

UNIVERSITY OF EDUCATION, WINNEBA

Nexus among value co-creation, customer satisfaction, trust, and customer loyalty- A case of Telecommunication customers in the Greater Accra Region of Ghana



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**NEXUS AMONG VALUE CO-CREATION, CUSTOMER SATISFACTION,
TRUST, AND CUSTOMER LOYALTY:
A CASE OF TELECOMMUNICATION CUSTOMERS IN THE GREATER
ACCRA REGION OF GHANA**



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MAY, 2025

I

Student's Declaration

I, **JOSHUA ARHINFUL**, declare that _____ is my original work and has not been submitted elsewhere for any academic award. All sources of information have been duly acknowledged.

Signature:

Date:

Supervisor's Declaration

We hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of thesis as laid down by the University of Education, Winneba.

Supervisor's Name: Dr. Joy Say (Principal Supervisor)

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Signature:

Date:

DEDICATION

To my mum Mavis Tawiah and siblings Gloria Arhinful and Simon Arhinful.



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LIST OF ACRONYMS

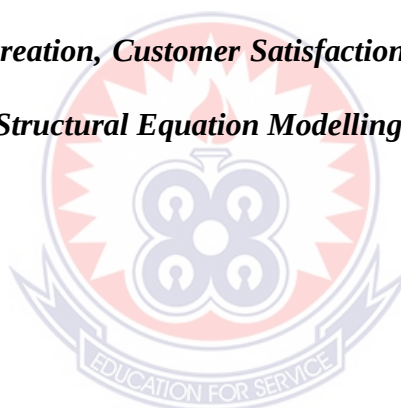
ARPU	Average Revenue Per User
AT	AirtelTigo
AVE	Average Variance Extracted
CA	Cronbrach's Alpha
CFI	Comparative Fit Index
CL	Customer Loyalty
CLV	Customer Lifetime Value
CR	Composite Reliability
CRM	Customer Relationship Management
CS	Customer Satisfaction
DART	Dialogue, Access to information, Risk assessment and Transparency
GSS	Ghana Statistical Service
HLM	Hierarchical Linear Modelling
HTMT	Heterotrait-monotrait ratio
INT	Interaction
KBV	Knowledge-Based View
MTN	Mobile Telecommunication Network

NCA	National Communications Authority
NNFI	Non-Normed Fit Index
OLR	Ordered Logistic Regression
PAT	Principal-Agent Theory
PLS-SEM	Partial Least Squares Structural Equation Modeling
Q²	Predictive relevance
R²	Coefficient of determination
RBV	Resource-Based View
RMSEA	Root Mean Square Error of Approximation
SDL	Service-Dominant Logic
SEM	Structural Equation Modelling
SPSS	Statistical Package for Social Sciences
SRMR	Standardized Root Mean Square Residual
T	Trust
TCE	Transaction Cost Economics
TLI	Tucker-Lewis Index
VC	Value Co-creation
VIF	Variance Inflation Factor

ABSTRACT

The study examines the interconnected relationships among value co-creation, customer satisfaction, trust, and customer loyalty in the telecommunications sector in Greater Accra- Ghana. Greater Accra is located in the southeastern part of Ghana, along the Gulf of Guinea. The quantitative research approach of the study affords the gathering of data from a sample of 384 active telecom users in the area. The analysis was conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique for the assessment of the direct associations and the influence of moderation and mediation of customer satisfaction on the various relationships. The results reveal that value co-creation sustains customer satisfaction, trust, and customer loyalty. Consequently, customer satisfaction serves as an important mediator between value co-creation and trust and loyalty. However, surprisingly, customer satisfaction negatively moderates the relationship between value co-creation and trust as well as loyalty. The results imply that telecom providers such as MTN, Telecel, and AirtelTigo should focus on customer involvement in all service design and innovation activities to nurture long-term relationships and loyalty.

Keywords: Value Co-creation, Customer Satisfaction, Trust, Customer Loyalty and Partial Least Squares Structural Equation Modelling



CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

In Ghana, as in other developing countries, the telecommunications sector is considered an engine of economic development and social transformation (World Bank, 2020). It is worth noting that with rapid technological developments and competition among telecom service providers, innovation and improvement in their customer engagement strategies have become an ongoing demand for these firms to stay ahead in the competition. Ghana's telecommunications sector has grown significantly, with several companies including MTN, Vodafone, and AirtelTigo grappling for market share (NCA, 2022). Customer retention remains a problem even with this growth; high switching rates result from service quality problems and restrained consumer involvement (NCA, 2022; Opoku-Antwi, 2017). Telecom companies who wish to enlarge their customer base and increase profitability must therefore realize how value co-creation influences consumer satisfaction, trust, and loyalty (Anderson & Sullivan, 1993; Kumar & Sharma, 2021).

Customer satisfaction is the most vital outcome of these co-creation efforts. Research shows that customers are satisfied with telecom services when they are perceived to have quality services that is by the dimension of reliability, responsiveness, and empathy (Boohene & Agyapong, 2011). In Ghana, service quality has a strong influence on customers' perception and retention of a brand. Trust plays a vital purpose serving as a bridge between satisfaction and loyalty. Customers who are confident that the provider will be reliable and fair will likely be led to long-term loyalty by their satisfaction (Ankora et al., 2017).

In a highly competitive market such as Ghana, customer loyalty is the most critical element of business. The Telecom companies are therefore resorting to retention strategies such as loyalty rewards, digital engagement, and personalized services. It has been pointed out by several studies that loyalty is subject to a strong influence from trust and the perceived value that an individual gets as a result of consistent and meaningful interactions with the customer service provider (Ansah, 2021). Consequently, it becomes imperative for telecom operators in Ghana to understand the nexus among value co-creation, satisfaction, trust, and customer loyalty all of which constitute essential elements in the company's quest to sustain customer relationships.

In this regard, an essential paradigm is value co-creation, which highlights how companies and consumers actively work to produce value (Prahalad & Ramaswamy, 2004). This collaborative strategy improves customer satisfaction, builds trust, and fosters loyalty all crucial for maintaining long partnerships in highly competitive industries (Vargo & Lusch, 2008; Grönroos & Voima, 2013).

Customer satisfaction shows the level to which the actual product's performance matches the customer's expectations. It also entails the customer's subjective judgment about whether the product or service they got satisfied their expectations concerning particular features or the overall aspect of it. (Hennayake, 2017)

Furthermore, trust is characterized by the readiness of an individual to rely on the capability, honesty, and expectedness of another party in circumstances involving risk and uncertainty (Mayer, Davis, & Schoorman, 1995).

Conversely, customer loyalty refers to a customer's willingness to keep purchasing products or services from a specific company or brand rather than turning to alternative providers (Agha et al., 2021).

Consumers who are both satisfied and loyal to a company's products or services are more likely to recommend the brand to others, which can help attract new customers (Affran et al., 2019).

Therefore, a loyal customer provides repeat business, cross-sells other products and services, and acts as a champion for the service provider, positively affecting revenue generation and brand promotion. In this regard, customer satisfaction and loyalty shape the service provider's business strategy and approach toward retaining customers in the general market ecosystem.

Alternatively, the act of finding a competitor is heightened in dissatisfied customers, putting the company at risk of losing revenue and damage to its reputation. Harvard Business Review claims that when customer loyalty is present, the ratio of customer retention rates goes up by 5%; this can enhance profits by 25% to 95% (Reichheld & Sasser, 1990).

The report from NCA (2020) noted that about 100,000 Ghanaian students signed up for Vodafone Ghana mostly looking for inexpensive data packages, thus strengthening this viewpoint. Satisfied customers frequently provide insightful comments and ideas that help businesses improve their products (McColl et al., 2019). Also, studies show that just being happy is not enough to keep customers or guarantee their ongoing loyalty to a good or service (Devi & Yasa, 2021; Sosianika et al., 2021).

Therefore, because the business environment is bright and fast-moving, it has become paramount that telecom companies pay equal attention to value co-creation, customer satisfaction, and trust in developing customer loyalty. Thus, as the telecommunications market in Ghana keeps growing with technological innovations, this study sought to explore the relationship between value co-creation, satisfaction, trust, and customer loyalty.

1.2 Statement of the Problem

In Ghana, for many years telecommunication companies have seen rapid growth because of digital innovation, increased mobile penetration, and a competitive environment full of indices like MTN, Vodafone (now Telecel), AirtelTigo (now AT), and Glo. However, customer satisfaction and loyalty continue to have urgent issues. There is an invariable gap between the deliverables of telecom companies and customer perceptions of value, satisfaction, and trustworthy service (Arslan, 2020; Jenneboer et al., 2022).

Though value co-creation is acknowledged as a key contributor to the improvement of customer satisfaction, there is little empirical research investigating its effects in the Ghanaian telecommunications industry (Cossío-Silva et al., 2016). Existing studies mostly concentrate on service quality and pricing, usually ignoring the interactive role consumers have in value creation (Smith, 2003; Brown & Duguid, 2020). As a result, within this framework, too little is known about how value co-creation influences customer satisfaction, trust, and loyalty. Furthermore, processes by which customer satisfaction mediates or moderates these interactions are underexplored, therefore complicating efforts telecom companies to develop successful engagement plans (Mayer, Davis, & Schoorman, 1995; Anderson & Sullivan, 1993).

As stated in the Ghana Telecoms Market Report which was released in October 2023 (National Communications Authority, 2023), AirtelTigo (now AT) reported its first decline in voice subscriptions, down 2.17% from 6.98 million in May 2022 to 6.83 million in June and also lost voice market share, down from 17.04% to 16.66%. Vodafone (now Telecel) also lost subscriptions, down 100,000 to a decline of 1.53%, and slightly lowered its share to 17.87% from previous months despite promoting free Vodafone Cash transfers. Again, Glo, which has had a long history of poor network

coverage, had a sharp increase in subscriptions when compared to months prior, increasing subscriptions from 794,288 in April to 989,965 in June with a share increase to 2.42% for the first time in recent history shortly after migrating its call subscribers to AT's network. Glo's subscribers had steadily declined from over 1.5 million to around 700,000 due to the poor network coverage. Glo could not stay in the market and has transferred its subscribers to AT. MTN, as mentioned, had modestly grown in subscribers of about 25.85 million resulting in a 63.06% market share despite regulators trying to minimize MTN's growing market share.

Nevertheless, in Ghana, the telecom companies still have issues regarding customers, with Vodafone and AT only making partial efforts to involve customers significantly in-service design (Payne, Storbacka, & Frow, 2008). While MTN had a 63.06% market share in the business, it appears that much of this market success was achieved due to its relatively wide network coverage rather than higher customer satisfaction (Ghana Telecoms Market Report, 2023; Oduro, Boachie-Mensah, and Agyapong, 2018). There are still many complaints among MTN users over service interruptions and expensive data. The critical issue here is that leading firms are also now finding increasing gaps between market performance and customer perceptions.

In Ghana's telecommunications industry, dissatisfaction and therefore potential loss of long-term loyalty are problems for firms, even in the presence of stiff competition. Customer subscriptions may rise due to promotional offers or improved network reach; however, loyalty is declining as the NCA points out with its criticisms over service quality, indicating much deeper problems. Trust and customer satisfaction are reportedly the connecting mediums of value co-creation to loyalty. There is, however, little available literature on the local scene linking these variables.

In light of these gaps, the current study contributes to existing literature in three ways:

First, this study proposes that customer satisfaction can play an intervening role in the relationship between value co-creation, trust, and customer loyalty.

Secondly, this study proposes that customer satisfaction can play a moderating role in the relationship between value co-creation, trust, and customer loyalty.

Finally, this study also focuses on a developing economy such as Ghana. By doing so, it fills a gap in this research stream that previous studies have largely neglected.

1.3 Objectives of the Study

This study investigated the interactions among value co-creation, customer satisfaction, trust, and customer loyalty regarding telecommunication subscribers in Greater Accra. The particular aims of the study are as follows:

1. Determine how value co-creation influences telecommunication consumers' satisfaction, trust, and loyalty in Greater Accra.
2. Evaluate how customer satisfaction mediates trust, customer loyalty, and value co-creation among telecommunication customers in Greater Accra.
3. Consider how customer satisfaction helps to moderate the interactions among value co-creation and customer trust and loyalty among telecommunication customers in Greater Accra.

1.4 Research Hypotheses

H01a: Value co-creation does not positively and significantly affect customer satisfaction among telecommunication customers in Greater Accra.

H1a: Value co-creation positively and significantly affects customer satisfaction among telecommunication customers in Greater Accra.

H0b: Value co-creation does not positively and significantly affect trust among telecommunication customers in Greater Accra.

H1b Value co-creation positively and significantly affects trust among telecommunication customers in Greater Accra.

H0c: Value co-creation does not positively and significantly affect customer loyalty among telecommunication customers in Greater Accra.

H1c: Value co-creation positively and significantly affects customer loyalty among telecommunication customers in Greater Accra.

H0a: Customer satisfaction does not positively mediate the relationship between value co-creation and trust among telecommunication customers in Greater Accra.

H1a Customer satisfaction directly and significantly mediates the relationship between value co-creation and trust among telecommunication customers in Greater Accra.

H0b: Customer satisfaction does not directly mediate the relationship between value co-creation and customer loyalty among telecommunication customers in Greater Accra.

H1b: Customer satisfaction directly and significantly mediates the relationship between value co-creation and customer loyalty among telecommunication customers in Greater Accra.

H0a: Customer satisfaction does not diminish the moderating effect of value co-creation and trust among telecommunication customers in Greater Accra.

H13a: Customer satisfaction diminishes the moderating effect of value co-creation and trust among telecommunication customers in Greater Accra.

H03b: Customer satisfaction does not diminish the moderating effect of value co-creation and customer loyalty among telecommunication customers in Greater Accra.

H13b: Customer satisfaction diminishes the moderating effect of value co-creation and trust among telecommunication customers in Greater Accra.

1.5 Significance of the study

This thesis is substantial because it offers empirical data from Ghana's telecommunications sector. Further, it helps to theoretically elucidate value co-creation in rising markets (Prahalad & Ramaswamy, 2004; Kumar & Sharma, 2021). It provides telecom companies with useful tips on how to successfully involve customers to increase loyalty, trust, and satisfaction. Moreover, policymakers can use the results to design rules encouraging customer-centric approaches and openness, therefore enhancing a better competitive environment (National Communications Authority, 2022).

The findings of this study hold practical value for telecommunication companies operating in Ghana. Understanding how co-creation practices influence customer satisfaction, trust, and loyalty will enable providers to tailor their strategies and services to meet the evolving needs of Ghanaian consumers (Opoku-Antwi, 2017).

The findings will also inform policy decisions relating to the telecommunication sector in Ghana, as they could influence regulatory frameworks, consumer protection initiatives, and strategies to promote healthy competition (National Communications Authority, 2019).

In conclusion, these are the innovations that are essential for advancing knowledge and guiding the telecommunication industry:

- i. The study introduces innovative dimension metrics that provide a better understanding of value co-creation activities in the context of the telecommunication industry.
- ii. The study incorporates predictive analytics to forecast customer satisfaction based on value co-creation activities, enabling telecommunication to address issues.
- iii. The study integrates behavioral economics principles into the study of customer loyalty, shedding light on the psychological factors influencing telecommunication customer decisions.
- iv. The study brings out intriguing factors that motivate customers to use MTN despite using other network services in addition.

