existing ones, and differentiate the laboratory from other competitors in the market. In a B2B context, where services are highly technical and trust-driven, a professional and consistent brand image signals quality, stability, and credibility all of which are significant in forming long-term partnerships.

Price is an important factor that influences how customers perceive the value and credibility of a brand. In the case of ISO TECH Laboratory, clients often assess the laboratory's professionalism and service reliability based on its pricing structure. In B2B technical services, pricing that reflects fairness, transparency, and alignment with service quality can strengthen the perception of trust and competence. On the other hand, inconsistent or unclear pricing may harm brand image, especially when clients compare options in a competitive market. Therefore, maintaining a pricing strategy that balances cost with perceived value is essential to reinforce a positive brand image and attract repeat clients.

Price promotion is also a significant factor that shapes brand perception, especially in markets where clients seek both quality and affordability. For ISO TECH Laboratory, offering targeted price promotions such as introductory discounts, bundled services, or loyalty based incentives can enhance visibility and improve client perceptions of accessibility and value. However, such promotions must be strategically managed to avoid undermining the brand's technical credibility. When applied appropriately, price promotions are not only effective in encouraging trial usage but also contribute to a stronger and more approachable brand image among business customers.

Service quality is an essential aspect of maintaining competitiveness and credibility in the laboratory testing industry. For ISO TECH Laboratory, which provides construction material and water quality testing services, consistently high service quality is important to meet the technical, regulatory, and timeline expectations of clients. Business customers rely not only on test results but also on the overall service experience from sample submission to report delivery. High service quality builds confidence, enhances professional relationships, and supports repeat business, all of which are vital for long-term sustainability in a specialized and competitive field.

Technical quality is a significant component of overall service quality, especially in a laboratory setting where accuracy, reliability, and compliance are central to the value provided. For ISO TECH Laboratory, technical quality reflects the precision of test results, the validity of procedures, and the use of certified equipment and standards. Clients in the construction industry depend on this accuracy to make critical decisions about structural safety and material performance. A single inaccurate report could delay a project or lead to non-compliance with regulations. Therefore, maintaining high technical quality is vital for protecting the laboratory's reputation and ensuring client trust and satisfaction.

Functional quality is equally important in shaping the client's perception of service excellence. It encompasses how services are delivered—such as the professionalism of staff, the responsiveness of communication, and the clarity of documentation. For ISO TECH Laboratory, functional quality affects how clients experience the process of testing, from initial inquiries to final reporting. Even with accurate results, poor communication or slow response times can damage client relationships. By ensuring that service delivery is smooth, courteous, and timely, the laboratory can create a positive client experience, which is essential for fostering satisfaction, trust, and long-term loyalty in market.

1.2 Objectives of the Study

The objectives of the study are:

1) To examine the influencing factors on service quality at Waterworks Engineering Group Services Co.,Ltd;
2) To examine the influencing factors on brand image at Waterworks Engineering Group Services Co.,Ltd;
3) To examine the influencing factors on trust at Waterworks Engineering Group Services Co.,Ltd;
4) To analyze the effect of service quality, brand image and trust on customer loyalty at Waterworks Engineering Group Services Co.,Ltd;
5) To analyze the mediating effect of customer satisfaction on the relationship between service quality and customer loyalty at Waterworks Engineering Group Services Co.,Ltd;
6) To analyze the mediating effect of customer satisfaction on the relationship between brand image and customer loyalty at Waterworks Engineering Group Services Co.,Ltd; and
7) To analyze the mediating effect of customer satisfaction on the relationship between Trust and customer loyalty at Waterworks Engineering Group Services Co.,Ltd.

1.3 Scope and Method of the Study

This study focuses on business customers of Waterworks Engineering Group Services Co.,Ltd. Total population is 162 and the sample size is 115 by using Raosoft sample size calculator. Simple random sampling method is applied to select the respondents. This study is applied an online survey method using a structured questionnaire with a 5-point Likert scale. Secondary data is collected from relevant text books, papers, websites, international dissertations and other MBA research papers from the library. Descriptive statistics and regression analysis are used to analyze the collected data.

1.4 Organization of the Study

This study is organized into five chapters. Chapter one is an introduction that includes the rationale of the study, the objectives of the study, the scope and method of the study and the organization of the study. Chapter two reviews relevant theories and the literature on brand image, service quality, trust, customer satisfaction and customer loyalty including previous studies and the conceptual framework of the study. Chapter three presents the profile and service quality, brand image and trust of Waterworks Engineering Group Services Co.,Ltd., demographic profiles and reliability test. Chapter four analyzes the effects of service quality, brand image and trust on customer satisfaction and customer loyalty, including the mediating effect of customer satisfaction on the relationship between service quality and customer loyalty, the mediating effect of customer satisfaction on the relationship between brand image and customer loyalty and the mediating effect of customer satisfaction on the relationship between Trust and customer loyalty at Waterworks Engineering Group Services Co.,Ltd. Finally, Chapter five involves the conclusion with the findings and discussions, suggestions and recommendations, and needs for further research.

CHAPTER 2

THEORETICAL BACKGROUND

This chapter, presents theoretical background and literature reviews relating to service quality, brand image, trust, technical quality, functional quality, price, price promotions, ability, integrity, customer satisfaction and customer loyalty. In addition, it contains previous studies and the conceptual framework of the study

2.1 Service Quality

Service quality refers to the extent to which service performance matches customer expectations and contributes to overall satisfaction (Johnston, 1995). Parasuraman et al. (1985) highlighted service quality as the gap between customer expectations and their actual experiences. In construction services, this quality is not only tied to technical performance and safety standards but also encompasses timely delivery, client communication, and coordination efficiency. Service quality in construction is judged based on how well the contractor meets contractual obligations while maintaining transparency, consistency, and professionalism (Lehtinen & Lehtinen, 1991).

Service quality is multifaceted due to the involvement of multiple stakeholders, complex processes, and long project timelines. According to Kang and James (2004), service quality in project-based services such as construction involves both the core service (e.g., actual building or renovation work) and the relational service (e.g., communication, responsiveness, problem-solving). A high-quality construction service not only completes projects to technical specifications but also maintains smooth interactions between clients, subcontractors, and consultants. Consistent supervision, timely progress reporting, and respect for client needs are all markers of service quality in this field.

Moreover, customers often evaluate service quality through both tangible and intangible aspects. Tangible aspects include on-site safety practices, the condition of equipment, and the physical outcomes of the construction. Intangible elements such as reliability, empathy, and assurance play a critical role in shaping client satisfaction (Brady & Cronin, 2001). Especially in large-scale construction projects, where delays and changes are common, maintaining service quality through proactive communication and adaptive

problem-solving can significantly influence client perceptions and long-term business relationships. Therefore, construction firms must continuously improve their service quality to stay competitive and earn client trust in a challenging and dynamic market.

2.2 Influencing Factors on Service Quality

There are several factors influencing service quality, which can be broadly categorized into technical quality and functional quality. Technical quality concerns the actual outcome of the service provided, while functional quality relates to the manner in which the service is delivered.

2.2.1 Technical Quality

Technical quality refers to the objective outcome of the service process, particularly the accuracy, effectiveness, and reliability of the service delivered. In construction services, this includes structural integrity, adherence to engineering standards, use of quality materials, and compliance with project specifications and safety regulations. Clients in this sector place significant value on the tangible results of the service, which directly affect operational functionality, lifecycle performance, and long-term asset value. Lehtinen and Lehtinen (1991) described technical quality as the what of service delivery, referring to the actual outcome that the customer receives. In professional service environments, such as laboratories or healthcare settings, technical quality plays a critical role because clients expect precise, reliable, and accurate results. Unlike functional quality, which focuses on how the service is delivered, technical quality emphasizes the end result. Therefore, technical quality acts as a key determinant of client satisfaction and project success in the construction industry.

In construction projects, where outcomes are typically long-term and capital-intensive, technical quality acts as a trust-building mechanism that influences client satisfaction and future engagement. Contractors and service providers are often evaluated not only on the final deliverables but also on how they manage complex technical challenges, coordinate multidisciplinary teams, and adhere to industry best practices. According to Kang and James (2004), technical quality is directly linked to customer perceptions of professionalism and competence. To strengthen technical quality, construction firms invest in skilled labor, advanced technologies, quality control systems,

and continuous training. Ultimately, sustained technical excellence helps establish a strong market reputation and competitive positioning in a highly demanding and performance-sensitive industry.

2.2.2 Functional Quality

Functional quality refers to the manner in which a service is delivered, encompassing elements such as responsiveness, communication, professionalism, and courtesy (Brady & Cronin, 2001). In construction and other technical service contexts, functional quality becomes especially important when clients may lack the expertise to assess technical outcomes directly. As Parasuraman et al. (1988) emphasized, service attributes like empathy, assurance, and reliability shape the customer's perception of performance. These interpersonal and procedural dimensions play a vital role in reducing client uncertainty, building trust, and fostering a positive overall experience during the service delivery process.

Functional quality is closely linked to customer satisfaction and loyalty, especially in industries where service is extended over long periods and involves high client engagement. According to Rauch et al. (2015), both technical and functional quality jointly influence perceived service value, but functional aspects often carry more emotional significance for clients. When service staff demonstrate clear communication, timely responsiveness, and supportive interactions, it contributes to stronger trust and perceived reliability. For construction firms, maintaining high functional quality can enhance their professional image, improve repeat business, and create competitive advantage in project-based environments.

2.3 Brand Image

Brand image is not only has it represented functional aspect, but also as a representative of consumer’s emotion (Yuan & Chang, 2013). Brand image comprises the beliefs and impressions held in the minds of consumers, which play a critical role in shaping their attitudes and influencing purchasing decisions. In service industries where outcomes are often intangible, delayed, or difficult to evaluate, brand image serves as a key signal of reliability and quality. A strong brand image enhances customer confidence, fosters trust, and contributes to long-term loyalty by reducing perceived risk and reinforcing positive

expectations (Keller, 1993).

In professional and technical services, brand image is shaped by consistent service quality, trustworthiness, and professional reputation. According to Aaker (1996), brand image contributes to overall brand equity, influencing how clients assess service performance even prior to actual engagement. Nguyen and Leblanc (2001) further emphasized that within service industries, a positive brand image not only enhances customer satisfaction but also plays a critical role in client retention, particularly in highly competitive market environments. In the context of construction services, where service delivery is complex, project-based, and often evaluated over extended periods, a reliable brand image can help firms stand out and build a stronger rapport with clients.

Moreover, brand image in construction is influenced by visible outcomes such as completed projects, client testimonials, safety standards, and ethical practices. According to Bravo et al. (2009), corporate reputation significantly impacts brand perception in industries where customers have limited technical knowledge to assess actual performance. In such cases, a well-crafted brand image functions as a strategic asset, acting as a proxy for trust and competence. Firms that invest in professional branding, consistent communication, and stakeholder engagement are better positioned to attract repeat business and referrals. Building a strong brand image also supports premium pricing, as clients are more willing to pay for perceived assurance, quality, and peace of mind. Therefore, brand image is not merely a marketing tool but a long-term investment that drives competitive advantage in construction service markets.

2.4 Influencing Factors on Brand Image

Brand image is influenced by several factors, including price and promotional strategies, which affect how customers perceive value.

2.4.1 Price

Price is the amount of money charged for a product or service, or the total values that consumers exchange for the benefits of having or using the product or service (Kotler et al., 2008). Price is considered as the most important measurement of repurchase intentions (Parasuraman & Grewal, 2000). The price is the amount paid for a product. In

some cases, especially in business-to-business marketing this can also include the total cost of ownership. Total cost of ownership may include costs such as installation and other products required to deliver a complete functional solution (Ling, 2007).

According to Anderson et al. (1994), pricing decisions must align with the core value delivered, especially when services are part of a long-term relationship where perceived fairness builds loyalty. Zeithaml (1988) explained that price plays both an economic and psychological role, as clients associate higher prices with higher service quality when other information is limited. Customers tend to compare prices with their expectations, previous experiences, and competitors' offerings when forming perceptions of fairness (Bolton et al., 2003).

2.4.2 Price Promotion

Price promotion is about a decision of how best to the related product to the target market and to persuade consumer to buy it (Lovelock et al., 1998). Promotional pricing must be handled with care. While it can help increase initial engagement, frequent or poorly planned promotions may lower the perceived value of a service (Shimp, 2007). Kotler and Keller (2016) highlighted that effective price promotion works best when it complements the overall value offering and strengthens not undermines the brand's image. In relationship-based service industries, occasional promotional offers can enhance goodwill and support long-term loyalty when aligned with trust and satisfaction.

2.5 Trust

Trust is defined as a crucial factor for customer loyalty (Singh, 2016). Morgan and Hunt (1994) described trust as the belief that a partner is reliable and will fulfill obligations honestly and consistently. It reflects the confidence customers place in the provider's ability and intent to act in their best interest. Trust is widely recognized as a key antecedent to customer satisfaction and loyalty, especially in service industries where the outcome is often intangible and relationship-based. In the construction sector, trust is earned through proven project delivery, transparent communication, and adherence to safety and quality standards. These elements are essential when engaging clients in long-term, high-value projects that involve shared risk and responsibility.

In services that require technical or professional expertise, trust is established through consistent positive experiences, ethical conduct, and clear communication. Mayer et al. (1995) identified three key components that influence trust: ability, integrity, and benevolence. When these characteristics are consistently demonstrated, they help reduce perceived risk and foster client commitment. Moreover, Garbarino and Johnson (1999) stated that trust can be a more critical predictor of future interactions than satisfaction, particularly in contexts where switching costs are high or long-term relationships are essential. This is especially relevant in the construction industry, where ongoing partnerships and repeat business often depend on mutual confidence and transparency throughout the project lifecycle.

Furthermore, trust not only supports long-term relationships but also encourages brand advocacy and positive referrals. According to Delgado-Ballester and Munuera-Alemán (2001), customers who trust a service provider are more likely to recommend the brand, tolerate minor service failures, and remain loyal even under competitive pressure. In the project-driven construction environment, where reputation and word-of-mouth significantly influence client acquisition, trust becomes a strategic asset. Maintaining trust requires continuous effort, including honest dealings, contract clarity, on-site professionalism, and consistent performance. Ultimately, trust forms the foundation of enduring business relationships and plays a central role in securing future project opportunities and sustaining competitive advantage.

2.6 Influencing Factors on Trust

Trust is influenced by several factors, including the perceived ability and integrity of a company, which shape how customers evaluate its reliability and credibility.

2.6.1 Ability

Ability is defined as the group of skills, competencies and characteristics that enable a party to have influence within some specific domain (Mayer et al., 1995). Observable signals like professional certifications, staff experience, and consistent service delivery help shape ability. To enhance service organizations that invest in skilled personnel and structured processes are more likely to earn credibility, which supports satisfaction and long-term client loyalty (Gefen et al., 2003). According to Mayer et al. (1995), ability is

one of the key foundations of trust, representing a provider's capability within a specific domain. In service sectors that require technical precision such as consulting, certification, or scientific analysis ability is often judged based on qualifications, tools, and a proven track record of performance. when clients cannot fully assess technical quality themselves, their trust depends heavily on the provider's demonstrated ability.

2.6.2 Integrity

Integrity is defined as the trustor's perception that the trustee adheres to a set of principles deemed acceptable by the trustor, demonstrated through consistent past actions, credible communications from others, a perceived strong sense of justice, and the alignment between stated intentions and actual behavior (Mayer et al., 1995). Integrity involves honesty, fairness, transparency, and a commitment to doing what is right, even when it may not be easily observed by clients. In service industries where clients depend on reliable, unbiased information such as testing, consulting, or certification integrity becomes a deciding factor in long-term relationship building. According to Mayer et al. (1995), integrity is one of the three core dimensions of trust, reflecting the extent to which a service provider adheres to principles that clients value and respect.

In construction services, integrity plays a central role in shaping the reputation and credibility of contractors and consultants. Given the complexity and cost of projects, clients must rely on firms to provide accurate cost estimates, meet safety and regulatory standards, and deliver work that aligns with contractual obligations. Integrity is particularly vital in areas such as procurement, quality assurance, and project supervision, where unethical behavior can lead to financial loss, project delays, or legal consequences. Thus, upholding integrity strengthens trust and contributes to sustainable business relationships in the construction industry.

2.7 Customer Satisfaction

Customer Satisfaction is defined the overall satisfaction as an affective state that is the emotional reaction to a product or service experience (Spreng et al., 1996). Fornell (1992) defined customer satisfaction as an overall evaluation based on the total purchase and consumption experience with a product or service over time. It reflects whether the service has fulfilled customer expectations, which in turn influences the likelihood of

continued engagement. Oliver (1999) further emphasized that satisfaction is not a momentary reaction but a cumulative judgment shaped by multiple interactions and service experiences.

According to Zeithaml and Bitner (2003), satisfaction serves as an outcome of perceived service quality and performance. Customer satisfaction is positively related to service reliability, responsiveness, and value. In technical or professional services, where direct evaluation of outcomes can be challenging for customers, satisfaction often hinges on trust, clarity, and the smoothness of the overall experience (Shah & Yasin, 2010). In construction services, where projects often involve high financial stakes and long durations, customer satisfaction depends not only on the final result but also on communication, timeliness, and how effectively issues are managed throughout the process.

Moreover, Tracey et al. (1999) highlighted that customers often evaluate the perceived value they receive against the price paid when forming satisfaction judgments. High levels of satisfaction contribute significantly to customer loyalty, positive word of mouth, and increased repurchase intentions. Mittal and Kamakura (2001) highlighted that satisfied customers are more likely to remain with a brand, refer others, and spend more over time. This loyalty can serve as a competitive advantage in markets where customer retention is more cost-effective than acquisition. According to Tao (2014), organizations that ignore customer needs are less likely to grow sustainably. Therefore, measuring and improving customer satisfaction is not only a performance indicator but also a strategic necessity for service organizations.

2.8 Customer Loyalty

Kotler (2005) defined customer loyalty as the repeat purchase made by a customer due to a commitment to a brand or company. Customer loyalty is a deeply held commitment to repurchase or re-engage with a product or service despite marketing efforts or situational influences that may encourage switching. Loyalty is often considered a measure of trust, emotional connection, and perceived value built over time (Oliver, 1999). In service-driven industries such as construction, where projects are complex and long-term in nature, establishing and maintaining loyalty can be particularly valuable for sustaining ongoing business relationships and generating repeat contracts.

According to Brown (1952), customer loyalty can be observed through consistent

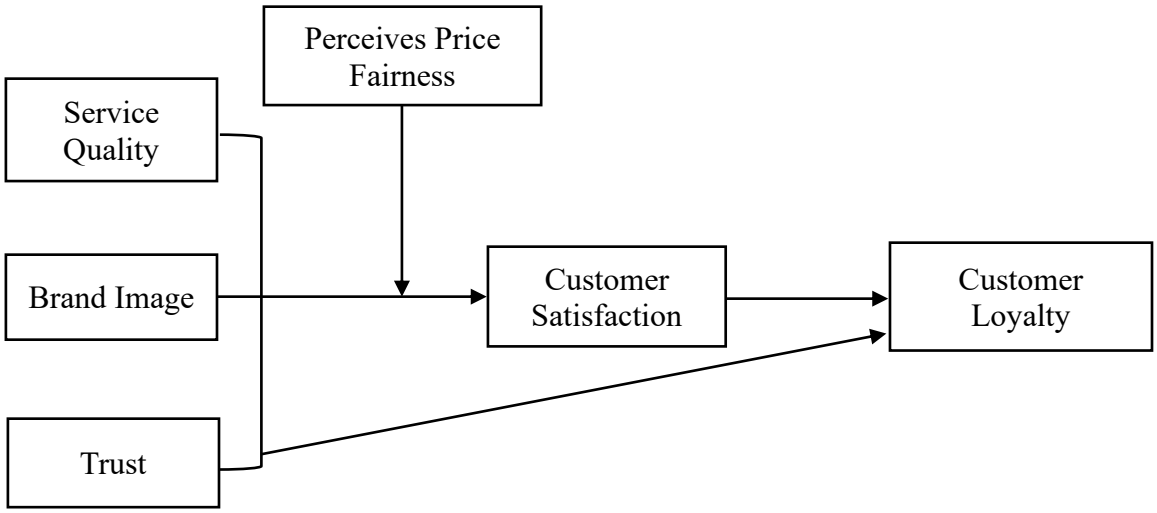
repeat purchases. Over time, this concept has evolved into a broader framework that includes both behavioral and attitudinal dimensions. Behavioral loyalty refers to the frequency and consistency of purchases, while attitudinal loyalty reflects a deeper psychological attachment and brand preference. Jones and Sasser (1995) emphasized that true loyalty is long-term and resilient, persisting even in the face of more attractive alternatives. Loyal customers are not only more forgiving of minor service lapses but also more likely to serve as brand advocates through positive word-of-mouth, which is particularly influential in industries driven by referrals and reputation, such as construction and engineering services.

Shanka (2012) indicated a positive relationship between service quality and customer satisfaction, demonstrating that higher service quality leads to stronger customer commitment and loyalty. A high level of loyalty can reduce the need for aggressive marketing expenditures and lower client acquisition costs. Reichheld and Sasser (1990) showed that even a small increase in customer retention can substantially improve profitability, particularly in sectors where acquiring new clients is more costly than retaining existing ones. Therefore, building customer loyalty through consistent quality, ethical conduct, timely delivery, and trust-based communication should be a strategic focus for construction firms seeking to achieve long-term competitiveness and sustainable growth.

2.9 Previous Studies

There are many papers related to service quality, brand image, trust, functional quality, technical quality, price, price promotion, ability, integrity, customer satisfaction and customer loyalty. Four previous papers are based on to develop the conceptual framework of this study. The first paper was the impact of brand image, service quality, and trust on customer loyalty, moderating effect of perceived price fairness and the mediating effect of customer satisfaction conducted by Ashraf et al. (2018) telecommunication sector of Pakistan. The objective of the study was to examine the impact of brand image, service quality, and trust on customer loyalty. From a questionnaire survey, 268 respondent's data were obtained and a structural equation modelling (SEM) were used to analyse the data. Figure (2.1) shows the conceptual framework of Ashraf et al. (2018)

Figure (2.1) Conceptual Framework of Ashraf et al.

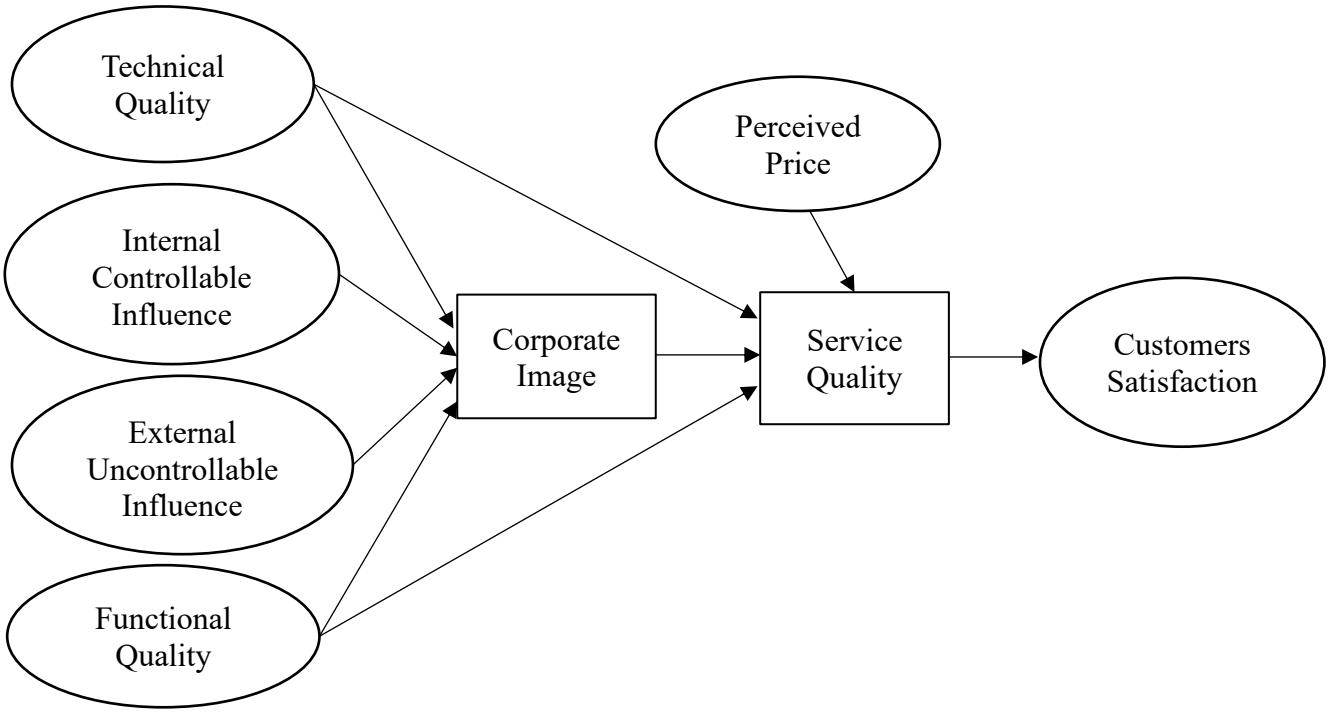


Source : Ashraf et al. (2018)

The findings of the study explored that service quality, brand image and trust have significant positive effects on customer satisfaction, and in turn, customer satisfaction strongly influences customer loyalty. Furthermore, perceived price fairness was found to moderate the relationship between satisfaction and loyalty. The authors concluded that to retain loyal customers, service providers must strengthen brand perception, build trust, and consistently deliver quality service. This study supported the conceptual foundation of the present study by confirming the relationships between service quality, brand image, trust, customer satisfaction, and customer loyalty.

In a second study, Rahman et al. (2012) studied the title of a conceptual study on the relationship between service quality and towards customer satisfaction. Rahman et al. (2012) emphasized that customer satisfaction is significantly influenced by both functional and technical aspects of service delivery. The Grönroos model provides a broader perspective by integrating how the service is delivered (functional quality) with what is delivered (technical quality). The study aimed to clarify the impact of these models on understanding customer satisfaction in service contexts. Figure (2.2) shows the conceptual framework of Rahman et al. (2012)

Figure (2.2) Conceptual Framework of Rahman et al.



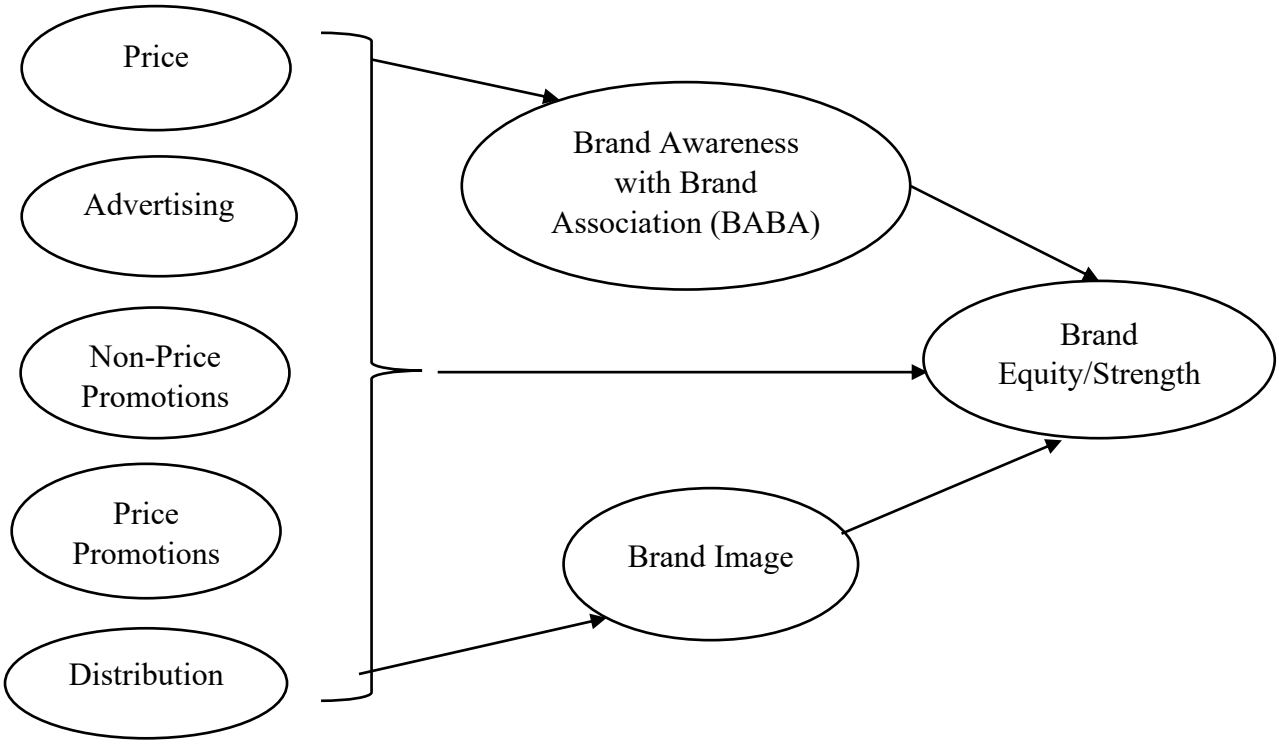
Source : Rahman et al. (2012)

According to Rahman et al. (2012), both these dimensions critically shape customer perceptions and, ultimately, satisfaction levels. The authors argued that functional quality plays a particularly crucial role in service industries where customer interaction and service delivery processes are central to value creation.

Rahman et al. (2012) concluded that service organizations aiming to enhance customer satisfaction must address not only the core technical quality of their services but also focus intensively on the functional aspects of delivery, such as employee behavior, service environment, responsiveness, and empathy.

In a third study, Shariq et al. (2014) investigated the relationships between marketing mix elements (price, distribution intensity, advertising, and promotions) and brand equity dimensions (awareness, loyalty, quality, associations, and overall equity) within the UAE FMCG sector. The study was based on a quantitative survey using a 33-item questionnaire covering these constructs. A total of 536 respondents participated, representing a demographically diverse sample in terms of gender, age, ethnicity, income, and education. Respondents rated each item using a 5-point Likert scale, and the author applied exploratory factor analysis to validate and refine the constructs. Figure (2.3) shows the conceptual framework of Shariq et al. (2014).

Figure (2.3) Conceptual Framework of Shariq et al.