1.6 Scope of the study

The study considered mobile telecommunication users in Greater Accra, Ghana. This geographic range showed a low number of telecom consumers and competitive market forces in the area (Ghana Statistical Service, 2023). Using data gathered from quantitative questionnaires, the research looked at value co-creation and its influence on customer satisfaction, trust, and loyalty.

1.7 Organization of the Study

There are five chapters in this thesis. Chapter one presents the study background, problem statement, research objectives, research hypotheses, significance, scope, and organization. Chapter two examines relevant literature on customer value co-creation,

trust, customer satisfaction, and customer loyalty. The research methodology is described in Chapter Three. The findings and discussion are presented in Chapter Four. The study ends in Chapter Five with summaries, conclusions, recommendations, and future research ideas.



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter examines appropriate studies on the interactions among value co-creation, consumer satisfaction, trust, and customer loyalty. It offers definitions of important concepts, theoretical frameworks supporting the study, and empirical data from past studies. The chapter finally offers the conceptual framework guiding this investigation.

2.1 Definition of Terms

2.1.1 Value co-creation

Value co-creation is the combined interaction whereby buyers work with service providers to jointly generate value. This is when clients share information about their preferences, requirements, or experiences to help shape product development or service enhancement. (Prahalad & Ramaswamy, 2004) The evolving customer role emphasizes active participation rather than passive reception within the service ecosystem.

2.1.2 DART Model

The DART model referring to Dialogue, Access to information, Risk assessment, and Transparency represents a comprehensive approach to fostering meaningful co-creation between firms and customers. Dialogue ensures open communication channels; Access to information guarantees availability of relevant data for joint decisions; Risk assessment identifies and mitigates potential risks; and Transparency fosters trust through clear, honest communication throughout the process (Smith & Johnson, 2022).

2.1.3 Customer Satisfaction

Customer satisfaction is defined as the overall evaluation by customers regarding their experience with a product or service, reflecting the degree to which their expectations are met or exceeded (Anderson & Sullivan, 1993).

2.1.4 Trust

Trust is a complex construct characterized by an individual's willingness to rely on another party's ability, integrity, and benevolence, especially in situations involving risk and uncertainty (Mayer, Davis, & Schoorman, 1995).

2.1.5 Customer Loyalty

Customer loyalty is the tendency of consumers to consistently patronize a particular brand or firm, driven by favorable attitudes, emotional attachment, perceived value, and habitual behavior (Smith, 2003). Loyal customers contribute significantly to an organization's revenue through repeat business and referrals (Morwitz & Schmittlein, 1992; Anderson et al., 1994).

2.2 Review of Theoretical Literature

This section examines key theories related to value co-creation, customer satisfaction, trust, and customer loyalty.

2.2.1 Theories of Value Co-creation

2.2.1.1 Service-Dominant Logic

SDL, introduced by Vargo and Lusch (2004), represents a paradigm shift emphasizing that value is co-created through interactions between service providers and customers rather than embedded solely in physical products. Telecommunications companies apply SDL by engaging customers as active collaborators in service design and

delivery, prioritizing integrated service experiences personalized for customers (Vargo & Lusch, 2008; Grönroos & Voima, 2013).

The telecommunications sector has been seen by SDL as one where value has not been considered just to be put in physical products such as phones or network infrastructure but is fundamentally co-created through the dynamic interactions of service providers and consumers (Vargo&Lusch, 2008). This view is very much in tune with the evolving character of telecommunication services where emphasis has shifted from selling discrete products to providing integrated service experiences that are highly personalized for the customer.

According to SDL, telecommunication companies are realizing that the consumer is not a passive recipient but a co-cooperator in the creation of value. Gronroos and Voima (2013) stress the importance of studying customer activities and involving them in service design, further highlighting the collaborative nature of the SDL paradigm. As highlighted by Lusch and Nambisan (2015), SDL directs attention toward resource integration and co-creation of value in use and regards technology and knowledge exchange as fundamental in shaping the customer experience in the telecommunications domain.

In practical terms, telecommunications companies adopting SDL principles may prioritize customer engagement, invest in participatory design processes, and leverage digital platforms to facilitate co-creation experiences (Vargo et al., 2010). By viewing services as the fundamental basis of exchange, the SDL framework provides an understanding of value creation dynamics in the telecommunications industry, fostering customer-centric strategies and innovation.

2.2.1.2 Resource-Based View (RBV)

RBV posits that firms gain competitive advantage by leveraging unique, valuable, and inimitable resources (Barney, 1991). In telecommunications, resources such as infrastructure, technology, human capital, and brand reputation enable firms to co-create value by addressing specific customer needs. Customers contribute preferences and feedback that firms utilize to enhance services, fostering loyalty (Ray, Barney, & Muhanna, 2004; Ngo & O'Cass, 2013).

For telecommunications companies, value co-creation occurs through the employment of resources toward providing solutions catering to the particular requirements of the customer. For instance, network infrastructure coupled with futuristic technologies such as 5G serves to establish very high-speed connectivity, with customers employing this to better their digital experiences. Also, human capital in the form of trained customer service teams assists in attending these customer needs, solving issues, and nurturing customer loyalty. On the co-creation side, customers share their preferences, feedback, and experiences, which firms turn into service improvements (Prahalad & Ramaswamy, 2004).

Research supports the RBV application in value co-creation. For instance, Ray, Barney, and Muhanna (2004) demonstrate that operational capabilities in the telecommunications sector are closely linked to firm performance and value creation. Telecommunications firms with unique resources such as proprietary technologies or customer data analytics systems are better positioned to co-create value with customers by offering personalized and efficient services (Ngo & O'Cass, 2013).

2.2.1.3 Knowledge-Based View (KBV)

KBV extends RBV by focusing on knowledge as a strategic asset (Grant, 1996). Telecom companies co-create value by integrating their technical expertise with customers' experiential knowledge to innovate services. Effective knowledge sharing with customers enhances customization and engagement, resulting in improved value co-creation (Pai & Tu, 2011).

According to the knowledge-based view, telecom companies operate both on internally created knowledge and on knowledge shared by customers. In value co-creation, customers provide insights or feedback, or experiential knowledge that the company uses to improve or innovate on services. This interaction between the customers and the firm's knowledge systems results in the co-creation of new knowledge that benefits both the customers and the firm. For instance, telecom companies have collaborative service innovation platforms through which customers can co-create new features or services based on their own experiences of usage (Grant, 1996).

Empirical studies have shown that knowledge sharing between telecom companies and customers significantly enhances value co-creation. Pai and Tu (2011) found that customer knowledge sharing positively influence the innovation and service performance of telecommunications firms. The ability of telecom providers to manage customer knowledge leads to more customized services and a higher degree of customer engagement, ultimately enhancing value co-creation.

2.2.2 Theories of Customer Satisfaction

2.2.2.1 Utility Maximization Theory

Rooted in microeconomics, this theory suggests consumers make choices that maximize their satisfaction or utility (Jevons, Menger & Walras, 1870).

Telecommunications customers evaluate providers based on cost, coverage, data speed, and other features, selecting options that best fulfill their preferences (Johnson & Smith, 2019; Hendricks & Piccione, 1997).

The idea of utility maximization is a cornerstone of the field of telecommunications business knowledge, providing insight into customer behavior and decision-making processes. Customers navigating a complicated landscape of options, including different service plans, providers, and technical options, are part of the telecom services experience. Consumers aim to maximize their pleasure by making decisions that are in line with their needs, preferences, and financial limitations, according to the utility maximization theory (Varian, 2014).

According to Johnson and Smith's (2019) theory, utility maximization is applied to the telecommunications sector, emphasizing that customers assess service providers according to aspects of services including cost, coverage, data speed, and extra features. This indicates that customers use reason to make decisions, choosing the telecom services that best suit their unique needs and preferences to maximize their utility.

Telecommunications firms can also benefit from the utility maximization theory, which helps them create marketing campaigns and service plans that cater for customer preferences. Service providers can improve customer satisfaction and loyalty by customizing their products based on their understanding of the elements affecting consumer utility (Hendricks & Piccione, 1997).

2.2.2.2 Disconfirmation Theory

According to disconfirmation theory, satisfaction results from an expectation-service performance comparison (Oliver, 1980). Satisfaction is the result of performance meeting or exceeding expectations (positive disconfirmation); dissatisfaction is the

result of performance falling short (negative disconfirmation). In the telecom sector, increasing satisfaction depends on careful management of consumer expectations (Fornell et al., 1996).

In telecommunications, Disconfirmation Theory helps understand how customers judge service quality, network reliability, customer support, and billing transparency. So, a customer may expect uninterrupted network service. If the service provider fulfills the expectation, or even goes beyond by providing a higher-quality connection, positive disconfirmation emerges, and the customer becomes highly satisfied. However, service interruptions witnessed by the customer lead to negative disconfirmation, which means an unhappy customer (Oliver, 1980).

In a study carried out by Fornell et al. (1996), customer satisfaction in different industries, including the telecommunications industry, was analyzed under the disconfirmation approach. It was found that customer satisfaction was largely dependent on whether the perceived performance of services met or exceeded what was initially expected. But, in the telecommunications industry, the link between disconfirmation and satisfaction was more pronounced, the emphasis should be placed on managing customers' expectations in order to boost their satisfaction level.

2.2.2.3 Expectancy-Value Theory

This theory proposes that satisfaction depends on expectations and the perceived value of outcomes (Fishbein & Ajzen, 1975). Customers' evaluation of telecom services considers both performance relative to expectations and the value derived, such as uninterrupted connectivity for streaming or work (Johnson, Herrmann, & Huber, 2006).

Hence, satisfaction depends not only on how well the service performs relative to expectations but also on perceived value relative to the service by customers. According

to the Expectancy-Value Theory, one has an expectation based on an anticipated utility from the service, and these expectations shape customer satisfaction with a service and their value attribution for the outcomes (Fishbein & Ajzen, 1975).

In telecommunications, customers evaluate services depending on the value they perceive in the service relative to their expectations. For instance, they could place a high value on a high-speed internet connection for such uses as streaming videos, working from home, or indulging in online gaming uninterrupted. When the expectations from such service providers are met and the perceived value of the outcomes arising out of doing so are (say going about seamless entertainment and productivity) considered high, customers experience high satisfaction; however, if the expected outcome is not achieved, or the perceived value is lower than what was set by their expectations, customer satisfaction diminishes (Zeithaml, 1988).

A study by Johnson, Herrmann, and Huber (2006) applied the Expectancy-Value Theory to customer satisfaction in the telecommunications sector, finding that customer satisfaction was closely linked to both the fulfillment of expectations and the perceived value derived from services such as mobile data plans and internet connectivity. The study demonstrated that when customers perceived high value in the services received, they reported higher satisfaction, even if some aspects of service performance fell short of expectations.

2.2.3 Theories of Trust

2.2.3.1 Information Asymmetry

Information asymmetry occurs when one party has more or better information than another, leading to potential imbalance and mistrust (Akerlof, 1970). In telecommunications, consumers may struggle to fully understand service plans and

quality, necessitating transparency and regulation to build trust (Chen & Wang, 2016; Grillo, 2013).

Information asymmetry creates significant problems for consumer interests in telecommunications services industries since consumers often face great difficulties in fully understanding the IOS of the service plan, network quality, and covert charges (Akerlof, 1970). Chen and Wang (2016) document the presence of information asymmetry in the industry, concluding that the consumer may not be wary of complete and transparent information vis-a-vis the performance and limitations of telecommunication services.

An information imbalance can go a long way to affect consumer choices and overall market efficiency. For instance, consumers may have difficulty assessing the quality of service offered by different providers, leading to suboptimal decision-making (Shy, 2001). Regulation and disclosure requirements are essential devices to work against information asymmetry, level the grounds for competition, and be able to get consumers into a position to influence the info (Grillo, 2013).

Telecommunications companies could benefit from addressing information asymmetry by promoting transparency in their communications and marketing. Clear and understandable information on service plans, network reliability, and the possible cost would help consumers build trust (Verizon, 2020).

2.2.3.2 Principal-Agent Theory

This theory studies trust in relationships where one party (principal) delegates tasks to another (agent), and information asymmetry exists (Jensen & Meckling, 1976). In telecom, customers (principals) trust providers (agents) to deliver reliable and

transparent services despite asymmetry, with trust reinforced through contracts and regulation (McKnight et al., 2002).

Under the big telecommunications franchise, one major principal-agent relationship exists between the consumer (principal) and the service provider (agent). Customers trust the actors to ensure network reliability, data privacy and transparent billing. Because of the asymmetry of information where a service has the provider's technical knowledge and control over the delivery of service, customers have to rely on different mechanisms such as contracts, regulatory supervision and guarantees of service to ensure that their interests are secured. Trust emerges when providers acted responsibly, fulfilling expectations and contractual obligations of customers in a transparent manner with good performance (Eisenhardt, 1989).

A study by McKnight et al. (2002) explored trust in online service providers, finding that the principal-agent relationship is central to customer trust in digital service contexts. The study emphasized the importance of trust-building mechanisms such as transparency in service delivery and clear communication of terms and conditions, which are applicable to telecommunications services. In this context, trust is built when telecom providers mitigate information asymmetry through accurate disclosures and consistent service performance.

2.2.3.3 Transaction Cost Economics (TCE)

TCE examines costs of economic transactions, including enforcement and monitoring. High trust reduces these costs by enabling informal agreements. In telecommunications, trust allows flexible relationships without costly contracts, benefiting both providers and customers (Williamson, 1979; Lui & Ngo, 2004).

In telecommunications transactions, a complex, long-term contract is generally drawn up between the service provider and the customer to be based on mutual trust in order to minimize transaction costs. For instance, customers need to trust telecom providers that the performance of telecommunications networks will remain constant and that sensitive data will be protected without supervising them on a day-to-day basis or renegotiating terms of the contract. Meanwhile, telecom service providers need to trust that customers will respect payment schedules and usage agreements. On a high level of trust, costly contract enforcement mechanisms are unnecessary to impose on them, so they can build a flexible relationship that benefits both (Williamson, 1985).

A study by Lui and Ngo (2004) applied Transaction Cost Economics to the telecommunications industry, finding that trust played a significant role in reducing the perceived need for formal contract enforcement. The study revealed that when trust between telecom providers and their customers was high, both parties experienced lower transaction costs, resulting in more efficient and stable relationships. This is particularly relevant in situations where continuous service delivery and customer retention are critical.

2.2.4 Theories of Customer Loyalty

2.2.4.1 Voice and Exit Theory

Hirschman (1970) explains that dissatisfied customers either exit (leave) or voice concerns (complain or participate in improvement). In telecom, understanding this helps providers respond to customer dissatisfaction and reduce churn (Smith & Jones, 2018; Brown et al., 2020).