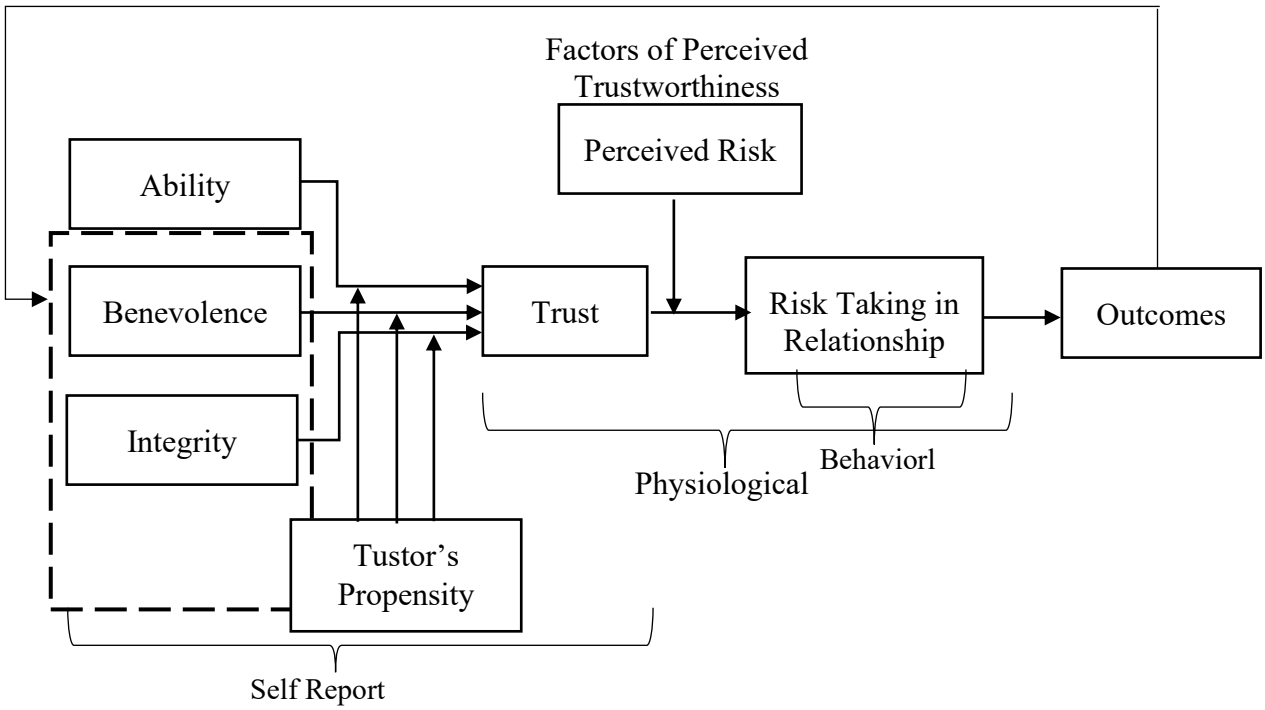
Source : Shariq et al. (2014)

The findings revealed that marketing mix elements significantly influence brand equity dimensions in the FMCG market context. Among the marketing mix variables, advertising and distribution intensity emerged as the most influential factors in shaping brand awareness and brand associations, indicating that higher advertising efforts and broader product availability enhance how consumers recognize and relate to a brand. Furthermore, price strategies and promotional activities were found to play a significant role in affecting brand loyalty and perceived quality. The study demonstrated that competitive pricing and well-executed promotional campaigns can strengthen customer loyalty and positively influence consumers' perceptions of product quality.

In the fourth study, Kohn et al. (2021) developed a conceptual framework to understand the development and outcomes of trust within relational contexts. The study emphasizes the interaction between the trustor's internal disposition, perceived risks, and evaluations of the trustee's characteristics. The model identifies key components such as trustor's propensity, perceived risk, and the dimensions of perceived trustworthiness ability, benevolence, and integrity as critical antecedents of trust. Furthermore, the study categorizes trust outcomes into self-reported, behavioral, and physiological responses, as well as the willingness to take risks within relationships. This framework was designed to

comprehensively analyze the cognitive and emotional processes underlying trust decisions in interpersonal or service-based exchanges. Figure (2.4) shows the conceptual framework of Kohn et al. (2021).

Figure (2.4) Conceptual Framework of Kohn et al.



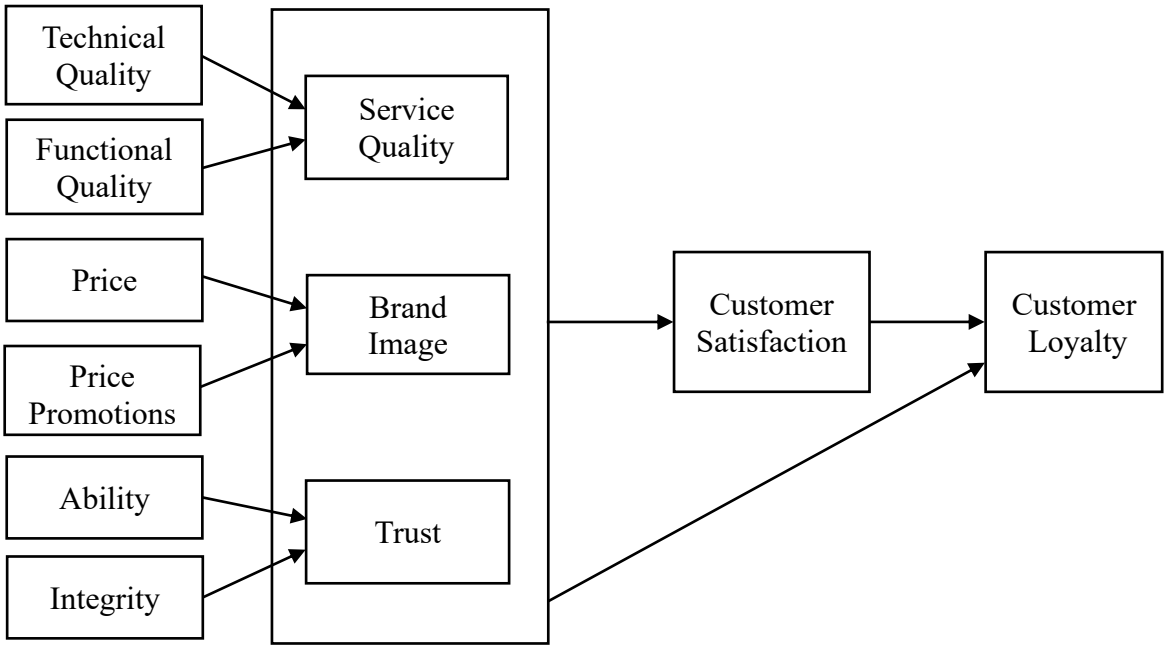
Source: Kohn et al. (2021)

The study found that ability, benevolence, and the trustor's propensity had significantly influence the formation of trust in relationships. Among these, perceived ability had the strongest effect. The study confirmed that trust mediates the relationship between these factors and risk-taking behavior, while also reducing perceived risk. The results emphasized that trust decisions involve both cognitive and emotional components, and that higher levels of trust lead to greater willingness to take risks in interpersonal or organizational contexts.

2.10 Conceptual Framework of the Study

This study is designed to explore the effect of brand image, service quality and trust on customer satisfaction and customer loyalty towards Waterworks Engineering Group Services Co., Ltd. Figure (2.5) presents the conceptual framework of the study.

Figure (2.5) Conceptual Framework of the Study



Source : Own Compilation (2025)

The conceptual framework in this study is structured into three components based on the variables illustrated in the figure. In the first component of the framework, technical quality and functional quality are positioned as independent variables, while service quality serves as the dependent variable. In the second component of the framework, price and price promotions function as independent variables, with brand image as the dependent variable. In the third component of the framework, ability and integrity are identified as independent variables, while trust is the dependent variable. Furthermore, service quality, brand image, and trust collectively act as independent variables that influence customer Satisfaction, which subsequently serves as a mediating variable between these service attributes and customer loyalty. Finally, customer loyalty is positioned as the ultimate dependent variable in the framework. This conceptual model reflects a structured pathway of influence from service-related factors and marketing practices to customer relationship outcomes, with customer satisfaction mediating the relationship between the initial factors (service quality, brand image, and trust) and customer loyalty.

CHAPTER 3

PROFILE, SERVICE QUALITY, BRAND IMAGE AND TRUST OF WATERWORKS ENGINEERING GROUP SERVICES CO., LTD.

This chapter provides profile, vision and mission, organizational structure of Waterworks Engineering Group Services Company Limited. In addition, it presents the practices of service quality, brand image and trust of the company. And profile of respondents and reliability test are described.

3.1 Profile of Waterworks Engineering Group Services Co., Ltd.

Waterworks Engineering Group Services Co., Ltd. (WEG) is a multidisciplinary engineering and technical services company headquartered in Yangon, Myanmar. Established on January 21, 2004, the company has grown to become a leading local player in construction engineering, laboratory testing, and infrastructure development services. Over the past two decades, WEG has steadily built a reputation for providing reliable and professional solutions to public and private sector clients across the country.

The company's diverse service portfolio includes water and sanitation engineering, bored pile foundation works, construction materials testing, laboratory analysis, human resource management, and financial administration. WEG's structure reflects a commitment to integrated service delivery, with specialized departments working in coordination to support complex engineering and construction projects.

One of WEG's most prominent divisions is ISO TECH Laboratory, which offers construction materials testing and water analysis. This department plays a vital role in ensuring the quality and safety of infrastructure projects, both for internal WEG operations and for external clients such as engineering firms, government agencies, and private developers.

Through continuous investment in human capital, technical capacity, and operational systems, Waterworks Engineering Group Services Co., Ltd. remains committed to infrastructure improvement, environmental stewardship, and the delivery of services that support Myanmar's national development.

3.1.1 Vision, Mission, and Core Values of Waterworks Engineering Group Services Co., Ltd.

The vision of Waterworks Engineering Group Services Co., Ltd. is to be a leading and trusted provider of sustainable water solutions, infrastructure development, and environmental testing services-ensuring safe, clean water and resilient foundations for communities and future generations.

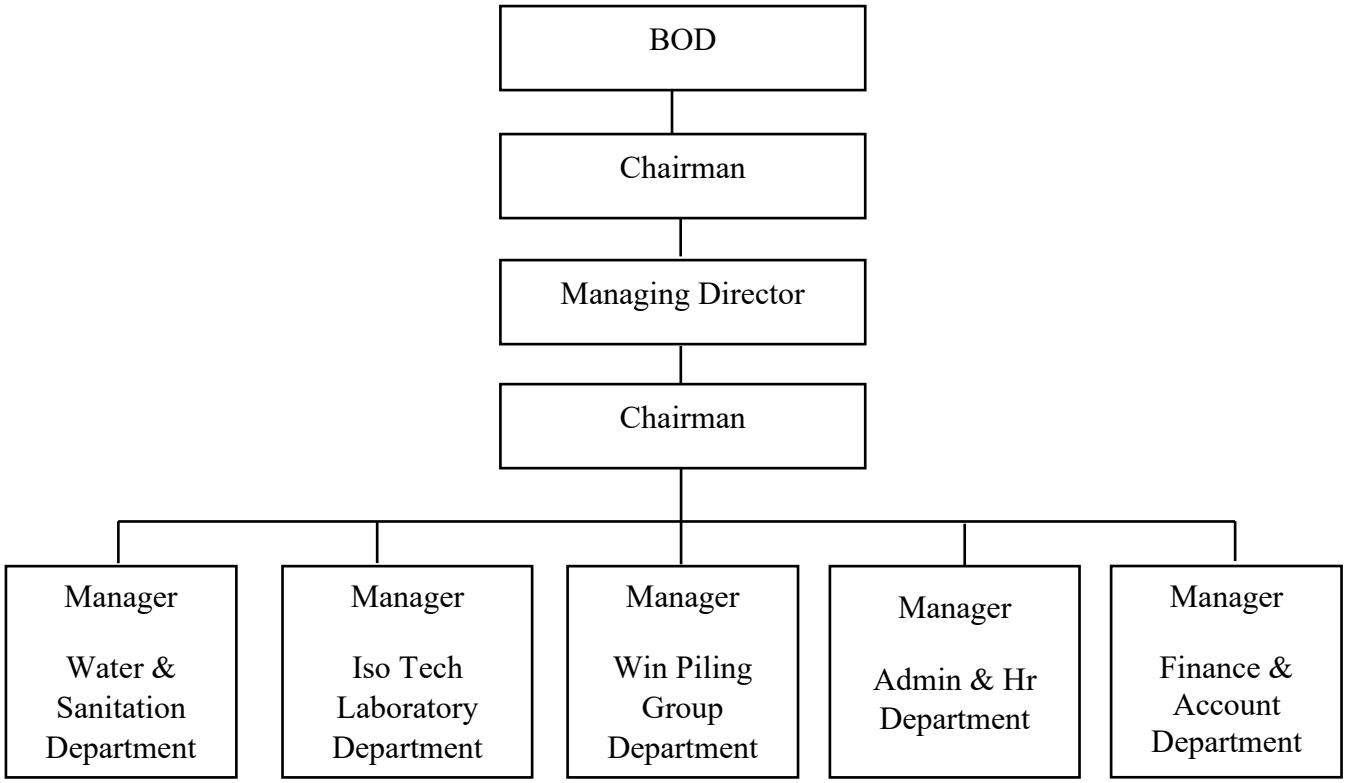
The mission is to provide high-standard engineering, construction, and laboratory services that meet both local and international benchmarks. Continuous enhancement of technical capabilities, operational efficiency, and service reliability is pursued through training, advanced technology, and adherence to professional best practices. Emphasis is placed on safety, transparency, and customer satisfaction to build lasting relationships and contribute to community development in the water, sanitation, construction, and environmental sectors.

Core values are integrity, quality, innovation, teamwork, sustainability, and customer focus are embedded into every aspect of operations. From the precision-driven work of ISO TECH Laboratory to the strategic execution of piling and sanitation projects, the organization remains committed to excellence, accountability, and long-term growth.

3.1.2 Organization Structure of Waterworks Engineering Group Services Co., Ltd.

WEG's success is driven by its multidisciplinary team of engineers, chemist, administrators, and technicians who operate under a well-defined organizational structure. The company is led by a chairman, supported by executive and operational leadership including a managing director, deputy managing director, and general manager. Under this leadership, each department is managed independently but collaborates as part of a shared vision—to deliver dependable engineering services that meet local needs and international standards. The organization chart of WEG is presented in Figure (3.1).

Figure (3.1) Organization Chart of Waterworks Engineering Group Services Co., Ltd.



Source: WEG (2025)

There are five major departments within the organization, namely: water & sanitation department, iso tech laboratory department, win piling group department, admin & hr department, finance & account department. Each department is overseen by a respective manager who reports to the general manager. This hierarchical structure helps ensure effective management and coordination across all operational areas of the company.

(a) Water and Sanitation Department

The water and sanitation department is one of the earliest and most established units within WEG, focused on planning, designing, and implementing water supply and sanitation systems. The department undertakes both public and private sector projects that involve the construction of water treatment plants, distribution pipelines, sewerage systems, pumping stations, and internal pipeline networks.

This department supports Myanmar's infrastructure development goals by delivering practical solutions to urban and rural water challenges. The team consists of civil

engineers, hydraulic specialists, and field technicians who ensure that each project meets the required environmental and public health standards.

With a strong track record of successful installations and community-based systems, the department plays an essential role in improving public health, environmental hygiene, and access to clean water across the country.

(b) ISO TECH Laboratory Department

The ISO TECH laboratory department is one of the core technical divisions under Waterworks Engineering Group Services Co., Ltd. It specializes in construction materials testing and environmental quality analysis. Originally formed to support WEG's internal engineering projects, the laboratory has expanded its services to serve a wide range of external clients, including construction firms, developers, government agencies, and industrial businesses across Myanmar.

ISO TECH provides a broad scope of testing services including concrete compressive strength test, water absorption test, sulphur capping for cylinder, steel reinforcement testing, rebar bending**,** water and wastewater quality assessment**.** Each type of test is performed using calibrated equipment and standardized methods that comply with ISO 9001:2015 requirements**,** ensuring both technical accuracy and reliability.

The department is led by a laboratory manager and is divided into specialized sections for each type of material testing. In addition to routine analysis, ISO TECH also provides clients with consultation on test results, interpretation, and recommendations—making it not just a testing center but a knowledge-driven support unit for quality assurance in engineering projects.

The department's commitment to precision, timely service delivery, and strict adherence to ethical reporting practices has earned it a respected position in Myanmar's laboratory services sector. As part of WEG's broader mission, ISO TECH contributes significantly to upholding construction safety standards and promoting environmental responsibility.

(c) Win Piling Group Department

The Win Piling Group department specializes in foundation and piling works**,** including bored piles**,** sheet piles**,** press piles, spun piles and contiguous piles. As infrastructure projects in Myanmar increasingly require deep foundation systems to support bridges, buildings, and high-load structures, this department offers crucial expertise in geotechnical solutions.

Led by experienced foundation engineers and site supervisors, Win Piling Group operates with modern piling equipment and follows rigorous safety and performance protocols. The department also collaborates closely with ISO TECH laboratory for site soil testing and post-pile integrity evaluations.

Its work is vital for ensuring structural stability in challenging soil conditions, and the department has contributed to many high-profile infrastructure developments across the country.

(d) Administration and Human Resources Department

The administration and human resources department oversees the internal operational framework of WEG. This includes office management, employee recruitment and development, policy implementation, and regulatory compliance. The department ensures that the company operates smoothly on a day-to-day basis while fostering a productive and ethical workplace culture.

It also manages staff benefits, performance evaluations, training programs, and workforce planning. By supporting the needs of over a hundred professionals across various departments, this unit plays a key role in strengthening team coordination and organizational efficiency.

(e) Finance and Account Department

The finance and account department is responsible for managing the company’s financial operations, including budgeting, expense tracking, internal audits, taxation, and payroll. This department provides strategic support for investment decisions, cost control, and financial planning across all WEG divisions.

With the use of accounting software and internal control systems, the department ensures transparency and accountability in all financial dealings. Its role is particularly important in managing multi-project workflows, ensuring that both client projects and internal operations are financially sustainable and compliant with local laws and international reporting standards.

3.2 Service Quality, Brand Image and Trust of Waterworks Engineering Group Services Co.,Ltd.

To examine the effect of key business variables on customer satisfaction and customer loyalty at Waterworks Engineering Group Services Co., Ltd., this study incorporates a set of eleven conceptual variables categorized into technical, service, and trust-based components. Each variable plays a distinct role in shaping customer perceptions and behaviors, particularly in the context of laboratory services provided by the company. The following sections elaborate how each variable manifests operationally within the laboratory context.

3.2.1 Service Quality at Laboratory

Service quality is a broader construct encompassing both technical and functional aspects. It includes all customer-facing service dimensions, such as reliability, responsiveness, assurance, empathy, and tangibles. At the laboratory, service quality is operationalized by ensuring timely delivery of test reports, maintaining hygienic sample handling environments, and offering post-report consultations. The use of the SERVQUAL model helps guide internal performance metrics and continuous service improvement.

3.2.2 Technical Quality at Laboratory

Technical quality represents the core competency of any laboratory service and refers to the accuracy, reliability, and consistency of test results delivered to clients. At the laboratory operated under Waterworks Engineering Group Services Co., Ltd., technical quality is ensured through strict adherence to ISO/IEC 9001:2015 standards and the use of calibrated, high-precision equipment.

In operations, technical quality is further reinforced through the deployment of

modern, internationally sourced laboratory machines. The facility is equipped with Matest Compression Machine from Italy, RMU compression Machine along with Control Compression Machine and Gotech Universal Testing Machine from Taiwan, and NL Machines from Malaysia. These machines are selected for their precision, durability, and compliance with global testing standards, allowing for accurate measurement of material strength, durability, and performance across a wide range of civil engineering applications. High-quality chemical reagents used for water testing are imported from the United Kingdom, the United States, and Thailand. These certified reagents are carefully selected to ensure accuracy, reliability, and compliance with international testing standards.

All equipment is regularly calibrated, and testing procedures are carried out under tightly controlled conditions to eliminate variability and ensure repeatability of results. Internal quality control systems and routine validation processes are rigorously applied, preserving data integrity and enhancing test reliability. These practices not only uphold international laboratory standards but also significantly strengthen client confidence in the technical competence of the laboratory, forming a fundamental part of the overall service value delivered.

3.2.3 Functional Quality at Laboratory

Functional quality focuses on the manner in which services are delivered, emphasizing responsiveness, professionalism, and courtesy during client interactions. In the case of WEG's laboratory unit, this includes the efficiency of sample collection, transparency in reporting timelines, and the communication skills of technical staff. Functional quality complements technical quality and contributes to clients' overall service experience, particularly when prompt support and technical consultation are required.

3.2.4 Brand Image of the Laboratory

Brand image in laboratory services reflects the perception of technical credibility, ethical standards, and organizational reputation. The lab operating under WEG has built a strong image through ISO accreditation, transparency, and public engagements in environmental and public health testing. Positive brand image not only reinforces trust but also helps differentiate the lab from competitors in a specialized B2B market.

3.2.5 Price of Laboratory Services

In the laboratory service sector, price is a significant decision-making factor for business customers. Price reflects both monetary cost and perceived value, often evaluated in comparison with industry benchmarks and service reliability. At WEG Laboratory, pricing strategies are aligned with market rates while ensuring value-for-money through high technical standards and dependable reporting. Clients evaluate fairness of pricing based on the accuracy of testing, turnaround time, and consistency.

3.2.6 Price Promotion at Laboratory

Price promotion includes temporary discounts or bundled testing packages offered to enhance perceived customer value. WEG Laboratory occasionally introduces pricing incentives such as reduced fees for bulk sample testing or long-term service agreements, especially targeted at returning clients. These initiatives help improve customer retention and trial among new clients, serving as a tactical approach to enhance perceived affordability without compromising quality.

3.2.7 Trust in Laboratory Services

Trust is built through consistent service delivery, transparent communication, and the perceived benevolence of the provider. In the laboratory context, trust is crucial for repeat service engagements. WEG fosters trust through regular client updates, open feedback channels, and strict adherence to testing protocols. Trust also acts as a mediator between perceived service quality and customer loyalty.

3.2.8 Ability of the Service Provider

Ability is the perceived competence and expertise of the lab's personnel. This includes qualifications, experience, and problem-solving capacity of laboratory analysts and managers. WEG ensures that staff undergo continual professional development and external proficiency testing, which reinforces clients' belief in the lab's capability to deliver reliable outcomes.

3.2.9 Integrity of the Laboratory

Integrity denotes the lab's commitment to ethical practices, impartial reporting, and confidentiality. Clients often entrust labs with sensitive industrial and environmental data; thus, integrity directly influences long-term engagement. The lab under WEG maintains a code of conduct aligned with ISO 17025 impartiality clauses, ensuring that results are free from external influence.

3.3 Demographic Profile of Respondents

The study is conducted among 135 customers who participated in the study. The data were collected based on several demographic characteristics of the respondents, including industry, size of company, location, frequency of service use, customer relationship duration and type of services used from laboratory. The demographic results are summarized and presented in the following subsections and Table (3.1).

Table (3.1) Demographic Profile of the Respondents

Sr. No.	Demographic Factors	No. of Respondents	Percentage
	Total	115	100.0
1	**Industry**		
	Manufacturing	31	27.0
	Construction	53	46.1
	Healthcare	19	16.5
	INGO/ NGO	12	10.4
2	**Size of Company**		
	11-50 employees	50	43.5
	51-200 employees	43	37.4
	201-500 employees	12	10.4
	over 500 employees	10	8.7

Sr. No.	Demographic Factors	No. of Respondents	Percentage
3	**Location**		
	Yangon	92	80.0
	Mandalay	10	8.7
	Naypyitaw	13	11.3
4	**Frequency of Service Use**		
	Weekly	18	15.7
	Monthly	32	27.8
	Quarterly	17	14.8
	As Needed	48	41.7
5	**Customer Relationship Duration**		
	< 1 year	22	19.1
	1 - 3 years	35	30.4
	3 – 5 years	23	20.0
	5- 10 years	14	12.2
	> 10 years above	21	18.3
6	**Type of Services Used from Laboratory**		
	Compressive test and Absorption test	34	29.6
	Water and Wastewater quality test	60	52.2
	Rebar bending and Tensile strength test	21	18.3

Source: Survey Data (2025)

According to the Table (3.1), a total of 115 respondents participated in the survey. Regarding industry, the highest number of respondents (46.1%) came from the construction sector, followed by manufacturing (27.0%), healthcare (16.5%), and INGO/NGO (10.4%).

This distribution highlights that most customers of the laboratory services are concentrated in construction-related activities, which require regular material and quality testing.

In terms of company size, 43.5% of respondents represent companies with 11–50 employees, while 37.4% work in organizations with 51–200 employees. The remaining 10.4% come from companies with 201–500 employees, and 8.7% from companies with more than 500 employees. This shows that small to medium-sized enterprises (SMEs) form the majority of the laboratory's customer base.

Regarding location, the majority of respondents are based in Yangon (80.0%), followed by Naypyitaw (11.3%) and Mandalay (8.7%). This reflects the geographic concentration of laboratory service users in the commercial capital, where construction and industrial activities are more prominent.

The frequency of service use shows that 41.7% of respondents use the laboratory's services as needed, while 27.8% use them monthly, 15.7% weekly, and 14.8% on a quarterly basis. This indicates that while many clients rely on the services periodically, a significant portion of users are engaged on a consistent basis.

In terms of customer relationship duration, 30.4% of respondents have been using the services for 1–3 years, followed by 20.0% for 3–5 years, 19.1% for less than 1 year, 18.3% for more than 10 years, and 12.2% for 5–10 years. This distribution implies that the laboratory maintains both new and long-term client relationships, which is a positive sign of customer retention.

Lastly, when looking at the type of services used, the majority (52.2%) use water and wastewater quality tests, followed by compressive and absorption tests (29.6%) and rebar bending and tensile strength tests (18.3%). This shows the diverse range of testing services provided, with a primary demand for environmental testing.

Based on data from 115 respondents, most laboratory service users come from the construction industry, indicating a strong need for material and quality testing. The majority represent small and medium-sized enterprises (11–200 employees), primarily based in Yangon. Many customers use the services as needed, while others engage monthly or weekly, showing varied usage patterns. Water and wastewater quality testing is the most commonly used service, highlighting strong demand in both environmental and construction sectors.

3.4 Reliability Test Analysis

To evaluate the consistency and reliability of the measurement scales used in this study, Cronbach's Alpha was applied as a statistical measure. This method assesses how closely related a set of items are as a group, providing insight into the internal consistency of each construct measured by multiple Likert-scale items. It is particularly valuable for examining latent variables such as perceived quality, trust, or customer satisfaction, which cannot be observed directly but are inferred through survey responses (Tavakol & Dennick, 2011). A high Cronbach's Alpha value indicates that the items reliably measure the same underlying concept and can be confidently used in subsequent data analysis.

In this study, Cronbach's Alpha was employed to evaluate the internal consistency of the scales used for eleven key variables. The interpretation of Cronbach's Alpha is based on the following thresholds: values of 0.9 or above are considered excellent, 0.8 to 0.9 are good, 0.7 to 0.8 are acceptable, 0.6 to 0.7 are questionable, and below 0.6 are considered poor (Cronbach, 1951).

Table (3.2) Reliability Analysis

Sr. No.	Variables	No. of item	Cronbach Alpha	Level of Reliability
1	Technical Quality	5	.764	Acceptable
2	Functional Quality	5	.872	Good
3	Service Quality	5	.875	Good
4	Price	5	.893	Good
5	Price Promotions	5	.823	Good
6	Brand Image	5	.848	Good
7	Ability	5	.836	Good
8	Integrity	5	.866	Good
9	Trust	5	.927	Excellent
10	Customer Satisfaction	5	.898	Good
11	Customer Loyalty	5	.946	Excellent

Source: Survey Data (2025)

The results shown in Table (3.2) reveal that all variables demonstrate strong reliability, with Cronbach's Alpha values ranging from 0.764 to 0.946. Specifically, customer loyalty, trust, and customer satisfaction exhibit excellent internal consistency, indicating that the items under these scales consistently measure the intended constructs. Likewise, service quality**,** functional quality**,** price**,** brand image**,** integrity**,** and ability all fall within the good range, further supporting their reliability.

Even the variable with the lowest alpha, technical quality, while showing the lowest reliability among the variables, still meets the acceptable threshold, ensuring its suitability for further analysis. Overall, these findings confirm that the measurement instruments used for all variables in this study are statistically reliable and internally consistent, making them suitable for further analysis and interpretation.

CHAPTER 4

ANALYSIS ON EFFECT OF BRAND IMAGE, SERVICE QUALITY AND TRUST ON CUSTOMER SATISFACTION AND CUSTOMER LOYALTY TOWARDS WATERWORKS ENGINEERING GROUP SERVICES CO., LTD.

This chapter consists of three parts. The first part is customer perception on influencing factors, brand image, service quality, trust, customer satisfaction and customer loyalty. The second part is the analysis of the influencing factors on service quality, brand image and trust. The third part is the analysis of the mediating effect of customer satisfaction on the relationship between service quality, brand image, trust and customer loyalty.

4.1 Customer Perception on Influencing Factors, Brand Image, Service Quality, Trust, Customer Satisfaction and Customer Loyalty

This section presents customer perception on influencing factors, brand image, service quality, trust, customer satisfaction and customer loyalty. The analysis utilizes descriptive statistics to explore mean values. Primary data is collected from 115 customers of Waterworks Engineering Group Services Co., Ltd.

The analysis is based on a five-point Likert scale, with the following ratings: (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, and 5= Strongly Agree). According to Best (1977), the interpretation of the mean values is as follows:

The score between 1.00 and 1.80 indicates "Strongly Disagree."

The score between 1.81 and 2.60 indicates "Disagree."

The score between 2.61 and 3.40 indicates "Neither Agree nor Disagree."

The score between 3.41 and 4.20 indicates "Agree."

The score between 4.21 and 5.00 indicates "Strongly Agree."

4.1.1 Customer Perception on Influencing Factors

This section aims to analyze the customer perception on influencing factors. These factors include technical quality, functional quality, price, price promotions, ability and integrity.

(a) Technical Quality

Customer perception on technical quality is analyzed with five statements. Means, overall mean and standard deviations of technical quality are described in Table (4.1).

Table (4.1) Technical Quality

Sr. No.	Statements	Mean Value	Std. Deviation
1	Accurate and reliable testing results	4.04	.641
2	Modern and effective laboratory equipment	4.18	.696
3	Regulatory-compliant technical performance	4.10	.799
4	Consistent and stable testing processes	4.13	.853
5	Skilled and experienced lab personnel	4.16	.884
Overall Mean		**4.12**	

Source: Survey Data (2025)

According to Table (4.1), all the mean values including overall mean fall within the range of 3.41 to 4.20 at the agree level. Most of the respondents agree with the technical quality of Waterworks Engineering Group Services Co., Ltd. The responses show that customers believe the company provides accurate and reliable test results, uses modern and effective laboratory equipment, and operates under acceptable technical performance standards. The consistency and stability of testing processes, along with the technical expertise of laboratory staff, are also favorably perceived by customers.

(b) Functional Quality

Customer perception on functional quality is analyzed with five statements. Means, overall mean and standard deviations of functional quality are described in Table (4.2).