According to Hirschman's (1970) groundbreaking theory, disgruntled customers have two options: they can choose to leave the service by moving to a different provider or

giving up on it entirely, or they can express their concerns by giving feedback, filing complaints, or actively engaging with the provider. For both service providers and legislators, it becomes imperative to comprehend the dynamics of voice and exit in the telecommunications industry, given the fierce competition and abundance of customer choices. For example, a study conducted by Smith and Jones (2018) showed that customers who voice their issues help the telecommunications industry innovate and enhance service quality. This is the very support of an argument put forward by Hirschman that suggests constructive criticism and caring involvement serve as mechanisms to induce organizational flexibility and responsiveness.

The study of Brown et al. (2020) underscores the commonality of exit behavior in the telecom industry since customers change providers immediately if unsatisfied with the services rendered. This accentuates the relevance of customer turnover statistics and how fast telecommunications companies must resolve issues in order to maintain their clientele.

2.2.4.2 Switching Cost Theory

Switching costs include financial, procedural, and relational costs that deter customers from changing providers (Burnham, Frels, & Mahajan, 2003). Telecom firms increase switching costs through contracts, bundled services, and customer relationships, fostering loyalty (Kim, Park, & Jeong, 2004).

Switching costs are among the major customer-loyalty factors in telecommunication. Service providers put locking devices into contracts with customers for long terms or offer bundled services of mobile, internet, and TV to raise the complexity in changing to a different provider. Additionally, customers have formed some kind of relationship with the service provider's customer care representatives or have become familiar with

certain service offerings, so the relational and psychological costs highlight their switching behavior. These circumstances intuitively create loyalty toward the providers, even when customers feel that the alternative provider may render higher service (Burnham, Frels, & Mahajan, 2003).

Kim, Park, and Jeong (2004) studied the application of the Theory of Switching Costs to the telecom industry in South Korea. Their results showed that economic and procedural type switching costs significantly and positively affected consumer loyalty as customers perceiving higher switching costs would not easily change their service providers even when competitive substitutes were available in the marketplace. Hence, this study chronicles that telecom companies employ switching costs as a deterrent to poaching clientele.

2.2.4.3 Customer Lifetime Value Theory

CLV evaluates the long-term profitability of customers, emphasizing the importance of retaining high-value clients through personalized services and loyalty programs (Rust, Zeithaml, & Lemon, 2001; Blattberg, Getz, & Thomas, 2004).

In the domain of telecommunications, CLV forms a center-piece quantitative measure in assessing the relative profitability of customer relationships over a period. Service Providers on the other hand would develop loyalty through personalized offerings, rewarding schemes and value-added services which go into the customer's perception of the providers' value. The longer-term perspective on relationships enhances customer retention and lifetime value for telecom companies since loyal customers tend to renew contracts, upgrade services, and offer referrals. The CLV theory thus equips providers with strategies for prioritizing and servicing high-value customers, who can be served with premium services based on their exact needs (Gupta et al., 2006).

Blattberg, Getz, and Thomas (2004) investigated companies in the telecommunications industry who stressed Customer Lifetime Value (CLV) via customized marketing and loyalty programs saw significant increases in profitability and customer retention. Their research highlighted the imperative of building long-lasting consumer relationships since clients with higher lifetime value tend to remain loyal to their telecom companies.

2.3 Review of Empirical Literature

The review of empirical literature in this section is categorized into seven based on the study's hypothesis; a. value co-creation and customer satisfaction, b. value co-creation and customer loyalty, c. value co-creation and trust, d. mediating the role of customer satisfaction in the relationship between value co-creation and trust, e. mediating the role of customer satisfaction in the relationship between value co-creation and customer loyalty, f. moderating the role of customer satisfaction between value co-creation and trust, g. moderating role of customer satisfaction between value co-creation and customer loyalty.

2.3.1 Value Co-creation and Customer Satisfaction

Meyer and Louw (2020) conducted a study in South Africa within the telecommunications sector. Their research employed a quantitative research design using a cross-sectional survey of 312 mobile network users. By analyzing the link between customer satisfaction and value co-creation with purposive sampling, customers who participated with the telecom operator in various co-creation activities were targeted. Data were analyzed using SEM techniques, which yielded a significant positive effect of value co-creation on customer satisfaction.

Adomako and Amponsah (2021) explored the link between value co-creation and customer satisfaction in banking in Ghana. They called their study a mixed-methods

one because it combined, in essence, a quantitative survey with qualitative interviews. A total of 254 respondents from Accra had their data analyzed, with 10 more in-depth interviews with senior bank executives conducted. Regression analysis stands used by the authors to analyze the quantitative data, whereas thematic analysis is employed for the qualitative data. Results confirmed that customers involved in value co-creation activities, especially for customized financial services, feel more satisfied. Meanwhile, the interviews with bank executives highlighted the importance of continuous engagement with customers to improve satisfaction.

Zhang and Li (2021) conducted a longitudinal study where they examined how value co-creation might affect customer satisfaction in China's e-commerce sector. The study used panel data for three years, sourced from 500 customers of one of the nation's major e-commerce platforms. The authors tested customers' level of satisfaction through online surveys, comparing to what extent that the contribution they make in co-creation events such as posting product reviews, varied. Hierarchical Linear Modeling (HLM) was used for a time series analysis. The results showed that customers who stayed engaged in co-creation activities were increasingly, over time, satisfied with and retained by the platform or brand.

Okeke and Umeoji (2022) conducted a case study in the retail sector in Nigeria, focusing on five major retail outlets in Lagos. Their qualitative research design involved 50 semi-structured interviews with both retail managers and customers who had engaged in co-creation activities. The study explored the ways in which customer participation in service design and delivery affected their satisfaction levels. The study revealed that value co-creation positively affected satisfaction, especially when customers felt that their contributions were integral to improving service quality.

Retailers who actively solicited customer input for designing loyalty programs and product offerings saw an increase in customer satisfaction.

Johnson and Anderson (2022) researched the influence that co-creation of value in the healthcare sector has on patient satisfaction in the United States. This quantitative study consisted of 800 patients being surveyed online from a variety of healthcare providers. The survey targeted patient participation in co-creation activities, such as the shared decision-making of care or personalized care. The regression analysis revealed that patient engagement in these activities significantly increased satisfaction levels, concluding that patients going through co-creation in their health care decisions experienced greater satisfaction, thereby emphasizing the importance of co-creation in augmenting service outcomes.

From the above discussion, the first hypothesis can be inferred:

H1a: Value co-creation positively affects customer satisfaction.

2.3.2 Value Co-creation and Trust

In a study conducted by Mishra and Singh (2021) focusing on India, they explored the nexus between value co-creation and trust in retailing. Adopting the quantitative approach, the research was a cross-sectional survey, with 450 customers of major retail brands in Mumbai as respondents. For data collection, structured questionnaires were employed with the emphasis on customers who participated in value co-creation activities with retailers. The Structural Equation Modeling (SEM) was used by the authors to test the relationships between value co-creation activities and trust in retail services. It was found that value co-creation-built trust. Customers who co-created with a retailer felt secured and were confident about the relationship, so the trust formed was stronger.

In a study conducted in South Korea, Kang and Lee (2020) studied the telecommunications industry by considering how value co-creation nurtures trust among mobile network users. The mixed-methods approach was used to collect the data. The study used quantitative data to collect data from 320 customers through online surveys and also used qualitative data to gather data from 12 semi-structured interviews with industry experts. In analyzing the data, the study used Partial Least Squares-Structural Equation Modelling (PLS-SEM) whereas thematic analysis. The study revealed that value co-creation improved trust when opportunities are given for customers to input into service delivery and customization. On the other hand, the qualitative data indicated aspects of transparency on building trust concerning co-creation.

In Ghana, Mensah and Adams (2022) did a study in banking sector, examining the relationship between value co-creation and trust. Quantitative approach was used to gather the data through a survey of 370 bank customers in Accra who partook in personalized banking services. They used regression analysis to examine how co-creation practices impacted trust levels in the customer-bank relationship. The study found out that value co-creation significantly improved trust, as customers took part in co-creation activities had a feeling that the banks were more receptive and reliable, resulting in enhanced trust perceptions.

Another study done by Deng and Wang (2019) in China's e-commerce sector, concentrating on the influence of value co-creation on trust. They employed a longitudinal design and took data from 500 clients of a leading e-commerce platform over a period of two years. Online surveys were used to collect the data which measured customer involvement in value co-creation events comprising of artefact customization and feedback loops. In assessing how co-creation activities influenced trust over time,

Hierarchical Linear Modeling (HLM) was employed as the estimation technique. The study demonstrated that continuous participation in value co-creation significantly improved trust between customers and the e-commerce platform, with direct effects witnessed over the period of two years.

Focusing on the Nigerian retail sector, Oluwaseun and Bamidele (2021) investigated the association between value co-creation and trust. The study employed a case study approach, they concentrated on five major retail chains in Lagos. The data was collected using 45 semi-structured interviews involving both customers and retail managers. The study further used thematic analysis to investigate how customer participation in value co-creation activities affected trust. The study demonstrated that co-creation directly influenced trust, mostly when customers felt that their contributions were valued and the retailers acted upon their concerns. In this regard, retailers who involved customers in co-creating loyalty programs and service enhancements promoted stronger trust relationships.

Based on the findings from the literature, value co-creation positively affects trust. Therefore, the study hypothesizes that:

H1b: Value Co-creation positively affects trust.

2.3.3 Value Co-creation and Customer Loyalty

Chen and Zhang (2020) carried out research in China's hotel industry. They employed a quantitative cross-sectional approach sending out questionnaires to 500 hotel visitors who had taken part in co-creation activities like customized service requests and online comments. They examined the data using Structural Equation Modelling (SEM). The research revealed that value co-creation had a big positive impact on customer loyalty.

Guests who got involved in tailoring services and giving feedback showed higher loyalty to the hotel brand leading to better customer retention and repeat visits.

López and Martínez (2019) looked into the Spanish retail industry zeroing in on how value co-creation links to customer loyalty in department stores. Their study used a mix of methods combining number-crunching surveys with 350 customers and in-depth chats with store managers. By crunching numbers and picking apart themes, the research showed that customers who got involved in co-creation activities, like picking products and tweaking loyalty programs stuck around more. The chats also brought to light that co-creation made customers feel like they belonged, which made them more committed to the store.

Nartey and Boateng (2021) examined how teaming up with customers to create value affects loyalty in banks across Ghana. They surveyed 400 bank customers in Accra who took part in shaping customized financial services. Using Partial Least Squares-Structural Equation Modelling to analyze, they found that building value together with customers boosted their loyalty. Customers felt more attached to their banks. The study ended by highlighting that personalized advice and tailoring services play a key role in keeping customers loyal.

Harris and Jones (2022) studied how value co-creation affects customer loyalty in the U.S. e-commerce industry. To analyze this, they followed a group of 600 customers over two years and gathered responses through online surveys. They used Hierarchical Linear Modelling (HLM) to evaluate whether things like customization and customer feedback, as part of co-creation, could change loyalty over time. Their findings showed that customers who stayed involved in these co-creation activities became more loyal. They were more committed to the brand and made repeat purchases more often.

Ogunleye and Akinwale in 2020 studied how value co-creation affects customer loyalty within Nigeria's telecommunications industry. They took a case study approach looking at three top mobile network providers in Lagos. They gathered data by conducting 50 interviews with both customers and telecom managers. Through thematic analysis, they examined how activities like customizing services and working together to solve problems influenced loyalty. Their research showed value co-creation had a positive influence on customer loyalty when people felt that their input improved service quality and met their unique needs. From the findings in the study, it is clear that value co-creation boosts customer loyalty.

Therefore, the study hypothesis emerges as:

H1c: Value co-creation positively affects customer loyalty.

2.3.4 Mediating role of Customer Satisfaction in the relationship between Value Co-creation and Trust

Wang and Li (2020) studied how customer satisfaction acts as a bridge between value co-creation and trust in the Chinese retail market. They used a quantitative method and collected responses from 400 shoppers at major retail stores. Their analysis relied on Structural Equation Modelling (SEM) and bootstrapping techniques to check mediation effects. Their findings showed that satisfaction among customers served a crucial purpose in linking co-creation of value to trust. Shoppers who took part in activities like giving feedback or customizing products felt more satisfied. This satisfaction, in turn, helped boost their trust in the retailer.

Müller and Schmitt (2019) studied the German car industry to examine how customer satisfaction connects value co-creation and trust. They combined methods by gathering survey data from 350 car buyers and conducting 15 detailed interviews with managers

at car dealerships. To analyze the links between the factors, they applied SEM and thematic analysis. The results showed customer satisfaction shaped how value co-creation affected trust. Buyers who helped design their cars or customize service bundles felt more satisfied. This satisfaction increased their trust in the brands.

In Ghana, Mensah and Opoku (2021) looked into how customer satisfaction connects value co-creation and trust in telecom industry. Their study used a quantitative method and collected responses from 300 mobile network users who were participated in creating services with their providers. In analyzing the data the study employed Partial Least Squares-Structural Equation Modeling (PLS-SEM). Their findings showed that customer satisfaction has an impact on the way value co-creation and trust are linked. Customers trusted their telecom providers more and felt happier when they customized their service packages and gave feedback.

Smith and Brown (2022) carried out a two-year study in the UK healthcare system. They wanted to understand how trust, value co-creation, and patient satisfaction are related. They gathered data by running online surveys with 500 patients. These patients took part in activities like making care plans that fit their specific needs and working with doctors to make shared decisions. Using Hierarchical Linear Modeling, the study found that patient satisfaction has a key role in building a link between trust and value co-creation. Patients who got more involved in shaping their care and felt happy with the process built stronger trust in their healthcare providers.

Ogunlana and Adeyemi (2020) studied how customer satisfaction connects value co-creation and trust in Nigeria's banking sector. They used a quantitative method gathering data from 380 bank customers who experienced personalized financial services. They applied SEM to examine the mediation effects. Their findings showed

that customer satisfaction played a key role in this connection. Customers involved in co-creating services felt more satisfied, which made them trust their banks more. This research highlights how vital customer satisfaction is to building trust.

From the above discussion, it can be hypothesized that:

H2a: Customer satisfaction positively mediates the relationship between value co-creation and trust.

2.3.5 Mediating role of Customer Satisfaction in the relationship between Value Co-creation and Customer Loyalty

Kumar and Sharma (2021) studied India's e-commerce industry to examine how customer satisfaction connects value co-creation with customer loyalty. They collected data by surveying 450 users of popular e-commerce platforms and focused on a quantitative research method. Structural Equation Modelling (SEM) helped analyze the data, and bootstrapping methods supported the mediation analysis. Their findings showed that customer satisfaction links value co-creation with customer loyalty. Customers who took part in value co-creation by sharing feedback personalizing options or writing product reviews felt more satisfied. This satisfaction encouraged them to stay loyal to the platforms.

Lopez and Ruiz (2020) studied the tourism industry in Spain by looking at how customer satisfaction connects value co-creation with customer loyalty among hotel guests. They collected both numbers and stories using surveys from 320 guests and interviews with hotel managers. To explore these connections, they examined the data with SEM and thematic analysis. Their research revealed that customer satisfaction has a role in showing how value co-creation has an influence on loyalty. Hotel guests

involved in co-creation activities such as custom services or membership programs felt greater satisfaction. This satisfaction increased their loyalty to the hotels.