Table (4.2) Functional Quality

Sr. No.	Statements	Mean Value	Std. Deviation
1	Timely delivery of test results	3.98	.991
2	Well-explained and interpretable results	4.02	.848
3	Operationally useful lab reports	4.17	.830
4	Established Quality Management System (ISO 9001:2015)	4.08	.850
5	Routine quality assurance audits	4.02	.816
Overall Mean		**4.05**	

Source: Survey Data (2025)

According to Table (4.1), all the mean values including overall mean fall within the range of 3.41 and 4.20 at the agree level. It can be concluded that most of the respondents agree with the functional quality of Waterworks Engineering Group Services Co., Ltd. Customers perceive that test results are delivered on time and include sufficient interpretation when needed. They also agree that the laboratory reports are practical for supporting operational decisions. Additionally, customers recognize the existence of a structured quality management system and confirm that regular audits are conducted to ensure compliance with quality standards.

(c) Price

Customer perception on price is analyzed with five statements. Means, overall mean and standard deviations of price are described in Table (4.3).

Table (4.3) Price

Sr. No.	Statements	Mean Value	Std. Deviation
1	Competitive service pricing	3.86	.837
2	Fair value-for-money perception	4.03	.805
3	Clear and transparent pricing structure	3.86	1.042
4	Willingness to pay for enhanced service quality	4.02	.878
5	Price-driven service usage frequency	3.83	1.070
Overall Mean		**3.92**	

Source: Survey Data (2025)

According to Table (4.3), all the mean values including overall mean fall within the range of 3.41 and 4.20, indicating that most of the respondents agree with the price of Waterworks Engineering Group Services Co., Ltd. It can be concluded that most of the respondents agree with the hospital pricing policy. The company's service is reasonable, fair and transparent compared to the price. Customers are willing to pay a slightly higher price and price of service influences on using laboratory.

(d) Price Promotions

Customer perception on price promotions is analyzed with five statements. Means, overall mean and standard deviations of price promotions are described in Table (4.4).

Table (4.4) Price Promotions

Sr. No.	Statements	Mean Value	Std. Deviation
1	Attractive service discounts	3.75	1.107
2	Promotional pricing incentives	3.77	1.043
3	Loyalty rewards and discount programs	3.92	.880
4	Satisfaction from service rebates	4.19	.634
5	Appealing cashback offers	3.97	.858
Overall Mean		**3.92**	

Source: Survey Data (2025)

According to Table (4.4), all the mean values including overall mean fall within the range of 3.41 and 4.20 at the agree level for price promotions. It can be concluded that most of the respondents agree with the promotional efforts of Waterworks Engineering Group Services Co., Ltd. Customers agree that the company offers attractive discounts and that such promotions motivate them to use the services more frequently. Respondents also agree that a loyalty program with discounts or rewards would increase their likelihood of returning to the same laboratory. Furthermore, customers feel satisfied when receiving rebates and consider cashback offers to make the laboratory services more appealing and cost-effective.

(e) Ability

Customer perception on ability is analyzed with five statements. Means, overall mean and standard deviations of ability are described in Table (4.5).

Table (4.5) Ability

Sr. No.	Statements	Mean Value	Std. Deviation
1	Proven technical expertise	4.15	.679
2	Knowledgeable laboratory personnel	4.17	.752
3	Comprehensive testing capabilities	4.06	.830
4	Clear technical communication	4.17	.700
5	Insightful result-based guidance	4.17	.737
Overall Mean		**4.14**	

Source: Survey Data (2025)

According to Table (4.5), all the mean values including overall mean fall within the range of 3.41 and 4.20 show the agree level for ability. It can be concluded that most of the respondents agree that the company possesses proven technical expertise and employs knowledgeable laboratory personnel. Respondents also agree that the company has comprehensive testing capabilities to meet various customer needs. Furthermore, they agree that the organization provides clear technical communication, which enhances customer understanding, and offers insightful result-based guidance.

(f) Integrity

Customer perception on integrity is analyzed with five statements. Means, overall mean and standard deviations of integrity are described in Table (4.6).

Table (4.6) Integrity

Sr. No.	Statements	Mean Value	Std. Deviation
1	Transparent testing practices	4.04	.693
2	Fair and equal customer treatment	4.10	.794
3	Strong operational ethics	4.12	.623
4	Unbiased and honest test reporting	4.23	.820
5	Adherence to professional standards and ethics	4.32	.779
Overall Mean		**4.16**	

Source: Survey Data (2025)

According to Table (4.6), all the mean values including overall mean fall within the range of 3.41 and 4.20 at the agree level. Most of the respondents agree with the integrity of Waterworks Engineering Group Services Co., Ltd. Customers agree that laboratory maintains transparency in its testing processes and treats all customers fairly, equally and upholds strong ethical standards in its operations.

The remaining two mean values fall between 4.21 and 5.00 at strongly agree level. Most of the respondents strongly agree that laboratory does not change results to please customers and follows professional ethics and standards.

4.1.2 Customer Perception on Service Quality

Customer perception on service quality is analyzed with five statements. Means, overall mean and standard deviations of service quality are described in Table (4.7).

Table (4.7) Service Quality

Sr. No.	Statements	Mean Value	Std. Deviation
1	On-time service delivery (Reliability)	3.98	.908
2	Responsive and helpful staff	3.97	.927
3	Personalized customer attention (Empathy)	4.09	.942
4	Perception of high-quality lab services	4.14	.867
5	Consistently reliable service quality	4.20	.871
Overall Mean		**3.92**	

Source: Survey Data (2025)

According to Table (4.7), all the mean values including overall mean fall within the range of 3.41 and 4.20 at agree level. Most of the respondents agree with the service quality of Waterworks Engineering Group Services Co., Ltd. Company delivers services on time as promised. Customers agree that customers are willing to assist customers personalized attention to the needs. Customers perceive that company provides very high service quality and very consistent quality.

4.1.3 Customer Perception on Brand Image

Customer perception on brand image is analyzed with five statements. Means, overall mean and standard deviations of brand image are described in Table (4.8).

Table (4.8) Brand Image

Sr. No.	Statements	Mean Value	Std. Deviation
1	Strong industry reputation	4.26	.594
2	Leadership in water quality testing (Myanmar)	4.44	.703
3	Positive customer experience	4.23	.653
4	Services meeting expectations	4.25	.673
5	Provision of high-quality laboratory services	4.32	.615
Overall Mean		**4.30**	

Source: Survey Data (2025)

According to Table (4.8), all the mean values including overall mean fall within the range of 4.21 and 5.00 at strongly agree level. Most of the respondents strongly agree with the brand image of Waterworks Engineering Group Services Co.,Ltd. Customers believe that company has a strong reputation in the engineering industry. Laboratory is recognized as a leader in construction materials testing in Myanmar. They strongly agree that they have good experience of this lab service, meet expectations and get high-quality services.

4.1.4 Customer Perception on Trust

Customer perception on trust is analyzed with five statements. Means, overall mean and standard deviations of trust are described in Table (4.9).

Table (4.9) Trust

Sr. No.	Statements	Mean Value	Std. Deviation
1	Reliable and consistent service quality	4.19	.794
2	Secure management of sensitive information	4.23	.841
3	Integrity-driven laboratory practices	4.35	.828
4	Trustworthy and dependable operations	4.16	.823
5	Confidence in the accuracy of testing procedures	4.29	.792
Overall Mean		**4.24**	

Source: Survey Data (2025)

According to Table (4.9), all the mean values except 4.19 and 4.16 (including overall mean) lie between 4.21 and 5.00. Most of the respondents strongly agree with the trust of Waterworks Engineering Group Services Co., Ltd. Customer perceive that company handles sensitive information with the utmost care and confidentiality. They strongly agree that laboratory is using works on the principle of honesty and is reliable and dependable.

Delivering consistent and high-quality services and being confident the testing methods fall between 3.41 and 4.20. Company is delivering consistent and high-quality services. Customers are confident in the laboratory's testing methods.

4.1.5 Customer Perception on Customer Satisfaction

Customer perception on satisfaction is analyzed with five statements. Means, overall mean and standard deviations of customer satisfaction are described in Table (4.10).

Table (4.10) Customer Satisfaction

Sr. No.	Statements	Mean Value	Std. Deviation
1	Overall service satisfaction	4.10	.831
2	Service performance aligned with expectations	4.24	.801
3	Good value for service received	4.06	.809
4	Clear explanation of test procedures	4.13	.853
5	Attentive listening to customer needs	4.26	.928
Overall Mean		**4.16**	

Source: Survey Data (2025)

According to Table (4.10), all the mean values except 4.24 and 4.26 (including overall mean) lie between 3.41 and 4.20. Most of the respondents agree with the customer satisfaction of Waterworks Engineering Group Services Co., Ltd. Customers are satisfied with the overall quality of services provided by the company. They are feeling with the value. They agree that laboratory explains test procedures clearly.

Meeting expectations and listening carefully to customer needs fall between 4.21 and 5.00. Respondents strongly agree that company Laboratory's services meet the expectations and laboratory listens carefully to their needs.

4.1.6 Customer Perception on Customer Loyalty

Customer perception on loyalty is analyzed with five statements. Means, overall mean and standard deviations of customer loyalty are described in Table (4.11).

Table (4.11) Customer Loyalty

Sr. No.	Statements	Mean Value	Std. Deviation
1	Overall service satisfaction	4.15	.830
2	Service performance aligned with expectations	4.16	.844
3	Good value for service received	4.12	.860
4	Clear explanation of test procedures	3.93	.903
5	Attentive listening to customer needs	4.10	.868
Overall Mean		**4.13**	

Source: Survey Data (2025)

According to Table (4.11), all the mean values including overall mean fall within the range of 3.41 and 4.20 at the agree level. Most of the respondents agree with the loyalty of Waterworks Engineering Group Services Co., Ltd. Customers agree continuing to use the company's services in the future, recommending the company's Laboratory to other businesses and trusting the company. Customers believe that they choose when they need laboratory testing or engineering services and promote the lab's services through word of mouth.

4.2 Analysis of Influencing Factors on Service Quality, Brand Image and Trust

The influencing factors is important to understand how each key element service quality, brand image, and trust, plays a vital role in shaping customer satisfaction and loyalty. These factors are interrelated and collectively influence customer perceptions and decision-making behavior toward the services provided by Waterworks Engineering Group Services Co., Ltd.

4.2.1 Analysis of Influencing Factors on Service Quality

This section presents the effect of influencing factors on service quality of Waterworks Engineering Group Services Co., Ltd. Multiple regression method is used to examine how the independent variables, technical quality and functional quality affect the dependent variable, service quality. The regression results are shown in Table (4.12).

Table (4.12) Influencing Factors on Service Quality

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(Constant)	-.385	.309		-1.246	.215	
Technical Quality	.450***	.120	.323	3.737	.000	2.628
Functional Quality	.604***	.095	.548	6.339	.000	2.628
R	0.826					
R square	0.682					
Adjusted R Square	0.676					
F value	120.166***					
Durbin-Waston	1.798					

Source: Survey Data (2025)

Note: *** Significant at 1% level; ** Significant at 5% level; * Significant at 10% level

According to the analysis result shown in Table (4.12), the effect of technical quality and functional quality on service quality is statistically significant. The R square value of 0.682 indicates that 68.2% of the variance in service quality can be explained by the combined effect of technical and functional quality. This shows a strong level of explanatory power, confirming that these two factors are substantial predictors of service quality. Based on Table (4.12), both technical quality and functional quality have positive and significant effects on service quality.

Technical quality has positive and significant effect on service quality at the 1% significant level. This indicated that customers perceive the laboratory's accuracy, equipment, and technical competence as important contributors to overall service quality at laboratory. This implies that ensuring consistent technical performance and regulatory compliance strengthens the service quality perception.

Functional quality has positive and significant effect on service quality at the 1% significant level. This highlights that customers value timely, interpretable, and operationally useful lab results, along with the presence of structured quality systems like ISO 9001:2015. The strong effect of functional quality indicates that process efficiency and

support systems play a vital role in shaping positive service experiences. Focusing on improving both technical precision and operational effectiveness will help the company deliver superior service outcomes and enhance customer satisfaction.

4.2.2 Analysis of Influencing Factors on Brand Image

This section presents the effect of influencing factors on brand image of Waterworks Engineering Group Services Co., Ltd. The multiple regression method is used to examine how the independent variables, price and price promotions affect the dependent variable, brand image. The regression results are shown in Table (4.13).

Table (4.13) Influencing Factors on Brand Image

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(Constant)	3.006	.238		12.629	.000	
Price	.360***	.086	.549	4.161	.000	2.660
Price Promotions	-.029	.096	-.040	-.303	.762	2.660
R	0.518					
R square	0.268					
Adjusted R Square	0.225					
F value	20.494***					
Durbin-Waston	1.701					

Source: Survey Data (2025)

Note: *** Significant at 1% level; ** Significant at 5% level; * Significant at 10% level

According to the analysis result shown in Table (4.13), the effect of pricing strategy on brand image and the values predicted by the independent variables (price and price promotions) is 0.518. The R square value of 0.268 shows that 26.8% of the variability in brand image can be explained by price and price promotions. This indicates that pricing factors are moderate predictors of brand image for Waterworks Engineering Group Services Co., Ltd.

Based on Table (4.13), price has a positive and significant effect on brand image at the 1% significant level. Customers value fair and transparent pricing, which enhances their perception of the company's credibility and reputation. Maintaining consistent and reasonable pricing helps strengthen trust and improve brand image. Price has a positive effect on brand image because fair and reasonable pricing reflects the company's transparency and value delivery, which leads customers to perceive the brand as trustworthy and reputable.

Price promotions have no significant effect on brand image, as indicated by the negative and insignificant coefficient. This indicates that customers do not consider short tern discounts or offers as key elements of brand reputation. While fair pricing strengthens brand image, promotional activities alone are not enough to influence brand perception.

4.2.3 Analysis of Influencing Factors on Trust

This section presents the effect of influencing factors on trust of Waterworks Engineering Group Services Co., Ltd. The multiple regression method is used to examine how the independent variables, ability and integrity affect the dependent variable, trust. The regression results are shown in Table (4.14).

Table (4.14) Influencing Factors on Trust

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(Constant)	-.408	.260		-1.567	.120	
Ability	.461***	.089	.370	5.201	.000	2.235
Integrity	.659***	.085	.553	7.770	.000	2.235
R	0.864					
R square	0.746					
Adjusted R Square	0.742					
F value	164.826***					
Durbin-Waston	1.589					

Source: Survey Data (2025)

Note: *** Significant at 1% level; ** Significant at 5% level; * Significant at 10% level

According to the analysis results shown in Table (4.14), the effect of ability and integrity on trust is statistically significant, with an R value of 0.864, indicating a strong correlation. The R Square value of 0.746 shows that approximately 74.6% of the variability in trust can be explained by ability and integrity, indicating that these are substantial predictors of trust. Based on Table (4.14), ability and integrity have a positive and significant effect on trust.

The significant positive effect of integrity implies that customers place great value on the honesty, transparency, and ethical behavior of Waterworks Engineering Group Services Co., Ltd. Maintaining a high level of integrity will therefore strengthen the trust of stakeholders. Transparent testing practices, fair customer treatment, and adherence to professional ethics enhance the company's integrity, which in turn fosters stronger trust among customers.

The positive and significant effect of ability indicates that customers recognize and appreciate the company’s competence, technical know-how, and capability to deliver quality services. This reinforces the importance of consistently demonstrating professional ability to foster and sustain trust among clients and partners.