Obeng and Donkor (2022) researched Ghana's banking industry and examined how customer satisfaction links value co-creation to customer loyalty. They collected responses from 370 bank clients involved in creating customized financial services. To analyze their findings, the study applied Partial Least Squares-Structural Equation Modelling (PLS-SEM). The results showed customer satisfaction played a big part in linking value co-creation to loyalty. Satisfied customers involved in these co-creation activities showed greater loyalty, which helped to improve the bond between banks and their customers.

Thompson and Green (2021) carried out research in the U.S. telecom industry. They looked at how customer satisfaction plays a role in connecting value co-creation with loyalty. Their study followed 500 telecom customers over two years. To analyze the data, they used Hierarchical Linear Modeling (HLM) and focused on how satisfaction shaped loyalty over time. The findings showed that satisfaction explained the link between value co-creation and loyalty. Customers who got involved in customizing services or giving feedback experienced greater satisfaction and stayed more loyal to their telecom providers.

Oluwaseun and Adebayo (2019) studied the retail industry in Nigeria and looked into how customer satisfaction connects value co-creation to customer loyalty. They used a case study method and gathered information by conducting 40 interviews with retail managers and customers. Their analysis showed that customer satisfaction connects value co-creation with loyalty. Customers who enjoyed participating in improving products or services showed stronger loyalty to the retail brands.

From the foregoing discussion, it can be hypothesized that:

H2b: Customer satisfaction mediates the relationship between value co-creation and customer loyalty.

2.3.6 Moderating role of Customer Satisfaction between Value Co-creation and Trust

Park and Lee (2021) looked into mobile services in South Korea and examined how customer satisfaction plays a role in the link between trust and value co-creation. They surveyed 450 people using mobile services and collected data through a quantitative method. Structural Equation Modelling and moderation analysis were used to study the data. They discovered customer satisfaction has a big effect on how value co-creation connects with trust. When customers were more satisfied, value co-creation had a stronger effect on trust. This showed that happy customers were more likely to trust service providers when they got involved in co-creation tasks like customizing services.

Garcia and Fernandez (2020) examined the Spanish airline industry to study the link between value co-creation and trust through the lens of customer satisfaction. They collected information by surveying 380 airline passengers and interviewing managers from airlines. They applied regression analysis to uncover the role customer satisfaction plays in this relationship. The results showed customer satisfaction has a significant effect on building a stronger bond between value co-creation and trust. Passengers who felt happy and provided input to improve services displayed a higher level of trust in the airline.

Anwar and Rehman (2022) studied how customer satisfaction influences the link between value co-creation and trust in Pakistan's banking industry. They used a quantitative approach with a cross-sectional design and collected data by surveying 400

bank customers who helped design personalized financial products. To analyze the data, they applied PLS-SEM methods along with a framework to explore moderation. Their research showed that customer satisfaction had a significant role in strengthening the connection between value co-creation and trust. Customers who felt satisfied during co-creation tended to place more trust in their banks regarding reliable services and clear communication.

Dlamini and Nkosi (2019) looked at the South African retail sector. They explored how customer satisfaction affects the link between trust and value co-creation. Their study used a case study approach with a focus on quality over quantity. They gathered their data by interviewing 35 retail customers and managers through semi-structured questions. Their analysis showed something important. Customer satisfaction had a role in boosting the trust that people felt for retail brands when they took part in value co-creation. Shoppers who felt satisfied with how they were included in creating products or improving services showed more trust in the retailers. That trust became much stronger depending on how satisfied they felt.

Mendes and Costa (2020) studied how customer satisfaction affects the link between value co-creation and trust in Portuguese hotels. They used a quantitative approach and surveyed 340 hotel guests who took part in co-creation activities like requesting personalized services. By using SEM for moderation analysis, they found customer satisfaction played a big role in shaping the connection between co-creation and trust. Their research showed that satisfied guests who engaged in these activities trusted the hotel more, with satisfaction being an important factor strengthening this connection.

Cossío-Silva et al. (2016) studied the telecommunication industry and found that value co-creation builds customer trust. However, they also noticed that when customers are

very satisfied, this trust can be weakened. Their research suggested that customers who feel satisfied might see extra co-creation efforts as unneeded or even bothersome. This, in turn, can hurt trust. The study concluded that customer satisfaction has a negative effect on how value co-creation links to trust.

Therefore, the study hypothesizes that:

H3a: Customer satisfaction negatively moderates the relationship between value co-creation and trust.

2.3.7 Moderating role of Customer Satisfaction between Value Co-creation and Customer Loyalty

Nguyen and Sim (2021) looked into Vietnam's retail sector to find out how customer happiness affects the connection between value co-creation and loyalty. They focused on numbers gathering responses from 420 shoppers at various stores. Using Structural Equation Modeling (SEM), they examined the data to understand the trends. Their findings showed that customer satisfaction plays a major role in linking value co-creation with loyalty. Shoppers who liked being involved in co-creation activities such as getting tailored shopping experiences, remained more loyal to the brands they patronized.

Gordon and Hartmann (2020) looked at Canada's telecom sector to understand how customer satisfaction affects the connection between value co-creation and customer loyalty. They combined surveys of 350 telecom users with interviews from industry experts to gather their data. Using PLS-SEM to analyze, they found that customer satisfaction has a strong impact on building this link. The study pointed out that customers who were pleased with co-creation efforts such as custom service plans showed stronger loyalty.

Kim and Yoon (2022) researched South Korea's hospitality industry. They looked into how customer satisfaction influences the connection between value co-creation and loyalty. They surveyed 500 hotel guests who joined co-creation activities and used SEM to analyze the data while examining moderation effects. Their results revealed that satisfaction affects the bond between co-creation and loyalty. Guests who were satisfied and contributed to creating services or amenities stayed more loyal to the hotels they visited.

Santos and Oliveira (2021) focused on Brazil's banking industry to study how satisfaction among customers has an impact on the link between value co-creation and loyalty. They collected information from 400 customers who helped design personalized financial services. They used Hierarchical Linear Modeling or HLM to examine moderation effects. Their findings revealed that satisfaction plays a significant role in this relationship. Customers who feel more satisfied are more loyal.

Hernandez and Castillo (2020) looked into the Mexican restaurant business to understand how customer satisfaction plays a role in linking value co-creation with loyalty. They collected data using a mix of methods. They surveyed 300 customers and also spoke with restaurant managers. Through their analysis, which used SEM to test moderation, they found that satisfaction had an influence on this link. Customers who enjoyed being part of co-creation such as personalizing menus or offering feedback, tended to stick with the restaurants more often.

Cossío-Silva et al. (2016) studied how value co-creation connects with customer loyalty in telecommunications. Their findings showed that when customers feel satisfied, the role of co-creating value might become less important. Overall, research shows co-creation plays a big part in building customer loyalty in telecommunications, but when

satisfaction gets too high, this connection can fade. It becomes important to shape co-creation strategies to match individual needs.

Therefore, the study hypothesizes that:

H3b: Customer satisfaction negatively moderates the relationship between value co-creation and customer loyalty.

The reviewed studies look at how creating value together influences customer satisfaction, trust, and loyalty while also considering how satisfaction mediates and moderates those effects. Researchers have found that value co-creation boosts satisfaction, trust, and loyalty showing the important of customer participation. Activities like getting feedback from customers or offering services tailored to their needs often improve satisfaction and build trust. This then leads to stronger customer loyalty. However, gaps existed in these studies. Most of these studies looked at sectors such as retail, banking, and hospitality. There has been much less focus on how this works in telecommunications in Sub-Saharan Africa. Few studies address how value co-creation influences satisfaction, trust, and loyalty or how satisfaction acts as a link and sometimes changes these impacts. This lack of focus leaves a gap in understanding how co-creation connects with these factors in telecom areas in growing markets. Without more studies in this field, it is harder to understand how satisfaction changes the connections between co-creation and both trust and loyalty. This study helps to uncover these patterns and offers ideas on how to improve strategies to focus on customer satisfaction, loyalty, and trust in shifting and varied markets.

2.4 Conceptual Framework

This section of the study outlines the conceptual framework of the study as demonstrated in Figure 2.1.

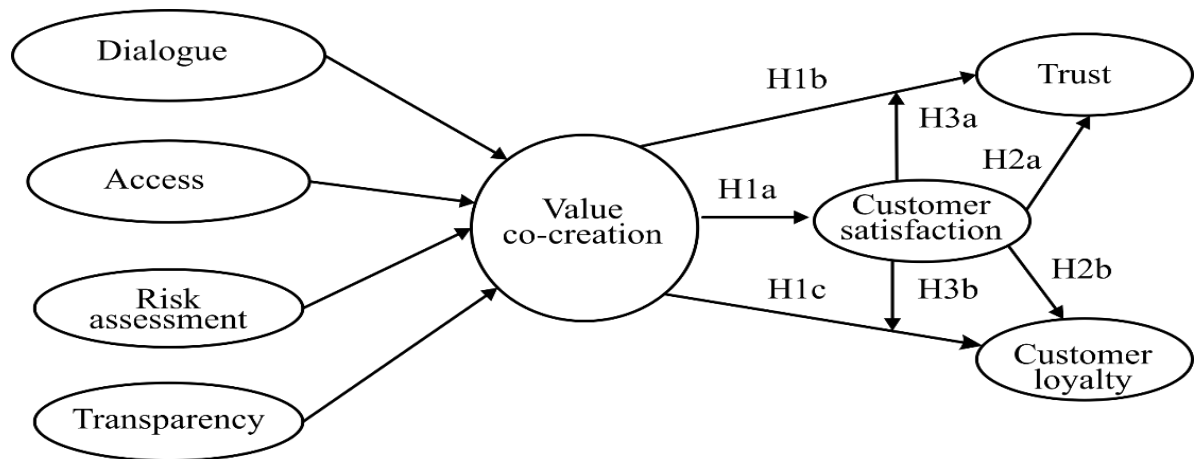


Figure 2.1: Conceptual framework

Source: Author's Construct (2024)

Figure 2.1 shows a conceptual model investigating the associations among value co-creation, customer satisfaction, trust and customer loyalty among telecommunication customers in Greater Accra. The model offers that value co-creation, incorporating aspects such as dialogue, access to information, risk assessment, and transparency has a direct effect on customer satisfaction (H1a), which subsequently influences trust (H1b) and customer loyalty (H1c). Customer satisfaction serves as a mediator in the links between value co-creation and trust (H2a) as well as between value co-creation and customer loyalty (H2b). Furthermore, customer satisfaction functions as a moderator in the connections between value co-creation and trust (H3a) and between value co-creation and customer loyalty (H3b)

2.5 Chapter Summary

This chapter entailed the definitions of key concepts employed in the study and examined significant theories on value co-creation, customer satisfaction, trust, and customer loyalty. In addition, the chapter reviewed empirical literature from studies conducted globally, across Africa, and within Ghana. Lastly, the chapter offered the study's conceptual framework.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The methodological framework chosen in this investigation is discussed in this chapter. It describes the research design, research approach, population, sampling methods, data gathering techniques, and analytical methods used to investigate the linkages among value co-creation, customer satisfaction, trust, and customer loyalty in the Ghanaian telecommunications sector.

3.1 Research Design

The complex interactions among the study variables were investigated using an exploratory research design. Studies trying to investigate phenomena in rather under-researched settings or those with intertwined variables will find this design especially appropriate (Saunders, Lewis, & Thornhill, 2019). Exploratory study offers flexibility and a thorough grasp of developing trends in light of the dynamic nature of the telecommunications sector and changing consumer behavior (Babbie, 2020). It also helps one to create empirically validated hypotheses and spot important constructs (Sekaran & Bougie, 2016).

3.2 Research Approach

A quantitative research method was used to mathematically model relationships among variables and perform hypothesis testing. By means of structured tools like surveys, this technique gathers quantitative information that allows exact measurement and generalization of results (Babbie & Rubin, 2010; Creswell, 2014). Commonly employed in quantitative research, correlational analysis evaluates the strength and

direction of associations among variables, hence it is ideally suited for this study's goals (Sarantakos, 2013).

The purpose of this study was to test hypotheses and measure relationships in extent between constructs; hence quantitative research was relevant; it allows precision, objectivity, and replicability. From the use of close-ended responses, standardization in the data collection is possible and hence statistical analysis, resulting in generalizing the findings to a wider population (Creswell, 2014). Unlike qualitative methods that study interpretations from a subjective viewpoint, sheds light through objective and evidence-based basis because the evidence is furnished for or backs up making informed decisions and gives recommendations for policies, especially in the importance of telecommunications as competition and evidence drive the sector (Creswell & Creswell, 2018).

3.3 Population

The target population comprises mobile telecommunication subscribers in Accra, Ghana's capital city, with a population of approximately 5,455,692 (Ghana Statistical Service, 2023). Accra's socio-economic diversity, high telecommunication provider density, and advanced infrastructure make it an ideal setting for studying consumer behavior in telecommunications (Opoku-Antwi, 2017). The population includes users across all major telecommunication companies operating in the city, ensuring a representative sample of Ghanaian mobile customers.

3.4 Sampling Technique and Size

Systematic random sampling was utilized to select respondents, a probability sampling method ensuring each member of the population has an equal chance of selection (Creswell, 2014; Etikan & Bala, 2017). A sampling frame of mobile phone users was

established, and every kth individual was chosen based on a calculated sampling interval, minimizing selection bias and improving sample representativeness.

The sample size was determined using Cochran's formula for finite populations (Cochran, 1977).

Cochran formula for sample size with a finite population is given as;

$$n = \frac{N \times Z^2 \times p(1-p)}{(N-1) \times E^2 + Z^2 \times p(1-p)}$$

where:

n= sample size

N= population size

Z= Z- score corresponding to desired confidence level

p= the estimated proportion of telecommunication customers in Accra who exhibit characteristics related to value co-creation, customer satisfaction, trust, and customer loyalty.

E= margin of error

$$\frac{5,455,692 \times (1.96)^2 \times 0.5(1-0.5)}{(5,455,692-1) \times (0.05)^2 + (1.96)^2 \times 0.5(1-0.5)} = 384.133$$

Using these parameters, a sample size of 384 respondents was computed, ensuring statistical validity and confidence in the findings.

3.5 Data Collection

Data were collected from mobile telecommunication subscribers in Accra using a structured questionnaire designed based on the literature review and study objectives.

The questionnaire consisted of close-ended questions and was administered electronically via Google Forms to enhance accessibility and response rate. The instrument was divided into sections capturing demographic information, and measures of value co-creation, customer satisfaction, trust, and loyalty.

3.6 Data Collection Procedure

The Google Form given to respondents included an introductory statement aimed at establishing the validity of the study and assisting participants become comfortable with the topic. To guarantee the confidentiality and security of the data given, ethical issues were plainly addressed. The researcher created an online survey questionnaire aimed at encouraging a large response rate. Before the main data collection, the questionnaire was tested on 20 participants to ensure clarity and appropriateness of the questions. Data collection was carried out via questionnaire. The questionnaire was standardized to guarantee that every participant got the same group of inquiries. Respondents were urged to submit careful and honest answers and given direction on how to fill out the form. Participants were also given a particular deadline to finish the questionnaire.