4.3 Analysis on the Effect of Service Quality, Brand Image, Trust and Customer Loyalty

This section presents the effect of service quality, brand image and trust on customer loyalty of Waterworks Engineering Group Services Co., Ltd. The multiple regression method is to find out the effect of service quality, brand image and trust on customer loyalty. The regression results are shown in Table (4.15).

Table (4.15) Influencing Factors on Customer Loyalty

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(Constant)	.600	.280		2.140	.035	
Service Quality	.343***	.066	.381	5.238	.000	2.487
Brand Image	-.039	.077	-.028	-.505	.615	1.460
Trust	.554***	.072	.565	7.672	.000	2.555
R	0.874					
R square	0.764					
Adjusted R Square	0.758					
F value	120.065***					
Durbin-Waston	1.815					

Source: Survey Data (2025)

Note: *** Significant at 1% level; ** Significant at 5% level; * Significant at 10% level

According to the regression results shown in Table (4.15) reveal the effect of service quality, brand image and trust on customer loyalty at Waterworks Engineering Group Services Co., Ltd. The Adjusted R Square of 0.758 confirms that 75.8% of the variance in customer loyalty is explained by independent variables, indicating that while the model is relatively robust, there are still other influential factors. The F-value of 120.065, with significance at the 1% level, shows that the overall regression model is statistically significant. The VIF (Variance Inflation Factor) values indicate that multicollinearity is not an issue, meaning the predictor variables are not highly correlated. According to the results, among the factors, service quality and trust have statistically effect on customer loyalty. However, brand image is not significant with customer loyalty at Waterworks Engineering Group Services Co., Ltd.

Service quality has a positive and significant effect on customer loyalty at the 1% significance level. Therefore, to enhance service quality, the company should prioritize timely service delivery, invest in staff training, and maintain consistent communication to build trust and satisfaction. By continuously monitoring customer feedback and

implementing targeted quality improvement initiatives, the company can sustain high service standards and further reinforce customer loyalty.

Trust also has a positive and significant effect on customer loyalty at the 1% significance level. To strengthen customer trust, the company should ensure transparency in operations, deliver reliable test results, and consistently meet promised service standards. Moreover, regularly soliciting client feedback and promptly addressing any concerns will help maintain confidence and deepen long-term trust.

4.4 Analysis on the Mediating Effect of Customer Satisfaction on the Relationship between Service Quality, Brand Image, Trust and Customer Loyalty

To examine the mediating effect of customer satisfaction on the relationship between service quality and customer loyalty, the following steps are followed:

1. Total effect through regression analysis on effect of independent variable on dependent variable.
2. Regression analysis on effect of independent variable on mediating variable.
3. Regression analysis on effect of independent variable and mediating variable on dependent variable.
4. Sobel test for significance of mediating variable.
5. Finding indirect effect, direct effect, and total effect.

4.4.1 Analysis on the Mediating Effect of Customer Satisfaction on the Relationship between Service Quality and Customer Loyalty

This section presents the effect of service quality on customer loyalty. The linear regression method is used to find out the effect of independent variable (service quality) on the dependent variable (customer loyalty) are shown in Table (4.16).

Table (4.16) Effect of Service Quality on Customer Loyalty

Variable	Unstandardized Coefficients		Standardized Coefficients (Beta)	t	Sig
	B	Std. Error			
(Constant)	1.315	.205		6.416	.000
Service Quality	.718***	.051	.797	14.013	.000
R	.797				
R Square	.635				
Adjusted R Square	.631				
F value	196.354***				
Durbin-Watson	1.490				

Source: Survey Data (2025)

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

According to the analysis results in Table (4.16), the coefficient of service quality is 0.718 with a standard error of 0.051 and is statistically significant at the 1% level. The R Square value of 0.635 indicates that approximately 63.5% of the variance in customer loyalty can be explained by service quality.

This result confirms that service quality has a strong and positive significant effect on customer loyalty. Therefore, enhancing service quality is essential to building and maintaining customer loyalty in the context of this study.

This section presents the effect of service quality on customer satisfaction. A simple linear regression analysis was conducted to examine how the independent variable (service quality) influences the dependent variable (customer satisfaction). The results of the analysis are presented in Table (4.17).

Table (4.17) Effect of Service Quality on Customer Satisfaction

Variable	Unstandardized Coefficients		Standardized Coefficients (Beta)	t	Sig
	B	Std. Error			
(Constant)	1.134	.184		6.175	.000
Service Quality	.772***	.046	.845	16.799	.000
R	0.845				
R Square	.714				
Adjusted R Square	.712				
F value	282.204***				
	1.984				

Source: Survey Data (2025)

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

According to Table (4.17), the coefficient of service quality on customer satisfaction is 0.772 and statistically significant at the 1% level. The R Square value of 0.714 shows that 71.4% of the variance in customer satisfaction can be explained by service quality.

This result indicates that service quality has a positive and statistically significant effect on customer satisfaction. The high R Square value confirms that service quality is a major contributor to enhance customer satisfaction, highlighting its importance in service-based industries.

This section analyzes the combined effect of service quality and customer satisfaction on customer loyalty. Multiple linear regression analysis is used to assess the influence of the two independent variables (service quality and customer satisfaction) on the dependent variable (customer loyalty). The regression results are presented in Table (4.18).

Table (4.18) Effect of Service Quality and Customer Satisfaction on Customer Loyalty

Variable	Unstandardized Coefficients		Standardized Coefficients (Beta)	t	Sig
	B	Std. Error			
(Constant)	.601	.197		3.058	.003
Service Quality	.233***	.080	.258	2.925	.004
Customer Satisfaction	.629***	.087	.638	7.229	.000
R	.867				
R Square	.751				
Adjusted R Square	.746				
F value	168.839***				
Durbin-Watson	1.578				

Source: Survey Data (2025)

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

According to Table (4.18), the coefficient value of service quality on customer loyalty is 0.233, with a standard error of 0.080, and the coefficient of customer satisfaction on customer loyalty is 0.629, with a standard error of 0.087. The R Square value of 0.751 indicates that approximately 75.1% of the variance in customer loyalty can be explained by service quality and customer satisfaction.

This analysis reveals that both service quality and customer satisfaction have a positive and statistically significant effect on customer loyalty at the 1% level. Among these two predictors, customer satisfaction demonstrates a stronger influence, with a higher standardized beta coefficient compared to service quality.

Sobel Test is conducted to test the mediating effect of customer satisfaction on the relationship between service quality and customer loyalty. The result of the sobel test are shown in Table (4.18)

Table (4.19) Sobel Test Result for Mediating Effect of Customer Satisfaction on the Relationship between Service Quality and Customer Loyalty

Input			Test statistic	Std. Error	*p*-value
A	0.772	Sobel test:	6.63995244	0.07313125	0.00000000000
B	0.629	Aroian test:	6.63003249	0.07324067	0.00000000000
S_a	0.046	Goodman test:	6.64991704	0.07302166	0.00000000000
S_b	0.087	**Reset all**	**Calculate**		

Source: Survey Data (2025)

According to Table (4.19), p-value indicates that the test is significant and the mediator variable (customer satisfaction) along with independent variable (service quality) is significantly explaining the dependent variable (customer loyalty). Since P value is 0.000 is less than 0.01, customer satisfaction has the mediating effect on the relationship between service quality and customer loyalty at 1% level. The total effect, direct effect and indirect effect are as follows:

Total Effect = 0. 718

Direct Effect = 0.233

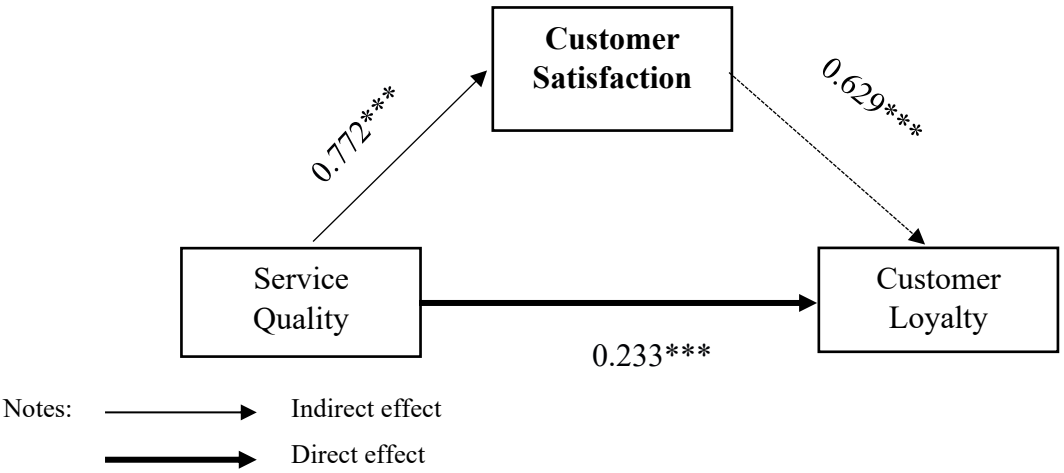
Indirect Effect = 0.772 x 0.629 = 0.485

Direct Effect + Indirect Effect = Total Effect

0.233 + 0.485 = 0.718

Figure (4.1) presents the analysis result of the direct effect and indirect effect of customer satisfaction on the relationship between service quality and customer loyalty.

Figure (4.1) Mediating Effect of Customer Satisfaction on the Relationship between Service Quality and Customer Loyalty



Source: Survey Data (2025)

The result shows that there is a positive direct significant effect of service quality on customer loyalty as shown in Figure (4.1). Regarding the indirect effect, it is found that there is a significant effect of service quality on customer satisfaction and a significant effect of customer satisfaction on customer loyalty.

Therefore, the mediating effect of customer satisfaction is found on the relationship between service quality and customer loyalty towards Waterworks Engineering Group Services Co., Ltd. It can be concluded that service quality directly influences customer loyalty, as well as indirectly influences customer satisfaction, which acts as a mediator.

Waterworks Engineering Group Services Co., Ltd provides highly reliable technical services and professional laboratory operations that contribute to customer satisfaction, which in turn enhances customer loyalty. Service quality has a positive significant effect on both customer satisfaction and customer loyalty, as it reflects dependable results, efficient service processes, and skilled personnel in the engineering laboratory testing sector. According to the analysis, service quality directly influences customer loyalty and indirectly affects loyalty through customer satisfaction, which mediates the relationship.

This implies that service quality along with the value perceived by customers contributes significantly to customer satisfaction, which goes beyond meeting expectations and builds emotional engagement with the brand. Waterworks Engineering Group Services Co., Ltd.'s commitment to service excellence increases customer satisfaction by ensuring consistency, trust in testing results, and timely service delivery. This customer satisfaction

ultimately strengthens loyalty, encouraging repeat service usage and long-term business relationships.

This comprehensive analysis highlights the critical role of customer satisfaction as a mediator, enhancing the positive effect of service quality on customer loyalty of Waterworks Engineering Group Services Co., Ltd.

4.4.2 Analysis on the Mediating Effect of Customer Satisfaction on the Relationship between Trust and Customer Loyalty

This section presents the effect of trust on customer loyalty. The linear regression method is used to examine the impact of the independent variable (trust) on the dependent variable (customer loyalty), as shown in Table (4.20).

Table (4.20) Effect of Trust on Customer Loyalty

Variable	Unstandardized Coefficients		Standardized Coefficients (Beta)	t	Sig
	B	Std. Error			
(Constant)	.633	.216		2.936	.004
Trust	.824***	.050	.840	16.456	.000
R	.840				
R Square	.706				
Adjusted R Square	.703				
F value	270.795***				
Durbin-Watson	1.852				

Source: Survey Data (2025)

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

According to the analysis results in Table (4.20), the coefficient of trust is 0.824 with a standard error of 0.050 and is statistically significant at the 1% level. The R Square value of 0.706 indicates that approximately 70.6% of the variance in customer loyalty can be explained by trust.

This result confirms that trust has a positive and significant effect on customer

loyalty. Therefore, enhancing trust plays a crucial role in strengthening customer loyalty within the context of this study. It shows that when customers perceive a company as trustworthy, they are more likely to remain loyal, maintain long-term relationships, and continue using the company's services.

This section presents the effect of trust on customer satisfaction. A simple linear regression analysis was conducted to examine how the independent variable (trust) influences the dependent variable (customer satisfaction). The results of the analysis are presented in Table (4.21).

Table (4.21) Effect of Trust on Customer Satisfaction

Variable	Unstandardized Coefficients		Standardized Coefficients (Beta)	t	Sig
	B	Std. Error			
(Constant)	.833	.247		3.367	.001
Trust	.784***	.058	.789	13.634	.000
R	.789				
R Square	.622				
Adjusted R Square	.619				
F value	185.892***				
Durbin-Watson	1.850				

Source: Survey Data (2025)

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

According to Table (4.21), the coefficient of trust on customer satisfaction is 0.784 and is statistically significant at the 1% level. The R Square value of 0.622 indicates that 62.2% of the variance in customer satisfaction can be explained by trust.

This result shows that trust has a positive and statistically significant effect on customer satisfaction. It indicates that customers who perceive the company as trustworthy based on its integrity, reliability, and consistent service quality are more likely to feel satisfied. This finding underscores the crucial role of trust in fostering customer satisfaction, especially in service-oriented industries where reliability and relationship-building are key drivers of customer loyalty.

This section examines the combined effect of trust and customer satisfaction on customer loyalty. Multiple linear regression analysis is conducted to evaluate the influence of the two independent variables trust and customer satisfaction on the dependent variable, customer loyalty. The regression outcomes are shown in Table (4.22).

Table (4.22) Effect of Trust and Customer Satisfaction on Customer Loyalty

Variable	Unstandardized Coefficients		Standardized Coefficients (Beta)	t	Sig
	B	Std. Error			
(Constant)	.213	.185		1.150	.253
Trust	.429***	.067	.437	6.429	.000
Customer Satisfaction	.504***	.067	.511	7.510	.000
R	.897				
R Square	.804				
Adjusted R Square	.801				
F value	229.923***				
Durbin-Watson	1.807				

Source: Survey Data (2025)

*** Significant at 1% level, ** Significant at 5% level, * Significant at 10% level

According to Table (4.22), the coefficient of trust on customer loyalty is 0.429 with a standard error of 0.067, and the coefficient of customer satisfaction on customer loyalty is 0.504 with a standard error of 0.067. Both variables are statistically significant at the 1% level. The R Square value of 0.804 indicates that approximately 80.4% of the variation in customer loyalty is explained by trust and customer satisfaction.

These results indicate that both trust and customer satisfaction have positive and statistically significant effects on customer loyalty. Among the two, customer satisfaction has a slightly stronger standardized effect (Beta = 0.511) compared to trust (Beta = 0.437). This highlights the importance of not only building trust but also ensuring high levels of customer satisfaction to foster lasting customer loyalty.

Sobel Test is conducted to examine the mediating effect of customer satisfaction on the relationship between trust and customer loyalty. The results of the Sobel test are shown in Table (4.23).

Table (4.23) Sobel Test Result for Mediating Effect of Customer Satisfaction on the Relationship Between Trust and Customer Loyalty

Input			**Test statistic**	**Std. Error**	***p*-value**
A	0.784	Sobel test:	6.57310417	0.06011406	0.00000000000
B	0.504	Aroian test:	6.55941316	0.06023954	0.00000000000
S_a	0.058	Goodman test:	6.58688126	0.05998833	0.00000000000
S_b	0.067	**Reset all**	**Calculate**		

Source: Survey Data (2025)

According to Table (4.23), p-value indicates that the test is significant and the mediating variable (customer satisfaction) along with independent variable (trust) is significantly explaining the dependent (customer loyalty). Since P value is 0.000 is less than 0.01, customer satisfaction has the mediating effect on the relationship between trust and customer loyalty at 1% level. The total effect, direct effect and indirect effect are as follows:

Total Effect = 0. 824

Direct Effect = 0.429

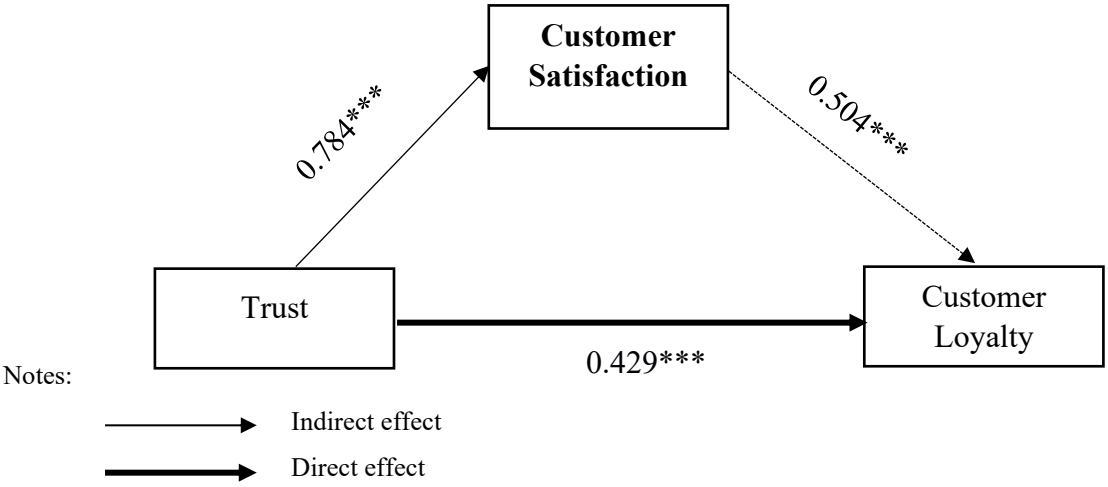
Indirect Effect = 0.784 x 0.504 = 0.395

Direct Effect + Indirect Effect = Total Effect

0.429 + 0.395 = 0.824

Figure (4.2) presents the analysis result of the direct effect and indirect effect of customer satisfaction on the relationship between trust and customer loyalty.

Figure (4.2) Mediating Effect of Customer Satisfaction on the Relationship between Trust and Customer Loyalty



Source: Survey Data (2025)

The result shows that there is a positive direct significant effect of trust on customer loyalty, as illustrated in Figure (4.2). Regarding the indirect effect, trust significantly influences customer satisfaction, which in turn significantly affects customer loyalty. This indicates that customer satisfaction mediates the relationship between trust and customer loyalty.

Therefore, the mediating effect of customer satisfaction is found in the relationship between trust and customer loyalty towards Waterworks Engineering Group Services Co., Ltd. Trust not only directly affect customer loyalty but also indirectly enhances it through improved customer satisfaction, acting as a mediator.

The company builds customer trust through transparency, reliability of service, and consistent communication, which leads to increased satisfaction with the services provided. As customers experience more satisfaction, their loyalty to the company strengthens.

The ability of Waterworks Engineering Group Services Co., Ltd. to maintain strong trust through integrity, service guarantees, and professional conduct contributes significantly to customer satisfaction. When customers trust that the company is committed to delivering high-quality services and resolving issues promptly, their satisfaction grows. This satisfaction leads to repeat usage and long-term loyalty.

In conclusion, trust has a strong direct and indirect effect on customer loyalty, with customer satisfaction playing a crucial mediating role. This comprehensive analysis

highlights that fostering trust through dependable service and ethical practices ultimately enhances customer satisfaction and strengthens customer loyalty towards Waterworks Engineering Group Services Co., Ltd.

CHAPTER 5

CONCULISION

This chapter presents the findings, discussions, and recommendations based on the analysis of the effects of brand image, service quality, and trust on customer satisfaction and customer loyalty toward Waterworks Engineering Group Services Co., Ltd. It summarizes the key results, interprets their implications, and proposes strategic actions for the company from finding. Additionally, this chapter outlines areas for further research to enhance understanding and improve future customer relationship strategies.

5.1 Findings and Discussions

This study explores how brand image, service quality, and trust influence customer satisfaction and customer loyalty toward Waterworks Engineering Group Services Co., Ltd. It also examines how customer satisfaction mediates the relationship between the influencing factors and customer loyalty. The respondents who participated in this study are individuals and businesses that have experience using laboratory testing and engineering services offered by the company.

In this study, most respondents are from the construction industry, with the majority representing companies that have 11 to 50 employees and are located in Yangon. Most respondents use the services on an as-needed basis. The duration of customer relationships is mostly between 1 to 3 years, and the most commonly chosen service is water and wastewater quality testing.

The respondents agree that the company's laboratory delivers accurate and reliable results. They agree that the lab is equipped with modern instruments and that its processes are consistent and professionally managed. They also agree that the company demonstrates technical expertise in handling test procedures. On the other hand, some respondents simply agree that the company meets regulatory standards and maintains testing stability. This reflects a generally agree of the company's technical performance, with slight variation in how certain aspects are experienced.

The mean value analysis of functional quality indicates that respondents agree the laboratory delivers practical value and operational efficiency. They believe the test results are provided in a timely manner and contain sufficient explanation. Customers agree that reports are easy to use in decision-making and that the laboratory adheres to a structured quality management system. Overall, they are satisfied with the functional effectiveness of the laboratory's services.

For the price variable, the findings indicate that customers agree on the pricing of the company's services is reasonable and fair relative to value received. They feel the pricing structure is transparent and easy to understand. Customers also express willingness to pay a slightly higher price for added benefits such as speed and detail. Overall, this reflects positive sentiment toward the fairness and flexibility of the company's pricing model.

The mean value analysis of price promotions shows that respondents agree the company's promotional strategies are effective and appealing. They feel that discounts and offers encourage them to use the services more frequently. Loyalty rewards and rebates are viewed favorably, and customers agree that these benefits increase the attractiveness of the service. This indicates that the company's pricing strategies not only influence value perception but also help drive customer behavior.

The findings on ability demonstrate that respondents agree the company is capable and well-equipped to provide a range of reliable services. They feel that the staff are knowledgeable and able to communicate technical information clearly. They also appreciate the advice offered based on test results. Customers recognize the company's competence in managing complex tasks, which boosts their confidence in the services provided.

With regard to integrity, the mean value analysis shows that most respondents agree

that the laboratory is transparent in its operations, fair in its customer dealings, and maintains high ethical standards. The respondents also strongly agree that laboratory avoids manipulating results to gain favor, follows professional practices and upholds integrity throughout the testing process. This builds trust and credibility with clients.

For the service quality variable, the findings indicate that respondents agree the company provides dependable service that meets expectations. They acknowledge the staff's willingness to assist and the personalized attention given to client needs. Respondents also agree that the service is consistent and reflects high quality standards. These perceptions indicate that service delivery is a key strength of the company.

In terms of brand image, most respondents strongly agree that the company holds a leading reputation in Myanmar's engineering and laboratory services industry. They feel positively about their experience with the brand and believe that the company consistently meets their expectations. The company is seen as a high-quality service provider, and customers associate its brand with professionalism and reliability.

The findings for trust show that respondents strongly agree that respondents strongly agree with statements regarding the secure management of sensitive information, integrity-driven laboratory practices, and confidence in the accuracy of testing procedures. These responses highlight agree level of trust in the organization's reliable and consistent service quality, as well as its trustworthy and dependable operations.

When analyzing customer satisfaction, most respondents agree that they are satisfied with the overall quality of services provided. They feel that their expectations are met and that the value received is worthwhile and explanation of procedures clearly. Respondents also strongly agree that the company listens to their needs they are pleased with how the company handles their concerns, reflecting a high level of satisfaction.

Finally, in terms of customer loyalty, respondents agree that they intend to continue using the company's services and would recommend them to others. They feel the company is their preferred choice and that they are comfortable promoting its services through word of mouth. The responses indicate that loyalty is strongly influenced by satisfaction and trust, leading to repeated engagement and customer advocacy.

As the first objective, the results show that both technical quality and functional quality have a significant and positive effect on service quality. Among them, functional quality demonstrates a stronger influence. These findings also indicate that while technical

expertise and modern equipment are important, customers place even more emphasis on the practical aspects of service delivery, such as timeliness, ease of interpretation, and usability of reports. Therefore, enhancing these operational functions can further strengthen perceptions of service quality.

As the second objective, the regression analysis reveals that price has a significant and positive effect on brand image, while price promotions do not have a statistically significant effect. This shows that customers form their impressions of the brand largely based on fair and transparent pricing structures rather than promotional campaigns. Hence, maintaining a pricing model that customers perceive as justified and valuable can strengthen the company's overall brand image in the market.

As the third objective, the results indicate that both ability and integrity significantly influence trust. Customers appreciate staff expertise, the ability to provide guidance, and honest, ethical operations. Among the two, integrity shows a slightly stronger effect, highlighting that ethical conduct and transparency are vital in building long-term trust with clients. These findings emphasize the need for the company to maintain professional standards and a commitment to unbiased, honest reporting.

As the fourth objective, the effect of service quality, brand image, and trust on customer loyalty, the findings show that service quality and trust have positive significant effect on customer loyalty, however brand image alone does not directly influence customer loyalty. This indicates that customers in technical service settings prioritize reliable, responsive service and transparent operations when deciding to remain loyal. Consequently, the company concentrate on optimizing service delivery processes and reinforcing trust-building initiatives to cultivate long-term customer loyalty.

As the fifth objective, the analysis confirms that customer satisfaction mediates the relationship between service quality and customer loyalty. While service quality has a direct positive effect on loyalty, its influence is significantly enhanced when customers are also satisfied. This means that improvements in service delivery are most effective in fostering loyalty when they also lead to high customer satisfaction. The indirect effect, as shown by the Sobel test, further supports the importance of customer satisfaction as a bridge between service experiences and customer retention.

As the sixth objective, the results show that there is the mediating effect of customer satisfaction on the relationship between trust and customer loyalty. Customers who trust

the company are more likely to be loyal, especially when their trust is reinforced by satisfying service interactions. This indicates that maintaining trust through consistent ethical practices, combined with high satisfaction levels, plays a key role in customer retention.

The findings indicate that both technical and functional quality significantly influence on the service quality. It indicates that customers place greater value on operational aspects such as timeliness, clarity, and the usability of test reports. The findings also indicate that price has a significant positive effect on brand image, while price promotions have no effect on brand image. It shows that customers form favorable brand perceptions based on fair and transparent pricing rather than promotional offers. Furthermore, the findings indicate that both ability and integrity significantly influence trust. It shows that the importance of ethical conduct, transparent operations, and professional competence in fostering customer trust. Hence, the results show that strengthening practical service delivery, maintaining value-driven pricing, and upholding standards are essential to drive customer satisfaction, trust, and long-term loyalty.

5.2 Suggestions and Recommendations

Based on the findings regarding the effects of service quality, brand image, and trust on customer satisfaction and customer loyalty, several strategic recommendations can be proposed for Waterworks Engineering Group Services Co., Ltd. As a leading provider of water and wastewater quality testing and construction materials testing services, the company must continue enhancing its service standards to remain competitive and trusted in the engineering service sector.

To achieve sustainable growth and long-term customer loyalty, Waterworks Engineering Group Services Co., Ltd. should strengthen the key factors identified in this study service quality, brand image, and trust, while focusing on enhancing customer satisfaction as a mediating force. The following strategic recommendations are made based on the empirical findings of this study.

First, the company should prioritize improvements in functional quality, as it has the strongest affect on service quality. Ensuring timely delivery of test results, clear reporting, and user-friendly formats can significantly improve customer experiences. Enhancing quality management systems and maintaining consistency in service processes

will further boost customer perception of operational excellence. The company should implement regular internal audits and customer feedback mechanisms to identify gaps and continuously refine service delivery.

Second, the role of technical quality in shaping service quality must not be overlooked. Although functional elements had a stronger effect, customers still expect high levels of technical expertise. Investing in modern laboratory equipment, professional training for lab personnel, and compliance with international testing standards will reinforce technical credibility. In doing so, the company should maintain accuracy and reliability, both of which are central to quality assurance.

Third, with price proving to be a significant influencer of brand image, the company should maintain a pricing strategy that reflects fairness, clarity, and value for money. Transparent communication of pricing structures, bundling services into attractive packages, and highlighting the cost-effectiveness of the service can further reinforce brand trust. Based on the findings, that price promotions alone do not significantly affect brand image; therefore, marketing campaigns should focus more on demonstrating long-term value rather than short-term discounts.

Fourth, the findings show that service quality and trust are the primary drivers of customer loyalty, while brand image alone does not directly influence loyalty. This indicates that clients value consistent, responsive service and transparent, reliable operations above all else. Therefore, the company should focus on enhancing its core service processes and reinforcing trust–building practices to secure long-term loyalty.

Fifth, to enhance brand image, the company should invest in strategic brand-building activities. These may include showcasing certifications, industry partnerships, customer testimonials, and media features that highlight leadership in the water engineering sector. Consistently delivering on brand promises and reinforcing the company's role as an industry expert will ensure that customer perceptions remain positive and resilient over time.

Sixth, the strong affect of integrity and ability on trust indicate that ethical standards and professionalism must remain central to the company's culture. Transparency in laboratory processes, unbiased reporting, and equal treatment of all customers will reinforce perceptions of integrity. At the same time, staff training, ongoing skill development, and accessible communication of technical data will help to sustain customer

confidence in the company's ability.

Seventh, since customer satisfaction mediates the relationship between service quality and customer loyalty, the company should treat satisfaction as a strategic priority. Efforts to improve satisfaction should include service personalization, responsiveness to feedback, and continuous engagement after service delivery. Surveys, focus groups, and complaint handling procedures can be used to better understand and act on customer expectations.

E ighth, as satisfaction also mediates the effects of brand image and trust on loyalty, the company should strengthen satisfaction touchpoints within all brand and trust-building activities. This means aligning marketing messages with actual service outcomes and ensuring that promises made during promotional efforts are fulfilled in every customer interaction.

Lastly, to deepen customer loyalty, the company may consider loyalty programs, membership incentives, and referral rewards. These should be tied to satisfaction metrics and service milestones to encourage repeat business and word-of-mouth promotion. Loyal customers can also be leveraged as brand ambassadors, further enhancing the company's market position.

Therefore, the company should maintain service quality by equipping the laboratory with advanced technology, providing continuous training to staff on both technical skills and ethical standards, and strengthening internal processes to ensure high levels of functional quality, technical accuracy, ability, and integrity in order to enhance customer loyalty.

In conclusion, Waterworks Engineering Group Services Co., Ltd. should manage brand image, service quality, and trust in a balanced manner while placing customer satisfaction at the center of its service delivery strategy. By doing so, the company can create a value-driven service environment that strengthens loyalty, supports business growth, and enhances its reputation in the competitive engineering service sector.

5.3 Needs for Further Research

While this study has contributed valuable insights into the factors influencing customer satisfaction and customer loyalty at Waterworks Engineering Group Services Co., Ltd., several areas remain open for future research and deeper exploration.

First, future studies could investigate industry comparisons by applying this model to different types of engineering service firms such as construction testing, environmental labs, or technical consultancies. This would help determine whether the relationships between service quality, brand image, trust, satisfaction, and loyalty are consistent across various technical service sectors or if they differ significantly based on service specialization.

Second, this study focused on a cross-sectional view, capturing customer opinions at one point in time. A longitudinal study could provide more detailed insights into how perceptions of service quality, brand image, and trust evolve over time and how changes in satisfaction affect loyalty in the long term. Tracking customers over several stages of service interaction may uncover behavioral trends and moments of influence that a one-time survey cannot capture.