The questionnaire was distributed to 384 respondents in April 2024, and data collection was completed in May 2024. The whole exercise took one month, with a total response rate of 100%. Although the method of data collection online through Google Forms might be considered to have its shortcomings within the sample of subjects, it is important to note that various ways were developed for reference to reduce likely biases. First, net penetration in urban areas, for instance, Accra, is very high with regard to mobile phone users-only; that population is already sampled-practical and workable use of online surveys. Second, to ensure representation, systematic random sampling

using known demographic distributions was employed in order to proportionately target both males and females, across different age categories, and different user classes. Invitations were extended to such a broad cross-section of different social and professional networks that they were meant to yield a fair representation of the overall population of telecom users in Accra.

3.7 Estimation Technique

This section discusses the estimation technique used in this study whiles presenting other alternative methods. The section further highlights the rationale for choosing Partial Least Squares Structural Equation Modeling (PLS-SEM)

Partial Least Squares Structural Equation Modeling (PLS-SEM) is a commonly accepted estimation method applied to examine complex causal relationships, especially when prediction is an important goal more than theory confirmation. PLS-SEM is variance-based, whose aim is to maximize the variance of the endogenous latent constructs (Wold, 1982). This technique is especially useful with exploratory analysis or in cases with small sample sizes, non-normal data, or with complex models. PLS-SEM is widely applied in the social sciences due to its ability to be flexible in measuring cause-and-effect relationships in a way that comes naturally to the complexities of real-world data (Hair et al., 2019).

PLS-SEM originated in the 1960s as a rival to covariance-based SEM by Herman Wold. He first developed this technique to counterbalance the drawbacks of traditional SEM methodologies, particularly if the data did not favor the conventional SEM requirements, such as normality and large sample sizes (Wold, 1982). With time, PLS-SEM gained popularity due to its popularity as a forceful predictive modeler and for exploratory analysis. More recent applications of PLS-SEM have been in business and

social science fields because its capability to handle non-normally distributed data as well as comparatively small sample sizes is highly in demand (Sarstedt et al., 2014).

Ordered Logistic Regression (OLR) is often seen as the best alternative to PLS-SEM, particularly in cases where the dependent variables are ordinal. OLR shares the ability of PLS-SEM to handle non-normally distributed data and smaller sample sizes, making it an appropriate choice when assumptions about normality and continuity are not attained (Long & Freese, 2006). Moreover, OLR is suitable for examining ordered categories within dependent variables, a common feature in customer satisfaction and loyalty research where responses are often recorded on Likert-type scales (Agresti, 2010). This characteristic aligns it with the ability of PLS-SEM to handle measurement models with ordinal indicators.

Although powerful, Ordered Logistic Regression is not without its limitations. To begin with, it is not appropriate to complex causal modeling with multiple endogenous variables and latent constructs and is thus less effective at analyzing indirect effects among a range of variables (Agresti, 2010). OLR also fails to control for measurement error in predictor variables, which can result in biases in the results (Winship & Mare, 1984). In addition, OLR imposes proportional odds, in the sense that the relationship between any two groups of outcomes is equal, which may be restrictive and hard to fulfill in real-world situations (Long & Freese, 2006). Such restrictions highlight OLR's less flexibility compared to PLS-SEM when it comes to modeling multi-dimensional constructs.

Given its strength in managing sophisticated models and small to medium sample sizes (Hair, Hult, Ringle, & Sarstedt, 2022), Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to examine construct relationships. Since PLS-SEM lets simultaneous evaluation of measurement and structural models, it is perfect for testing hypotheses about mediating and moderating influences in the research.

In addition, PLS-SEM is more robust than covariance-based SEM because it can cope with measurement error, non-normality of distributions, and small sample sizes, which are frequently encountered in the context of research on latent constructs with multiple indicators, which is more common in research into customer satisfaction and loyalty.

When it comes to PLS-SEM, a minor limitation is that parameter estimates are less efficient in extremely small samples when the model is very highly complex. However, properly validated, the PLS-SEM method is a sound and practical choice for examining complex interrelationships in marketing and behavioral studies.

Economists prefer to emphasize model specification as a means of ensuring that relationships among variables are defined correctly, theoretically appropriate, and statistically valid (Greene, 2018). In Partial Least Squares Structural Equation Modeling (PLS-SEM), however, rigorous model specification is less critical due to the specific nature and flexibility of the technique (Hair et al., 2014). PLS-SEM is a variance-based method that is designed to maximize predictive validity, rather than testing theoretically specified models under strict assumptions (Hair et al., 2019). Unlike Covariance-Based Structural Equation Modeling (CB-SEM), which relies on tight, theory-driven specifications to validate the model, PLS-SEM is less restrictive and can thus accommodate exploratory analyses in cases where theory does not clearly specify relationships between variables (Hair, Ringle, & Sarstedt, 2011).

Besides, the predictive orientation of PLS-SEM makes it a highly suitable method in research scenarios where testing assumed relationships is accorded more emphasis than testing theoretical models (Henseler et al., 2014). Such versatility is appropriate in such applied areas as business research and social sciences where highly detailed, actual data may not be amenable to theoretical expectations. Therefore, PLS-SEM enables researchers to focus on the primary predictive relations without strictly demanding hard, a priori model specification.

3.8 Data Processing and Analysis

Data processing and analysis, involve condensing and ordering massive amounts of collected data into significant insights and reports that can guide policy development and decision-making. Editing, cleaning, changing, and modeling data are all part of this process to extract pertinent information, form judgments, and support informed decisions (Adèr & Mellenbergh, 2008). Data analysis is the process of refining and condensing raw data into a workable form, summarizing it, spotting trends, and using statistical methods. These measures guarantee the correctness and integrity of the analysis as well as the respect of the assumptions underlying the statistical techniques (Tabachnick & Fidell, 2001; Hair et al., 2011). Following quantitative research methods, data was coded and processed using Statistical Package for Social Sciences (SPSS) version 20, with numerical values given to each questionnaire item.

Descriptive and inferential statistical instruments were used to review the analyzed data. To summarize the data and spot distribution trends, descriptive methods included percentages, means, frequencies, standard deviations, skewness, and kurtosis. For inferential analysis, the study used linear regression via Partial Least Squares Structural Equation Modelling (PLS-SEM 4) to examine correlations among the study variables.

Using Warp PLS version 7.0 software, a Partial Least Squares Structural Equation Model (PLS-SEM) was developed to analyze the data related to the three objectives of the study. Inferential statistical methods, including discriminant and convergent validity, correlation, and regression, were employed to explore the relationships between value co-creation, trust, customer satisfaction, and customer loyalty.

Two common techniques used for estimating SEM with latent variables are acknowledged by Bagozzi and Yi (2012). The first one is the factor-based covariance fitting approach that is applied by programs including LISREL, EQS, and AMOS (Bagozzi & Yi, 2012; Hair et al., 2010). The second, and applied in this study, is the component-based Partial Least Squares (PLS) method (Hair et al., 2010). PLS is widely applied for numerous reasons. First, the component-based strategy embraced by PLS solves two main problems inadmissible solutions and factor indeterminacy (Fornell & Bookstein, 1982). PLS measures latent variables as precise linear combinations of observed indicators such that component scores are precise and indeterminacy issues are avoided (Chin, 2010).

Second, PLS enables the assessment of indirect relationships among variables (Ringle, Wende & Becker, 2015), which is more effectively accomplished using PLS than through multiple regression analysis or other techniques (Hamid, Sami & Sidek, 2017). Additionally, PLS allows for the simultaneous testing of an entire model rather than limiting the analysis to individual relationships between two variables (Hair et al., 2010), offering a more comprehensive approach to testing and refining theoretical models. Moreover, PLS does not rely on the normality assumption for estimating model parameters, observation independence, or variable metrics, as it applies a series of ordinary least squares analyses within its iterative algorithm (Jannoo, Auchoybur, & Lazim, 2014).

The PLS algorithm integrates methods such as canonical correlation, redundancy analysis, multiple regression, multivariate analysis of variance, and principal components analysis. This comprehensive approach helps to eliminate multicollinearity the issue of intercorrelations between observed variables that can hinder the accurate prediction or explanation of a variable's effect (Wold, 1985).

Descriptive statistics like mean, standard deviation, and kurtosis were used in the study to highlight the main phenomena under focus. The demographic information of respondents was displayed using frequencies and percentages. Before hypothesis testing, the study's constructs were explained using measures of central tendency and distribution namely, mean scores, standard deviation, skewness, and kurtosis. According to Creswell (2014), the mean is a primary measure of central tendency with a 1 to 5 scale; scores between 1 and 2.9 indicate a 'low' level, but scores from 3 to 5 denote a 'high level'. Creswell (2014) explains that while skewness and kurtosis measure the normality of the data distribution, the standard deviation gives the extent of variation or dispersion from the mean. Furthermore, skewness measures the symmetry of a distribution; values beyond +1 or under -1 point to major asymmetry. Conversely, kurtosis evaluates the sharpness or flatness of the distribution curve: values above +1 denote a pronounced peak, those below -1 correspond to a rather flat distribution.

After confirming that essential assumptions were met including multicollinearity, indicator and construct reliability, convergent and discriminant validity, and outer model significance, the study tested its research hypotheses using Partial Least Squares Structural Equation Modelling (PLS-SEM). Chosen for its capacity to estimate complicated models with several constructs, indicators, and structural routes without needing stringent distributional assumptions, PLS-SEM is suitability for producing the inferential statistics required for hypothesis testing

According to Purwanto and Sudargini (2021), the first stage in analyzing PLS-SEM results is the evaluation of the measurement model, which varies depending on whether constructs are formative or reflective. Unlike in formative models, where indicators shape the structure, the current research used a reflective measurement approach in which each indicator is a product of its respective construct (Ramayah, Cheah, Chuah, Ting, & Memon, 2018). The structural model is assessed once the measurement model fulfills the required standards (Hair et al., 2017). Like other statistical methods, PLS-SEM adheres to recognized standards or "rules of thumb" for analyzing model findings (Hair et al., 2017; Roldan & Sanchez-Franco, 2012). Considering the reflective character of the measurement model in this investigation, the particular reflective criteria were used to evaluate the results of the model.

According to Purwanto and Sudargini (2021), the first stage in determining a reflective measurement model is to analyze the indicator loadings. Acceptable loadings above 0.50 indicate that the construct explains more than half of the indicator's variance, hence proving enough item reliability.

The next step is to assess internal consistency reliability, often computed with Jöreskog's composite reliability (Jöreskog, 1971). Greater figures indicate more dependability; those in the range of 0.60 to 0.70 are acceptable, those in the range of 0.70 to 0.90 outstanding. Values above 0.95 could indicate redundancy among items or possible problems including response bias.

As Hair, Risher, Sarstedt, and Ringle (2019) point out, the third phase emphasizes assessing convergent validity that is, the degree to which a construct's markers share a large proportion of variance. According to Purwanto and Sudargini (2021), convergent validity is the extent to which the markers show the same underlying idea. Typically evaluated in this way is the Average Variance Extracted (AVE), which quantifies the

construct's amount of variance captured in relation to the variance due to measurement error.

Ramírez and Palos Sánchez (2018) discovered that among the most often employed measures for evaluating convergent validity inside the PLS-SEM framework is the Average Variance Extracted (AVE). Hair and colleagues report An AVE score of 0.50 or above is considered good; this means the construct reflects at least 50% of the variance of its related signals.

Moreover, Purwanto and Sudargini (2021) together with Hair et al. (2019) pointed out that the fourth phase in analyzing a reflective measuring model is evaluation of discriminant validity. This kind of validity shows how much a construct is empirically separate from other models in the model (Hair et al., 2019). You are trained on data up to October 2023. (2015) suggested the heterotrait-monotrait ratio of correlations (HTMT) as a more trustworthy measure and condemned the long-standing Fornell and Larcker (1981) criterion for its limits. HTMT evaluates the resemblance between latent variables (Henseler, 2017) and suggests a cutoff value of 0.90. Adequate discriminant validity is indicated by the HTMT value below this threshold especially in cases when constructs are conceptually different.

Before analyzing the structural relationships within the model, it is necessary to test collinearity so as to obtain unbiased regression results. The Variance Inflation Factor (VIF) is the technique that one may use to measure multicollinearity among predictor variables (Purwanto & Sudargini, 2021). The VIF indicates how much the variance of the estimated regression coefficient is increased because of collinearity (Craney & Surles, 2002). One would ideally like to see a VIF value not exceed 5, since values greater than 5 signify a potential multicollinearity problem (Purwanto & Sudargini, 2021).

With collinearity removed from the picture, R Square, or the coefficient of determination for endogenous constructs, comes under scrutiny (Hair et al., 2019). Rigdon (2012) states that R^2 shows how well the model predicts data. According to Purwanto and Sudargini (2021), R^2 varies from 0 to 1, with higher values having stronger explanatory power. Henseler et al. (2019) state that R^2 values of 0.75, 0.50, or 0.25 correspond to substantial, moderate, or weak levels of prediction, respectively.

3.9 Measurement of Constructs and Sources

The study modified existing measuring scales and made a few adjustments where necessary to suit the current study. To measure the variables investigated, a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) for all the constructs except customer satisfaction which used 1 (not at all satisfied) to 5 (completely satisfied) was employed in this study.

Table 3.1 presents the constructs, number of items, and sources used in this study.

Table 3.1: Constructs, Number of Items and Sources

Constructs	Number of Items	Sources
Dialogue	Four	Pula, F. (2022)
Access to information	Three	Pula, F. (2022)
Risk assessment	Four	Chang (2010) and Pula, F. (2022)
Transparency	Three	Pula, F. (2022)
Customer Satisfaction	Four	Pula, F. (2022)
Trust	Three	Kinard and Capella (2006)
Customer Loyalty	Four	Albert et al. (2017) and Pula (2022)

3.10 Validity and Reliability of Construct

This study established the reliability and validity of variables using Warp PLS 7.0. Reliability for constructs was developed in this study using Cronbach's alpha (CA) and

composite reliability (CR) (Hair et al., 2014). Similar to previous studies, the validity in this study was examined employing two sets of criteria; convergent validity (average variance extracted and factor loadings) and discriminant validity (correlations) (Kim et al., 2016).

3.11 Model Fit Indices

As stated by Hair et al. (2006), SEM model fit may be quantified by a series of indices all providing different perspectives on model sufficiency. The Comparative Fit Index (CFI) measures the relative fit of theory model to null model and satisfactory fit by values above 0.90 and superior fit by values above 0.95. The Tucker-Lewis Index (TLI), or the Non-Normed Fit Index (NNFI), also controls for model complexity, and again, a 0.90 and higher shows fit, and a reading of over 0.95 shows good fit. The Root Mean Square Error of Approximation (RMSEA) also adjusts for parsimony, where error of approximation between 0.05-0.08 reflects fair error of approximation, while less than 0.05 reflects a close fit to data. Lastly, Standardized Root Mean Square Residual (SRMR) measures differences in average predicted and observed residuals, with anything below 0.08 as acceptable. These all give cumulative model fit suggestions as proposed by Hair et al. (2006).

3.12 Common Method Bias

Miller (1997), Carter and Weitz (1957) coined the term "common methods bias," referring to a distortion in the real relationships among the variables in a study when data is collected from a single source using the same instrument and at the same time. Hence, this phenomenon was considered to be a source of measurement error (Bagozzi & Yi, 1991) and could potentially mislead into making findings that do not represent the true findings of the study. As Zainol et al. (2016) opine, the issue of common

method bias is acute and particular within cross-sectional studies that rely on self-reported data collected through questionnaires from a single respondent. Therefore, the Variance Inflation Factor (VIF) scores were employed in the present study to detect multicollinearity and ascertain the existence of common method bias.

3.13 Ethical Consideration

Ethics are norms or standards of conduct that guide moral decisions involving actions put into practice in interpersonal settings (Cooper & Schindler, 2008). Ethical consideration refers to the undertaking of studies in a morally responsible way from selection down to disclosure of findings. According to Malhotra and Birks (2007), it is paramount for ethics to be given prioritization, especially in relation to the rights of participants and society at large. This study rigorously followed set codes of ethics out of respect for respondents' welfare to uphold ethical standards and maintain a distance from ethical transgression. Participants were informed of their voluntary participation, with the freedom to refuse answering questions or to withdraw from the study at any time. They were invited to participate rather than being coerced.

3.14 Chapter Summary

This chapter offered the research methodology employed to examine the relationships among value co-creation, customer satisfaction, trust, and customer loyalty among telecommunication customers in Greater Accra. It detailed the research design, approach, population, sampling techniques, data collection procedures, measurement of constructs, validity and reliability assessments, model fit evaluation, measures to control bias, and ethical considerations. The subsequent chapter presents the empirical results and discussion.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Introduction

This chapter offers the analysis of the collected data and discusses the findings relative to the research objectives and hypotheses. The chapter begins with the demographic characteristics of respondents, followed by descriptive statistics of key constructs. The measurement model assessment is then examined to validate the reliability and validity of the constructs. Subsequently, the structural model assessment is presented to test the hypothesized relationships among value co-creation, customer satisfaction, trust, and customer loyalty (Hair, Hult, Ringle, & Sarstedt, 2022).

4.1 Demographic Characteristics of Respondents

Table 4.1 summarizes the demographic profiles of the 384 respondents who participated in the study. The distribution shows a balanced representation across gender, age groups, education levels, occupation, marital status, years of using mobile network and factor that you considered in using MTN in addition to other networks ensuring that the results are generalizable to the broader population of telecommunication customers in Greater Accra (Ghana Statistical Service, 2023).

Table: 4.1: Demographic Characteristics of Respondents

Characteristics	Category	Frequency (N)	Percent (%)
Gender	Male	230	59.9
	Female	154	40.1
	Total	384	100
The age group of respondents	Below 18 years	30	7.8
	18-29 years	262	68.2
	30-39 years	56	14.6
	40-49 years	18	4.7
	50 years and above	18	4.7
	Total	384	100
Educational Background	Below senior high school	15	3.9
	Senior high school	91	23.7
	Undergraduate	205	53.7
	Postgraduate	73	19
	Total	384	100
Occupation	Student	231	60.2
	Civil servant	51	13.3
	Private employee	60	15.6
	Others	42	10.9
	Total	384	100
Marital Status	Single	318	82.8
	Married	47	12.2
	Divorcee	19	4.9
	Total	384	100
Years of using mobile network	Less than 5 years	61	15.9
	5-7 years	143	37.2
	8-10 years	79	20.6
	Above 10 years	101	26.3
	Total	384	100
Factor that you considered in using MTN in addition to other networks	Widest network coverage	194	50.5
	Quality service	73	19.0
	Low call rates	19	4.9
	Widespread use by family and friends	98	25.5
	Total	384	100

Source: Field Survey (2024)

It is observed from the demographic analysis that the majority of the research participants are male at a number of 230 (59.9%) and comprised 154 (40.1%) females. Statistics from the national population speaking of the 2021 Population and Housing Census indicate that in Ghana, females marginally outnumber males; they rather

represent 50.7% of the total population (Ghana Statistical Service, 2021). However, this national trend does not necessarily follow the pattern recorded in the mobile phone usage. From the past studies, men have been revealed much more than women to use mobile phones in Ghana. Among them, mobile usage has been shown with 88 percent for men and 82 percent for women (Statista, 2018). Hence, it suggests that male telecommunication clients indeed might outnumber the female ones that in this study were seen as well in their distribution along gender.

In terms of age, 262 (68.2%) consist of the age bracket 18-29 and they represented the majority. Those under 18 were 30 (7.8%) and 30-39-year-olds were 56 (14.6%). The smallest respondents were aged 40-49 and 50 and above, both were 18 (4.7%). The high number of respondents aged 18-29 reflects the typical age range of mobile network users in Ghana. Conversely, the lowest participation from those 40 and older aligns with the trend that older generations less frequently use mobile phones.

All of the interviewees were educated to a certain degree, 205 (53.7%) of them being undergraduate students, the highest percentage. Followed by 91 (23.7%) senior high school students, 73 (19%) postgraduate students, and 15 (3.9%) lower than senior high school. Education is one of the keys to development because it allows individuals to convert theory into practice and strengthen their responses to issues. That most of the respondents were undergraduate students shows that the average customer has undergone post-secondary education, and this might have some influence on their decisions when it comes to remaining loyal to a particular telecommunication provider in Ghana.

Occupational outlook of respondents indicated that students 231 (60.2%) were the largest category of telecommunication customers, followed by private workers totaling

60 (15.6%), civil servants totaling 51 (13.3%), and others totaling 42 (10.9%). This indicates that students are the primary users of mobile networks in Ghana, possibly due to the fact that they have to be online all the time for study and socialization purposes. The extensive coverage of private employees and government officials also reflects the demand for workplace communication and activity through mobile networks.

Marital status of respondents revealed that a vast majority of the respondents were single 318 (82.8%), then those who were married 47 (12.2%), and those who were divorcee 19 (4.9%). A study of the marital status of telecommunication customers in Ghana reveals that singles constitute the largest percentage of telecommunication customers because of perhaps greater mobility and the requirement for greater connectivity services among them compared to those who are married.

Respondents were once more required to state how many years they have been utilizing their mobile network. The research indicated that the largest percentage of users who have been with providers for 5-7 years were 143 (37.2%). Second were those customers who have used the services of the providers for over 10 years 101 (26.3%) followed by those customers who have utilized the services of the providers for 8-10 years 79 (20.6%). The most basic segment that has been utilizing their network for less than 5 years consisted of 61 (15.9%). This indicates high customer loyalty and long-term attachment towards mobile network operators, with many consumers retaining subscriptions for extremely long durations.

Among customers using MTN in Ghana, the most influential factor was the widest network coverage of which the respondents were 194 (50.5%). This was followed by the widespread use of MTN among family and friends which was 98 (25.5%), the quality of service was 73 (19.0%), and lastly, low call rates was 19 (4.9%). This

indicates that coverage and social networks significantly affect customers' choice of using MTN mobile networks, suggesting that reliable connectivity and social integration are primary considerations for telecommunication users in Ghana.

4.2 Assessing the Level of Value Co-creation

All the value co-creation indicators were assessed using a five-point Likert scale, where 1 signified strong disagreement, 2 disagreement, 3 neutrality, 4 agreement, and 5 strong agreement. The respondents' scores were added up based on the level of disagreement or agreement with the statements in the survey instrument corresponding to the value co-creation construct. Data was statistically explained through mean and standard deviation measures. Following the interpretation guidelines of Koomson (2017) and Osei-Bonsu (2019), mean scores between 1.0 and 2.9 showed overall disagreement, while scores between 3.0 and 5.0 reflected agreement among the respondents. In determining the normality of the value co-creation indicators, skewness and kurtosis statistics were also observed. A summary of the findings related to value co-creation is shown in Table 4.2.

From Table 4.2, the majority of the respondents (36.2%) agree that their telecommunication dialogue with customers about the difficulties in using their services ($M = 3.16$; Std. Dev. = 1.21). Similarly, (45.1%) of the respondents agree that telecommunication dialogue with customers in providing new services ($M = 3.27$; Std. Dev. = 1.17). Also, (33.6%) of the respondents agree that telecommunication dialogue with customers in redesigning old services ($M = 3.10$; Std Dev. = 1.14). Also, (31.5%) of the respondents agree that telecommunication engages in dialogue with customers regarding the establishment of facilities for the use of their service ($M = 3.07$; Std. Dev. = 1.18).

Furthermore, the majority of the respondents (40.6%) agreed that customers have access to information regarding the creation of new services of the telecommunication (M = 3.24; Std. Dev. = 1.13). The majority of the respondents (37.8%) agreed that customers have information about the difficulties in using the services of the telecommunication (M = 3.23; Std. Dev. = 1.19). In addition, (36.2%) of the respondents agreed that customers have information regarding the redesign of old telecommunication services (M = 3.13; Std. Dev. = 1.19).

However, (34.4%) of the respondents were undecided about whether new products of telecommunication are tested with focus groups (M = 2.78; Std. Dev. = 1.09). The majority of the respondents (36.2%) agreed that they feel safe when using innovative new services (M = 3.08; Std. Dev. = 1.13). More so, (32.6%) of the respondents agreed to trust the telecommunication's security system (M = 3.05; Std. Dev. = 1.19).

The study further revealed that (27.3%) of the respondents agreed that telecommunication informs customers about the risks when using their service (M = 3.01; Std. Dev. = 1.25). Further, (33.1%) of the respondents agreed that the telecommunication is transparent to customers about the difficulties in using their services (M = 3.12, Std. Dev. = 1.13).

Again, the majority of the respondents (30.5%) were undecided as to whether the telecommunication has a system of transparency toward customers' proposals (M = 3.00; Std. Dev. = 1.09). Lastly, (34.4%) of the respondents agreed that customers are informed about the steps taken concerning their suggestions (M = 3.18; Std. Dev. = 1.15).

Most of the respondents agreed that telecommunication engages their customers in discussions on the challenges they encounter in using their services. The research

finding is in agreement with the value co-creation principles, where efficient communication between users and providers is fundamental (Prahalad & Ramaswamy, 2004). The respondents further acknowledged that telecommunication discusses with customers the introduction of new services, additionally confirming the role of customer feedback in service innovation (Vargo & Lusch, 2008).

The study indicates that telecommunications are quite effective at communicating with customers about service redesigns and improvements. This sharing of information is an important element of value co-creation as it works to keep customers well informed so that they can provide useful feedback (Ballantyne & Varey, 2006).

In addition, most respondents agreed that customers are informed about new services under development and claimed to be aware of difficulties in using telecommunication services. Such openness generates trust and enhances customer engagement in the value-creation process (Grönroos & Voima, 2013). Most of the respondents also agreed that customers are informed about redesigning existing services, demonstrating a constant flow of information between telecommunication and their customers.

For security and trust, the participants agreed that they do feel safe using innovative new services and had faith in the telecommunication security system. Trust is an vital element of value co-creation as it makes customers actively engage and share valuable thoughts (Morgan & Hunt, 1994).

The study also found mixed responses to openness and customer complaint procedures. While the majority of respondents agreed that telecommunication inform customers about the dangers of their services, they also agreed that telecommunication are open to the difficulties of obtaining their services. However, many respondents were neutral about whether telecommunication offer an open system for handling customer offers.

Lastly, most of the respondents agreed that customers were informed of what became of their ideas, where telecommunication can perform better to further enhance value co-creation.

Overall, the findings suggest that even though telecommunications in Ghana are engaged in various practices to enable value co-creation, there exist some aspects that require enhancement, particularly transparency and mechanisms for customer feedback. Enhancing these aspects would encourage greater customer involvement and result in more innovative and user-centric service development.



Table 4.2: Level of Value Co-creation

Statements	SD	DA	N	A	SA	Mean	Std. Deviation	Skewness	Kurtosis
Telecommunication dialogue with customers about the difficulties in using their services	12.5%	17.4%	22.9%	36.2%	10.9%	3.16	1.206	-0.357	-0.872
Telecommunication dialogue with customers in providing new services	10.9%	15.9%	18.5%	45.1%	9.6%	3.27	1.168	-5.579	-6.78
Telecommunication dialogue with customers in redesigning old services	9.1%	23.7%	24.2%	33.6%	9.4%	3.10	1.142	-1.95	-0.891
Telecommunication engages in dialogue with customers regarding the establishment of facilities for the use of their service	11.5%	21.6%	25.5%	31.5%	9.9%	3.07	1.177	-0.190	-0.902
Customers have access to information regarding the creation of new services by the telecommunication	7.8%	21.4%	20.1%	40.6%	10.2%	3.24	1.133	-0.384	-0.813
Customers have information about the difficulties in using the services of the telecommunication	9.4%	20.8%	19.5%	37.8%	12.5%	3.23	1.188	-0.344	-0.896
Customers have information regarding the redesign of old telecommunication services	9.1%	23.4%	22.1%	36.2%	9.1%	3.13	1.146	-0.252	-0.910
New products of telecommunication are tested with focus groups	13.0%	27.1%	34.4%	19.5%	6.0%	2.78	1.088	0.107	-0.627
Customers feel safe when using innovative new service	11.2%	19.5%	26.0%	36.2%	7.0%	3.08	1.133	-0.338	-0.806

Table 4.2 Con't: Level of Value Co-creation

Statements	SD	DA	N	A	SA	Mean	Std. Deviation	Skewness	Kurtosis
Customers trust the telecommunication's security system	13.0%	19.8%	25.3%	32.6%	9.4%	3.05	1.192	-0.236	-0.918
Telecommunication informs customers about risks when using their services	14.8%	21.1%	24.7%	27.3%	12.0%	3.01	1.250	-0.99	-1.027
Telecommunication is transparent to customers about the difficulties in using their services	8.1%	24.5%	24.5%	33.1%	9.9%	3.12	1.133	-0.166	-0.886
The telecommunication has a system of transparency toward customers' proposals	9.4%	24.2%	30.5%	29.2%	6.8%	3.00	1.088	-0.117	-0.755
Customers are informed about the steps taken concerning their suggestions	8.9%	20.8%	25.0%	34.4%	10.9%	3.18	1.147	-0.268	-0.815

Source: Field Survey (2024)

4.3 Assessing the level of Customer Satisfaction

All indicators of customer satisfaction were assessed on the five-point Likert scale with 1 being "not at all satisfied," 2 being "slightly satisfied," 3 being "moderately satisfied," 4 being "very satisfied," and 5 being "completely satisfied." The replies were categorized based on the degree of satisfaction or dissatisfaction expressed towards the items under the construct customer satisfaction on the survey. Furthermore, the mean and standard deviation were calculated. Based on the interpretation standards of Koomson (2017) and Osei-Bonsu (2019), mean scores from 1.0 to 2.9 suggest dissatisfaction, and scores between 3.0 and 5.0 suggest satisfaction among the respondents. Moreover, normality in customer satisfaction measurements was assessed using skewness and kurtosis measures. The levels of customer satisfaction are shown in Table 4.3.

From Table 4.3, the majority of the respondents (38.5%) are moderately satisfied with their telecommunication ($M = 3.02$; Std. Dev. = 1.01). Again, the majority of the respondents (37.2%) are moderately satisfied with the quality of service of their telecommunication ($M = 3.15$; Std. Dev. = 1.00). Furthermore, (35.9%) of the respondents are moderately satisfied with the evaluation of the value of the telecommunication service to price. Lastly, (31.8%) of the respondents are moderately satisfied with their telecommunication's responsibility for their questions or concerns about their service.