Third, digital touchpoints and technology-driven service channels have become more common in engineering and laboratory services. Future studies could explore how digital transformation such as online report access, customer portals, automated result tracking, and AI-based customer support affect satisfaction and trust. Understanding how digital convenience affects loyalty will be especially useful as service providers modernize operations.

Fourth, this study used quantitative methods only, based on structured questionnaires. Future research can apply mixed-method approaches, incorporating qualitative interviews or focus group discussions to explore deeper emotional or experiential factors behind customer satisfaction. These methods can reveal insights not easily captured in numerical scales, such as personal stories, expectations, and dissatisfaction triggers.

Lastly, future research can focus on additional moderating or mediating variables such as service innovation, perceived risk, service recovery, or customer involvement. These factors may play an important role in shaping how customers respond to service experiences and form long-term loyalty, especially in high-stakes or highly technical environments.

In summary, while the current study has successfully examined the key influencing factors on customer satisfaction and loyalty, further research is recommended to broaden the scope, enhance depth, and adapt the model to emerging trends in technology, customer behavior, and industry dynamics. These future studies will contribute to building a more

comprehensive understanding of customer relationships in the engineering service industry.

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APPENDIX – A

QUESTIONNAIRE

Dear Sir/Madam,

I am currently conducting a survey for the purpose of completing my EMBA thesis. Therefore, I respectfully request your kind cooperation in answering the following questions regarding your service experience with ISO TECH Laboratory of Waterworks Engineering Group Services Co., Ltd. Please be assured that this research is purely for academic purposes and is not associated with any commercial intentions. Your responses will be used solely for this thesis and will be kept strictly confidential. The questionnaire will only take a few minutes to complete, and I sincerely appreciate your valuable time and support.

Respectfully,

Win Mar Soe
EMBA 20th Batch (Online)
Yangon University of Economics

STRUCTURED QUESTIONNAIRE

Section A: Demographic Information

1. Type of Industry

- ❒ Manufacturing,
- ❒ Construction
- ❒ Healthcare
- ❒ INGO/ NGO

2. Size of Company

- ❒ 11-50 employees
- ❒ (51-200) employees
- ❒ 201-500 employees
- ❒ over 500 employees

3. Location

- ❒ Yangon
- ❒ Mandalay
- ❒ Naypyitaw
- ❒ Others

4. Frequency of Service Use

- ❒ Weekly
- ❒ Monthly
- ❒ Quarterly
- ❒ As Needed

5. Customer Relationship Duration

- ❒ < 1 year
- ❒ 1 - 3 years
- ❒ 3 – 5 years
- ❒ 5- 10 years
- ❒ > 10 years above

6. Type of Services Used from Laboratory

- ❒ Compressive test and Absorption test
- ❒ Water and Wastewater quality test
- ❒ Rebar bending and Tensile strength test

Section II: Marketing Mix

Please indicate how much you agree or disagree with each statement by ticking (✓) in the box. Strongly Disagree= 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly Agree = 5

I. Technical Quality

No.	Particulars	1	2	3	4	5
1.	The quality testing results provided by the company's laboratory are accurate and reliable.					
2.	The laboratory equipment used by the company is modern and effective.					
3.	The technical performance of company's services meets regulatory standards.					
4.	The testing processes at the company's laboratory are consistent and stable.					
5.	The laboratory staff demonstrate strong technical expertise in handling samples and procedures.					

II. Functional Quality

No.	Particulars	1	2	3	4	5
1.	Laboratory test results are delivered within the expected time frame.					
2.	Test results include sufficient explanation or interpretation when necessary.					
3.	I can easily use the laboratory reports to support operational decisions					
4.	The laboratory has an established Quality Management System (e.g., ISO 9001;2015)					
5.	Regular audits are conducted to ensure quality standards are maintained.					

III. Service Quality

No.	Particulars	1	2	3	4	5
1.	The company delivers services on time as promised (Reliability).					
2.	The staff at the company are always willing to assist customers (Responsiveness).					
3.	The company provides personalized attention to my needs (Empathy).					
4.	It is likely that the lab service I am using is very high quality.					
5.	It is likely that the lab service is of very consistent quality.					

IV. Price

No.	Particulars	1	2	3	4	5
1.	The price of the company's services is reasonable compared to others.					
2.	I believe the pricing at the company is fair for the value received.					
3.	The price structure of the company's services is transparent and easy to understand.					
4.	I would be willing to pay a slightly higher price for even better accuracy, faster service, or detailed reports.					
5.	The pricing of services influences how frequently I use the laboratory.					

V. Price Promotions

No.	Particulars	1	2	3	4	5
1.	The company offers attractive discounts on its services.					
2.	The price promotions at the company's Laboratory encourage me to use their services more often.					
3.	A loyalty program offering discounts or rewards after multiple visits would motivate me to continue using the same laboratory.					
4.	I feel satisfied when I receive a rebate after using the laboratory's service.					
5.	Cashback offers from the laboratory make their services more attractive.					

VI. Brand Image

No.	Particulars	1	2	3	4	5
1.	The company has a strong reputation in the engineering industry.					
2.	The company's Laboratory is recognized as a leader in water quality testing in Myanmar.					
3.	I have good experience of this lab service.					
4.	The lab services meet my expectations.					
5.	This laboratory provides high-quality services.					

VII. Ability

No.	Particulars	1	2	3	4	5
1.	The company has the technical expertise to deliver reliable services.					
2.	The laboratory staff are knowledgeable.					
3.	The laboratory can perform a wide range of tests.					
4.	The laboratory can explain technical information clearly.					
5.	The laboratory staff can give good advice based on test results.					

VIII. Integrity

No.	Particulars	1	2	3	4	5
1.	The company's Laboratory maintains transparency in its testing processes.					
2.	The company treats all customers fairly and equally.					
3.	I believe the company upholds strong ethical standards in its operations.					
4.	The laboratory does not change results to please customers.					
5.	The laboratory follows professional ethics and standards.					

IX. Trust

No.	Particulars	1	2	3	4	5
1.	I trust the company to deliver consistent and high-quality services.					
2.	I believe the company handles sensitive information with the utmost care and confidentiality.					
3.	The lab service I am currently using works on the principle of honesty.					
4.	The laboratory is reliable and dependable.					
5.	I feel confident in the laboratory's testing methods.					

X. Customer Satisfaction

No.	Particulars	1	2	3	4	5
1.	I am satisfied with the overall quality of services provided by the company.					
2.	The company Laboratory's services meet my expectations.					
3.	I am pleased with the value I receive from the company's services.					
4.	The laboratory explains test procedures clearly.					
5.	The laboratory listens carefully to customer needs.					

XI. Customer Loyalty

No.	Particulars	1	2	3	4	5
1.	I would continue to use the company's services in the future.					
2.	I would recommend the company's Laboratory to other businesses.					
3.	I trust the company more than other service providers in the industry.					
4.	The company's services are my first choice when I need laboratory testing or engineering services.					
5.	I actively promote the lab's services through word of mouth .					

APPENDIX – B

SPSS Output

(1) Analysis of Influencing Factors on Service Quality

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.826[a]	.682	.676	.44389	1.798

a. Predictors: (Constant), Functional Quality, Technical Quality

b. Dependent Variable: Service Quality

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47.355	2	23.678	120.166	.000[b]
	Residual	22.069	112	.197		
	Total	69.424	114			

a. Dependent Variable: Service Quality

b. Predictors: (Constant), Functional Quality, Technical Quality

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.385	.309		-1.246	.215		
	TQ	.450	.120	.323	3.737	.000	.380	2.628
	FQ	.604	.095	.548	6.339	.000	.380	2.628

a. Dependent Variable: Service Quality

(2) Analysis of Influencing Factors on Brand Image

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.518[a]	.268	.255	.44186	1.701

a. Predictors: (Constant), Price Promotion, Price

b. Dependent Variable: Brand Image

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.003	2	4.001	20.494	.000[b]
	Residual	21.867	112	.195		
	Total	29.869	114			

a. Dependent Variable: Brand Image

b. Predictors: (Constant), Price Promotion, Price

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.006	.238		12.629	.000		
	Price	.360	.086	.549	4.161	.000	.376	2.660
	PP	-.029	.096	-.040	-.303	.762	.376	2.660

a. Dependent Variable: Brand Image

(3) Analysis of Influencing Factors on Trust

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.864[a]	.746	.742	.36433	1.589

a. Predictors: (Constant), Integrity, Ability

b. Dependent Variable: Trust

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.756	2	21.878	164.826	.000[b]
	Residual	14.866	112	.133		
	Total	58.623	114			

a. Dependent Variable: Trust

b. Predictors: (Constant), Integrity, Ability

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.408	.260		-1.567	.120		
	Ability	.461	.089	.370	5.201	.000	.447	2.235
	Integrity	.659	.085	.553	7.770	.000	.447	2.235

a. Dependent Variable: Trust

Multiple Regression Analysis of Service Quality, Brand Image and Trust on Customer Loyalty

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.874[a]	.764	.758	.34615	1.815

a. Predictors: (Constant), Trust, Brand Image, Service Quality

b. Dependent Variable: Customer Loyalty

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.159	3	14.386	120.065	.000[b]
	Residual	13.300	111	.120		
	Total	56.459	114			

a. Dependent Variable: Customer Loyalty

b. Predictors: (Constant), Trust, Brand Image, Service Quality

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.600	.280		2.140	.035		
	SerQ	.343	.066	.381	5.238	.000	.402	2.487
	BI	-.039	.077	-.028	-.505	.615	.685	1.460
	Trust	.554	.072	.565	7.672	.000	.391	2.555

a. Dependent Variable: CL

Multiple Regression Analysis of Influencing Factors on Customer Loyalty

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.874[a]	.764	.758	.34615	1.815

a. Predictors: (Constant), Trust, Brand Image, Service Quality

b. Dependent Variable: Customer Loyalty

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.159	3	14.386	120.065	.000[b]
	Residual	13.300	111	.120		
	Total	56.459	114			

a. Dependent Variable: Customer Loyalty

b. Predictors: (Constant), Trust, Brand Image, Service Quality

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.600	.280		2.140	.035		
	Service Quality	.343	.066	.381	5.238	.000	.402	2.487
	Brand Image	-.039	.077	-.028	-.505	.615	.685	1.460
	Trust	.554	.072	.565	7.672	.000	.391	2.555

a. Dependent Variable: Customer Loyalty

(4) Mediating Effect of Customer Satisfaction on Service Quality and Customer Loyalty

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.797[a]	.635	.631	.42721	1.490

a. Predictors: (Constant), Service Quality

b. Dependent Variable: Customer Loyalty

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	35.836	1	35.836	196.354	.000[b]
	Residual	20.623	113	.183		
	Total	56.459	114			

a. Dependent Variable: Customer Loyalty

b. Predictors: (Constant), Service Quality

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.315	.205		6.416	.000		
	Service Quality	.718	.051	.797	14.013	.000	1.000	1.000

a. Dependent Variable: Customer Loyalty

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.845[a]	.714	.712	.38288	1.984

a. Predictors: (Constant), Service Quality

b. Dependent Variable: Customer Satisfaction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.370	1	41.370	282.204	.000[b]
	Residual	16.566	113	.147		
	Total	57.936	114			

a. Dependent Variable: Customer Satisfaction

b. Predictors: (Constant), Service Quality

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.134	.184		6.175	.000		
	Service Quality	.772	.046	.845	16.799	.000	1.000	1.000

a. Dependent Variable: Customer Satisfaction

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.867[a]	.751	.746	.35434	1.578

a. Predictors: (Constant), Customer Satisfaction, Service Quality

b. Dependent Variable: Customer Loyalty

NOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.397	2	21.199	168.839	.000[b]
	Residual	14.062	112	.126		
	Total	56.459	114			

a. Dependent Variable: Customer Loyalty

b. Predictors: (Constant), Customer Satisfaction, Service Quality

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.601	.197		3.058	.003		
	Service Quality	.233	.080	.258	2.925	.004	.286	3.497
	Customer Satisfaction	.629	.087	.638	7.229	.000	.286	3.497

a. Dependent Variable: Customer Loyalty

(5) Mediating Effect of CS on BI and CL

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.471[a]	.222	.215	.62349	1.822

a. Predictors: (Constant), Brand Image

b. Dependent Variable: Customer Loyalty

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.532	1	12.532	32.238	.000[b]
	Residual	43.927	113	.389		
	Total	56.459	114			

a. Dependent Variable: Customer Loyalty

b. Predictors: (Constant), Brand Image

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.344	.494		2.719	.008		
	Brand Image	.648	.114	.471	5.678	.000	1.000	1.000

a. Dependent Variable: Customer Loyalty

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.508[a]	.258	.251	.61697	1.801

a. Predictors: (Constant), Brand Image

b. Dependent Variable: Customer Satisfaction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.922	1	14.922	39.202	.000[b]
	Residual	43.014	113	.381		
	Total	57.936	114			

a. Dependent Variable: Customer Satisfaction

b. Predictors: (Constant), Brand Image

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.119	.489		2.288	.024		
	Brand Image	.707	.113	.508	6.261	.000	1.000	1.000

a. Dependent Variable: Customer Satisfaction

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.857[a]	.734	.729	.36636	1.762

a. Predictors: (Constant), Customer Satisfaction, Brand Image

b. Dependent Variable: Customer Loyalty

NOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	41.427	2	20.713	154.323	.000[b]
	Residual	15.033	112	.134		
	Total	56.459	114			

a. Dependent Variable: Customer Loyalty

b. Predictors: (Constant), Customer Satisfaction, Brand Image

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.427	.297		1.437	.153		
	Brand Image	.068	.078	.050	.880	.381	.742	1.347
	Customer Satisfaction	.820	.056	.830	14.672	.000	.742	1.347

a. Dependent Variable: Customer Loyalty

(6) Mediating Effect of Customer Satisfaction on Trust and Customer Loyalty

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.840[a]	.706	.703	.38355	1.852

a. Predictors: (Constant), Trust

b. Dependent Variable: Customer Loyalty

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.836	1	39.836	270.795	.000[b]
	Residual	16.623	113	.147		
	Total	56.459	114			

a. Dependent Variable: Customer Loyalty

b. Predictors: (Constant), Trust

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.633	.216		2.936	.004		
	Trust	.824	.050	.840	16.456	.000	1.000	1.000

a. Dependent Variable: Customer Loyalty

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.789[a]	.622	.619	.44027	1.850

a. Predictors: (Constant), Trust

b. Dependent Variable: Customer Satisfaction

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.033	1	36.033	185.892	.000[b]
	Residual	21.903	113	.194		
	Total	57.936	114			

a. Dependent Variable: Customer Satisfaction

b. Predictors: (Constant), Trust

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.833	.247		3.367	.001		
	Trust	.784	.058	.789	13.634	.000	1.000	1.000

a. Dependent Variable: Customer Satisfaction

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.897[a]	.804	.801	.31419	1.807

a. Predictors: (Constant), Customer Satisfaction, Trust

b. Dependent Variable: Customer Loyalty

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	45.403	2	22.702	229.973	.000[b]
	Residual	11.056	112	.099		
	Total	56.459	114			

a. Dependent Variable: Customer Loyalty

b. Predictors: (Constant), Customer Satisfaction, Trust

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.213	.185		1.150	.253		
	Trust	.429	.067	.437	6.429	.000	.378	2.645
	Customer Satisfaction	.504	.067	.511	7.510	.000	.378	2.645

a. Dependent Variable: Customer Loyalty