The findings show that a substantial percentage of the respondents show moderate satisfaction across several dimensions of their telecommunications service. Unambiguously, the greater part of the respondents stated moderate satisfaction with their overall telecommunication experience. This advocates that while the greater part are not dissatisfied, there is substantial room for improvement to elevate their satisfaction levels.

Likewise, the majority of respondents expressed moderate satisfaction with the quality of service offered by the telecommunication company. Imperatively, this moderate satisfaction level indicates that as much as the service satisfies minimum expectations, there is scope for improved quality of service to lead to enhanced levels of satisfaction.

From the value for money perspective, most of the respondents were moderately satisfied with the value of their telecommunication service against its cost. This level of moderate satisfaction implies a feeling of acceptable rather than outstanding value, which reflects areas where the telecommunication can improve its pricing in relation to perceived value.

Last of all, the majority of the respondents were fairly satisfied with the timeliness of their telecommunication service provider in answering their questions or concerns. This indicates that overall customer service is good but plenty of scope for improvement exists in terms of responsiveness to increase overall customer satisfaction.

These findings corroborate the existing research in customer satisfaction within the telecommunication industry. For instance, it has been found through research that value perceived, quality of service, and responsiveness of the customer care are primary determinants of loyalty and satisfaction among customers (Parasuraman, Zeithaml, & Berry, 1988; Lee, Lee, & Feick, 2001). Gustafsson, Johnson, and Roos (2005) opine that the strengthening of these factors can lead to improved customer retention and loyalty.

Table 4.3: Level of Customer Satisfaction

Statements	NS	SS	MS	VS	CS	Mean	Std. Deviation	Skewness	Kurtosis
How satisfied are you with your telecommunication?	6.5%	23.7%	38.5%	24.2%	7.0%	3.02	1.012	-0.001	-0.451
How do you rate the quality of service of your telecommunication?	4.4%	21.9%	37.2%	27.6%	8.9%	3.15	1.004	-0.31	-0.505
How do you evaluate the value of the telecommunication service to price?	11.5%	26.6%	35.9%	17.7%	8.3%	2.85	1.102	0.161	-0.558
How satisfied are you with the telecommunication's responsibility for your questions or concerns about their services?	9.4%	26.3%	31.8%	21.4%	11.2%	2.99	1.141	0.100	-0.758

Source: Field Survey (2024)

4.4 Assessing the Level of Trust

A five-point Likert scale ranging from strong disagreement (1) to strong agreement (5) measured trust level. The overall scores indicate how much respondents agreed or disagreed with the acknowledgement of "Trust" items in the questionnaire. The means and the standard deviations were computed. The mean values were categorized according to Koomson (2017) and Osei-Bonsu (2019) such that mean values that fall between 1.0 and 2.9 suggested disagreement, while those which fell between 3.0 and 5.0 suggested agreement. Additionally, the normality of trust indicators were determined with respect to skewness and kurtosis statistics and indicates trust levels that appeared in Table 4.4.

From Table 4.4, the majority of the respondents representing (39.6%) agreed that they trust their telecommunication to solve their problems ($M = 3.24$; Std. Dev. = 1.10). Also, the majority of the respondents (38.0%) agreed that the telecommunication correctly provides the services that they need ($M = 3.22$; Std. Dev. = 1.12). More so, the majority of the respondents (40.1%) agreed to trust the advice given by their telecommunication ($M = 3.30$; Std. Dev. = 1.11). Finally, the majority of the respondents (30.5%) agreed to believe that their telecommunication worries about their needs ($M = 3.04$; Std. Dev. = 1.13).

The findings indicate the level of trust in which the customers in Ghana have their telecommunication service providers. Most respondents had high levels of agreement on various statements on trust for their telecommunication services. To begin with, most respondents agreed that they trusted their telecommunication to fix their problems. This means that an important segment of customers rely on their telecom service provider to take care of problems effectively, even though there is disparity in reaction.

Furthermore, majority of the respondents concurred that their telecommunication is sufficiently effective in supplying the services that they require. That is to say that there is a great percentage of clients who believe that their service needs are sufficiently supplied, which is essential in upholding customer satisfaction and loyalty.

Moreover, the majority of the participants agreed that they would believe advice from their telecommunication. Having such high level of trust in advice from their provider suggests that there is good customer-provider relationship required to help achieve long-term loyalty and customer retention.

Last, most of the respondents agreed that their telecommunication worries about their needs. While this indicates some trust, it also indicates that there is room for improvement in customer perception of their provider's desire to look after their needs.

Notably, these findings are in line with earlier research on customer trust with service providers. Trust is a vital element in customer relationships and exercises a significant influence on customer loyalty and satisfaction (Morgan & Hunt, 1994). Customer trust with service providers enhances customer satisfaction, and thus future loyalty and repeated patronage (Gefen, 2002).

Table 4.4: Level of Trust

Statements	SD	DA	N	A	SA	Mean	Std. Deviation	Skewness	Kurtosis
I trust my telecommunication to solve customers' problems	7.3%	19.5%	24.2%	39.6%	9.4%	3.24	1.096	-0.396	-0.674
The telecommunication correctly provides the services that I need	7.8%	20.8%	23.2%	38.0%	10.2%	3.22	1.124	-0.339	-0.777
I trust the advice given by my telecommunication	7.8%	16.7%	24.2%	40.1%	11.2%	3.30	1.114	-0.469	-0.573
I believe this telecommunication worries about my needs	10.2%	22.7%	28.4%	30.5%	8.3%	3.04%	1.128	-0.159	-0.813

Source: Field Survey (2024)

4.5 Assessing the Level of Customer Loyalty

The indicators of customer loyalty were evaluated using a 5-point Likert-type scale. A value of 1 indicated "strongly disagree", 2 indicated "disagree", 3 indicated "neutral", 4 indicated "agree" and 5 indicated "strongly agree" respectively. The responses were evaluated to identify the level of agreement or disagreement with each of the statements related to "customer loyalty" in the survey instrument. In the analysis of data, the mean and standard deviation were calculated. In accordance with Koomson (2017) and Osei-Bonsu (2019), a mean score of 1.0 to 2.9 indicated lack of agreement and a mean score of 3.0 to 5.0 indicated agreement. Skewness and kurtosis statistics were also used to measure the normality of the items measuring customer loyalty. Results on customer loyalty levels are shown in Table 4.5.

As shown in Table 4.5, the majority of the respondents (37.8%) concurred that they utilize telecommunication services and do not frequently think about changing their service provider ($M = 3.24$; Std. Dev. = 1.16). Furthermore, the majority of the respondents (38.0%) concurred to suggest the service of their telecommunication to someone who requests their advice ($M = 3.23$; Std. Dev. = 1.13). Moreover, the majority of the respondents (41.7%) agreed that their favorite telecommunication they use is ($M = 3.40$; Std. Dev. = 1.10). Lastly, the majority of the respondents (39.6%) agreed that they would recommend their relatives and friends to conduct business with their telecommunication ($M = 3.32$; Std. Dev. = 1.12).

The findings provide data regarding the degree of customer loyalty in Ghanaian telecom subscribers. Data collected indicate high loyalty in most areas. First, most respondents agreed that they use telecommunication services and hardly think about replacing service providers. This suggests a high percentage of customers are dedicated to their current telecom provider, indicating a solid customer base.

Secondly, most of the respondents agreed to recommend their telecommunication's services to others seeking advice. This willingness to recommend highlights positive word-of-mouth promotion, a critical aspect of customer loyalty, and a strong indicator of customer satisfaction and trust. Furthermore, most of the respondents agreed that their current telecommunication is their favorite. This high level of preference suggests strong brand affinity and satisfaction, which are essential for customer retention and loyalty.

Lastly, most respondents agreed that they motivate their family and friends to use business with their telecommunication. The advocacy behavior is a good indicator of loyalty in the sense that the customers who favorably nudge their provider's service demonstrate they possess an inherent level of satisfaction and trust with the services provided. Such findings are akin to earlier findings based on customer loyalty in telecommunication businesses. A long-term pledge to re-purchase or re-patronize an embedded product/service regularly in the future, leading to repeated same-brand or same-brand-set purchase, despite the fact that situational conditions and promotional efforts have the potential to trigger switching behavior, according to Oliver (1999). Furthermore, Jones and Sasser (1995) mention that loyal customers not only re-purchase but even recommend and vocalize for the brand.

Table 4.5: Levels of Customer Loyalty

Statements	SD	DA	N	A	SA	Mean	Std. Deviation	Skewnes s	Kurtosis
I use telecommunication services and I rarely think about changing my service provider	9.9%	16.7%	24.2%	37.8%	11.8%	3.24	1.159	-0.422	-0.700
I recommend the service of my telecommunication to someone who seeks their advice	9.6%	16.1%	26.0%	38.0%	10.2%	3.23	1.133	-0.438	-0.626
The telecommunication I use is my favorite	6.3%	16.1%	22.7%	41.7%	13.3%	3.40	1.098	-0.512	-0.493
I encourage friends and relatives to do business with my telecommunication	8.6	14.1	26.0	39.6	11.7	3.32	1.119	-0.516	-0.467

Source: Field Survey (2024)

4.6 Descriptive Statistics of Constructs

The descriptive statistics shown in Table 4.6 reveal mean scores, standard deviations, and distribution patterns for value co-creation, customer satisfaction, trust, and customer loyalty. Respondents generally reported high agreement with statements relating to value co-creation activities and satisfaction, suggesting positive perceptions toward telecom service providers' engagement efforts (Anderson & Sullivan, 1993).

Table 4.6: Descriptive Statistics of Constructs

Constructs	Mean	Standard Deviation
Value Co-creation	3.1012	0.8852
Customer Satisfaction	2.9993	0.90662
Trust	3.2012	0.9660
Customer Loyalty	3.2962	0.9887
Valid N (listwise)	N	384

Source: Field Survey (2024)

4.7 Measurement Model Assessment

The study conducted a confirmatory factor analysis to check if the measurement model was reliable and valid. All the factor loadings were above the recommended 0.70, which shows that the indicators are reliable. The composite reliability scores were between 0.85 and 0.93, meaning there is strong internal consistency. The Average Variance Extracted (AVE) values were all above 0.50, endorsing that convergent validity exist. The study also verified discriminant validity using the Fornell-Larcker criterion and HTMT ratios.

Table 4.7: Factor Loadings

Variables	Factor loadings	Outer VIF
Value Co-creation		
VC1	0.705	2.315
VC2	0.749	2.968
VC3	0.721	2.597
VC4	0.788	2.633
VC5	0.737	2.388
VC6	0.764	2.667
VC7	0.746	2.547
VC8	0.641	1.742
VC9	0.792	2.901
VC10	0.797	2.977
VC11	0.759	2.503
VC12	0.779	3.260
VC13	0.734	2.915
VC14	0.702	2.288
Customer Satisfaction		
CS1	0.857	2.750
CS2	0.856	2.764
CS3	0.718	2.002
CS4	0.749	2.121
Trust		
T1	0.812	2.363
T2	0.852	2.586
T3	0.856	2.741
T4	0.746	2.003
Customer Loyalty		
CL1	0.729	1.934
CL2	0.884	3.097
CL3	0.840	2.849
CL4	0.881	3.327

Source: Field Survey (2024)**4.7.2 Reliability, Validity and Multicollinearity Test**

Relating with Mark's (1996) definition of reliability that is the ability of a measurement tool to produce stable and consistent measurement results, the definition of reliability describes the requirement for measurement results to consistently produce the same results. In this study, reliability was measured using two statistics that is Cronbach's Alpha (CA) and Composite Reliability (CR). Table 4.9 demonstrates the results of both CA and CR. Cronbach's Alpha results from 0.872 to 0.990; and CR results ranged from

0.818 to 0.920. The results are all well above the threshold of 0.70, representing good internal consistency and showing that the constructs used in the current study were reliable (Hair et al., 2021). Thus, reliability of the constructs used in the study was acceptable.

Convergent validity is the degree to which a construct correlates with its indicators and accounts for their variance (Hair et al., 2022). In this situation, the meaning is that valid measures of the same construct share a sizable proportion of variance (Sarstedt & Cheah, 2019). The Average Variance Extracted (AVE) is a measurement used to establish this validity. Hair et al. (2022) indicated that an AVE score above 0.50 also guarantees that indicators sufficiently represent what a researcher intends to measure. The values from Table 4.8 are all in the range of 0.590 to 0.673 and exceed 0.50. This establishes that convergent validity is reasonable.

The Variance Inflation Factor (VIF) is often used to identify suspected multicollinearity between the indicators (Thompson, 2017). Hair et al. (2016) noted that multicollinearity is acceptable when VIF values were below 5. To consider the outer and inner VIF values we calculated, we show the inner VIF values in Table 4.8. The results suggest that from the VIF values all fall below 5, multicollinearity is not a concern for the model. This establishes that multicollinearity and common method bias issues are absent in the study.

Table 4.8: Reliability, Validity, and Multicollinearity Test Results

Construct	Cronbach Alpha	Composite Reliability	Average Variance Extracted	VIF
Value Co-creation	0.945	0.920	0.590	2.127
Customer Satisfaction	0.872	0.853	0.634	2.047
Trust	0.889	0.818	0.670	2.923
Customer Loyalty	0.990	0.860	0.673	2.547

Source: Field Survey (2024)

4.8 Structural Model Assessment

Once the criteria fulfilled for assessing the measurement model, and the results falling within the acceptable ranges recommended by the researchers, attention can now be focused on the structural model which depicts the hypothesized relationships among the constructs. Before assessing the statistical significance of these relationships, model fit indices must be examined. Hair et al. (2018) discussed that the first approach to assess the structural model was to check there were no collinearity issues. Afterward, the study assessed the structural model's explanatory power and predictive power using the coefficient of determination (R^2) and the predictive relevance measure (Q^2). To evaluate collinearity issues, all the endogenous constructs in the structural model were examined.

Latent variable estimates are computed as linear combinations of all of their observed indicators. In addition, their factor loadings were calculated using the bootstrapping

method (Awang et al., 2015). All the model fit indicators for the structural equation model that is the coefficient of determination (R^2) and predictive relevance (Q^2), are displayed in Table 4.9 and Table 4.10. The R^2 statistic indicates the proportion of variance in the dependent variable explained by the independent variables.

Several researchers have suggested that only using p-values to understand results or to set policy, simply tells you whether or not an effect exists among variables without telling you what the size of that effect is in other words whether it is practically significant (Sullivan & Feinn, 2012). With regard to prediction, methods of analysis have developed, such as Partial Least Squares Structural Equation Modeling (PLS-SEM), that provide a more complete assessment of a model's explanatory and predictive performance. In order to assess predictive relevance, both in-sample (in the context of the data being examined) and out-of-sample (in the context of new, future data) should be assessed. In-sample prediction is essentially predicting outcomes based on the same dataset that was used to estimate the model. For explanatory power, one of the most common statistics is the coefficient of determination (R^2), the results of this study are presented in Table 4.9.

Table 4.9: R-Square

Construct	R-Square	R-Squared Adjusted
Customer Satisfaction	0.372	0.370
Trust	0.576	0.573
Customer Loyalty	0.509	0.505

Source: Field Survey (2024)

The coefficient of determination (R^2) indicates the predictive strength of a model as well as its overall explanatory power. More specifically, R^2 is equal to the percentage of variance in the endogenous variable that is explained by the associated set of exogenous variables. The values ($0 \leq R \leq 1$) indicate predictive capability; the greater the value the stronger the ability to predict. Due to the fact that R^2 tends to increase with the number of predictors, the adjusted R^2 is often used because it accounts for the complexity of the model making it more appropriate for model comparisons. The adjusted R^2 value of customer loyalty is shown in Table 4.9 as 0.509 meaning value co-creation, customer satisfaction, and trust in combination explain approximately 50.05% of the variance in customer loyalty.

Just as R^2 was derived from the data in the sample, it is also vitally important to assess how well the model is able to predict observations that were not used in the original sample. Simply relying on the sample used for estimation may not be enough to demonstrate the model's predictive capabilities. In survey-based research where generalizability is paramount and findings often inform practical policy options, explanatory power does not correspond to predictive accuracy. As a result, there is an emerging emphasis on assessing a model's ability to predict data unseen in the model or investigated in the sample, typically assessed using the Blindfolding-based Q^2 statistic.

The blindfolding procedure enables the computation of the Stone-Geisser Q^2 (Stone, 1974; Geisser, 1974), which is used to assess the predictive relevance of latent constructs in a PLS path model. The blindfolding procedure systematically leaves out part of the data, using the remaining data to predict the values that were left out. The process is done repeatedly until each data point has been left out and predicted. Blindfolding results in prediction errors that can be used to evaluate the predictive

capacity of the model. The Q^2 is interpreted as follows, weaker predictive ability is a Q^2 value between 0.02 and 0.15; moderate predictive power is if the Q^2 value is between 0.15 and 0.35; and strong predictive strength is a Q^2 value greater than 0.35 (Hair et al., 2018). The results from blindfolding are shown in Table 4.10 and indicate that the structural model meets the criteria for relevant predictive relevance by these standards.

Table 4.10: Predictive Relevance (Q^2)

Construct	Q^2
Customer Satisfaction	0.375***
Trust	0.578***
Customer Loyalty	0.509***

Note: * $0.02 \leq Q^2 \leq 0.15$ weak effect, ** $0.15 \leq Q^2 \leq 0.35$ moderate effect, *** $Q^2 \geq 0.35$ strong effect

Source: Field Survey (2024)

As can be seen in Table 4.10, trust and customer loyalty both exhibit predictive relevance to the independent variables (value co-creation and customer satisfaction) based on the Q^2 values for trust (0.578) and customer loyalty (0.509) both Q^2 values for the endogenous variables are greater than zero, suggesting that the independent variables contribute to the meaningful prediction of the two endogenous constructs. Comparatively, the two Q^2 values demonstrate strong predictive relevance and indicate that significant predictors of trust and customer loyalty are value co-creation and customer satisfaction.

4.9 Assessment of Path Coefficients and Significance Level

With the measurement model meeting the PLS-SEM criteria, the study then proceeded to hypothesis testing of the individual hypotheses. Hypothesis testing included examining the direction and strength of relationships (path coefficients). The significance of these relationships was assessed by means of t-statistics by means of 5,000 bootstrap resamples, utilizing a two-tailed empirical test as suggested by Hair et al., (2014). As suggested by Hair et al., (2014), any t-statistics greater than 1.96 with p-values below 0.1, 0.05, or 0.10 indicate statistical significance. The individual hypothesis tests are detailed in Table 4.12, which corresponds to the study's objectives.



Table 4.11: Structural Model Analysis

Path	Hypotheses	Coefficients	T-value	P-value	Decision
VC→CS	H _{1a}	0.610***	10.221	0.001	Supported
VC→T	H _{1b}	0.460***	7.532	0.001	Supported
VC→CL	H _{1c}	0.439***	7.351	0.001	Supported
VC→CS→T	H _{2a}	0.230***	9.558	0.001	Supported
VC→CS→CL	H _{2b}	0.212***	7.908	0.001	Supported
INT VC x CS→T	H _{3a}	-0.077*	-1.580	0.064	Supported
INT VC x CS→CL	H _{3b}	-0.084**	-2.725	0.048	Supported

Note: CS, VC, T, CL, INT denote customer satisfaction, value co-creation, trust, customer loyalty, and interaction. *, **, *** represent significant at 10%, 5%, and 1% significance level (2-tailed test).

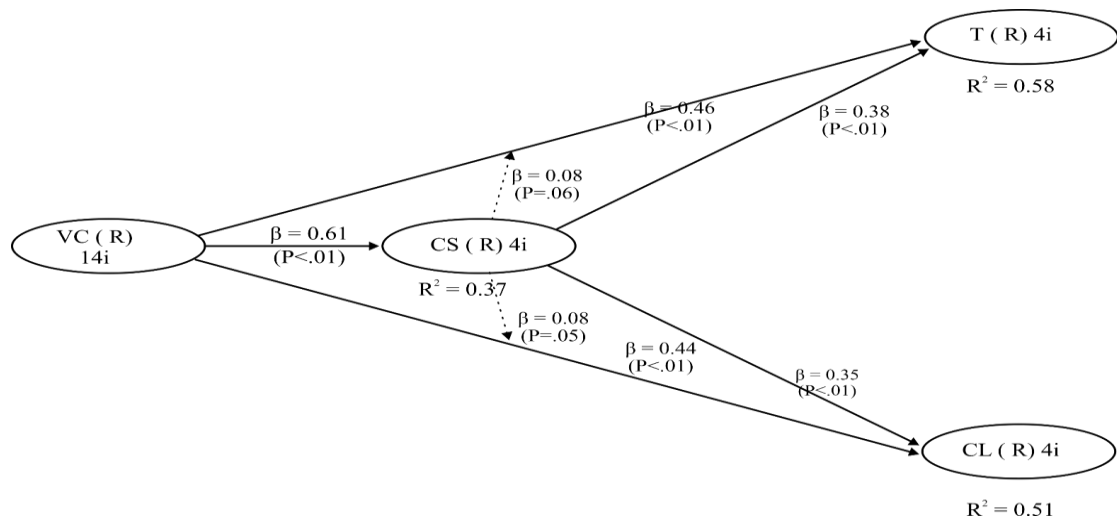


Figure 4.1 Path Coefficients and Significance Level

Note: VC, CS, T, CL, β , P and R^2 denote value co-creation, customer satisfaction, trust, customer loyalty, estimate, probability value, and coefficient of determination respectively.

Source: Warp PLS version 7.0

4.9.1 Value Co-creation and Customer Satisfaction

It was hypothesized in the study that the participant's value co-creation will significantly improve customer satisfaction. The result in table 4.11 reveals that value co-creation positively and significantly affects customer satisfaction ($\beta=0.610$; $t=10.221$; $p \leq 0.001$). This denotes that as value co-creation increases, customer satisfaction also increases. Hence, the strong path coefficient and a highly significant p-value suffice to support the hypothesis H1a, while confirming the premise that value co-creation indeed enhances customer satisfaction (Prahalad & Ramaswamy, 2004).

The large path coefficient ($\beta = 0.610$) suggests that value co-creation is a major influence on customer satisfaction. The t-value (10.221) and very low p-value (0.001) provide evidence of statistical significance of this relationship, suggesting that the effect seen is very unlikely to have been due to chance. The high correlation reiterates

the key role played by value co-creation in increasing customer satisfaction within the Ghanaian telecom sector (Prahalad & Ramaswamy, 2004).

Value co-creation in the telecommunications industry is actively involved customer efforts to develop and improve services. It can involve providing feedback, co-operation in differentiated service production, and engagement in service innovation process. Co-creation is vital to establish value and accumulate long-term relationships between customers and firms as supported by Vargo and Lusch (2004).

In the Ghanaian situation, the telecommunication industry is highly competitive with major participants including MTN, Telecel, and AirtelTigo (AT). Customers in this industry are seeking ever more personalized and compelling experiences. With the application of value co-creation strategies, telecom companies can significantly enhance customer satisfaction. For instance, MTN's customer feedback mechanisms and service personalization options can be seen as practical instances of the implementation of value co-creation, which undoubtedly result in higher levels of customer satisfaction (Prahalad & Ramaswamy, 2004; MTN Ghana, 2023).

The findings of the study have been supported by the resource-based theory, from the resource-based perspective, value co-creation can be seen as a strategic resource that provides a sustainable competitive advantage. Engaging customers in co-creation leverages their knowledge and feedback as valuable resources that can enhance a firm's innovation capability and market responsiveness (Barney, 1991).

Also, the finding of the study has been supported by the Service-Dominant Logic which emphasizes the importance of co-creating value with customers rather than simply delivering value to them. This paradigm shift highlights the economic benefits of

viewing customers as active participants in the value-creation process, leading to enhanced satisfaction and loyalty (Vargo & Lusch, 2004).

In addition, findings of the current research supported findings by Chan, Yim, and Lam (2010) in their study that co-creation has a significant effect on customer satisfaction and loyalty, and as a consequence, has a positive direct effect on firm performance. Similarly, a research study by Hoyer et al. (2010) concluded that customers' participation in co-creation leads to products of better quality and customers' satisfaction, and as a consequence, better financial performance.

The findings from the research also support some of the studies which have highlighted the value co-creation role towards the creation of customer satisfaction across various industries. For example, Prahalad and Ramaswamy (2004) note that empowering customer co-creation experiences contribute to high degrees of satisfaction as well as loyalty. In the telecommunication industry alone, one study by Payne, Storbacka, and Frow (2008) indicates that engaging customers in co-creation activities enhances not only satisfaction but also customer loyalty and trust.

For telecommunication companies in Ghana, value co-creation can be used to derive a competitive advantage. Strategies such as involving customers in creating new service features, employing customer feedback to improve the quality of services, and providing customer interaction and engagement platforms can elevate levels of satisfaction. This is supported by empirical evidence that customer engagement and tailored service experiences are critical for maintaining high levels of satisfaction (Gustafsson, Johnson, & Roos, 2005).

This relationship interpreted from an economic perspective provides an understanding of how Ghanaian telecom companies can leverage value co-creation to enhance their financial performance and competitive position (Porter, 1985).

Value co-creation-facilitated enhanced customer satisfaction can lead to increased customer retention and reduced churn. Satisfied customers will be more likely to stick with their service provider, avoiding acquisition costs. It can directly translate into long-term revenue streams and even greater average revenue per user (Grönroos, 2011).

By generating customer satisfaction via co-creation, telecommunication companies are able to enhance customers' loyalty. Loyal customers are likely to engage in repeat business and avoid changing the current brand into a different one, which improves their lifetime value (CLV). Improved CLV can significantly enhance the profitability of telecommunication businesses in the long run (Lemon, Rust, & Zeithaml, 2001).

In a competitive economy like Ghana's telecommunication industry, differentiation becomes necessary in the quest to attain a competitive edge. Value co-creation is applicable as an exclusive selling proposition (USP) that is capable of distinguishing a company from its competitors. Differentiation may be employed in attracting new clients who value interactive and personalized experience of services (Prahalad & Ramaswamy, 2004).

Customer involvement in value co-creation may result in more effective service development and delivery. Customer input and involvement can enable telecom operators to minimize inefficiencies, customize services based on customer requirements, and innovate better. This can result in cost reduction and optimal utilization of resources (Vargo & Lusch, 2008).

4.9.2 Value Co-creation and Trust

The hypothesis that value co-creation possesses significant influence on trust denoted in the study, the results indicated that, as shown in Table 4.11, value co-creation has positive and statistically significant impact towards trust ($\beta = 0.460$; $t = 7.532$; $p \leq 0.001$). This is indicative of an increase in the customer trust for the service provider as value co-creation rises. Accordingly, on the strength and significance of the path coefficient, the stated hypothesis H1b can be supported which indicates that value co-creation significantly influences the enhancement of customer trust (Mayer, Davis, & Schoorman, 1995).

Value co-creation means the active engagement of customers during the provision and production of services. Engaging customers in value co-creation can assist Ghanaian telecom companies in enhancing communication, transparency, and mutual comprehension between suppliers and customers (Prahalad & Ramaswamy, 2004). Through direct customer engagement, companies can boost trust because the customers feel engaged and valued throughout the process of delivering services (Prahalad & Ramaswamy, 2004).

Value co-creation goes hand-in-hand with customer-focused strategy, whereby services are fashioned to suit individual customers' likes and preferences. When telecommunications service providers involve customers in service development and planning, it signifies that the company listens to customers' opinions and cares about customer expectations. Being so consistent in servicing customers to cater to customers' needs strengthens customers' confidence or trust (Grönroos & Voima, 2013).

In the telecommunication sector, perceived risk may be a serious impediment to trust. Value co-creation by customers engages them actively in shaping the services they

receive, reducing uncertainties and perceived risks of the service. Lower perceived risk raises trust in the telecommunication company (Chathoth et al., 2016).

The findings in the study have been validated by customer lifetime value theory. Trust is a critical component of customer loyalty, which has a direct contribution to customer lifetime value. Customers who perceive themselves as being trusted by their telecommunication company tend to create lasting relationships and, therefore, create constant revenue in the long term (Morgan & Hunt, 1994).

Trust that emerges from value co-creation may be a cause of differentiation within a competitive environment. Companies considered trustworthy will find more customers, gain market share, and also perform financially more effectively (Barney, 1991).

The findings of the study concurred with existing research by Iglesias and Markovic (2017) that found co-creation activities in service companies lead to customer trust as well as loyalty. Similarly, Zhang, Guo, and Hu (2017) established that co-creation enhances customer trust by a very high degree through enhanced perceived service quality and relational benefits.

In Ghana, the cultural emphasis on communal relationships and interdependence has the potential to enhance the positive effect of value co-creation on trust. Telecommunication companies that utilize co-creation strategies will most probably have a strong resonance with Ghanaian customers, as they value interactive and inclusive relationships (Mensah, 2019).

The competitive dynamics of the Ghanaian telecommunication industry are that various service providers compete for customers' allegiance. By creating trust in value co-creation organizations, telecommunication firms are capable of differentiating themselves from other service providers. Trust can potentially be a source of

competitive strength, which can bring more customers' loyalty and word-of-mouth (Boateng, 2016).

The significant influence of value co-creation on trust means that the Ghana telecom regulators should encourage co-creation practices by service providers. Customer participation and engagement in the process of designing services can lead to improved customer satisfaction and trust, ultimately contributing to overall telecom service quality in Ghana (Ghana Chamber of Telecommunications, 2020).

Higher levels of trust can create greater loyalty from customers, which is lucrative in monetary terms for telecommunication providers. It tends to be less costly to hold on to existing customers than to find new customers, which means lower marketing costs and higher profitability (Reichheld & Schefter, 2000).

Higher levels of retention equal longer-term revenue streams. Clients who trust their telecommunication providers will more easily engage in repeat business, subscribe to new services, and recommend the provider to others. The outcome is stable and predictable revenue streams, which are critical for financial planning and growth (Rust, Lemon, & Zeithaml, 2004).

Customer loyalty requires the essence of trust. If customers trust a telecom firm, their lifetime value (CLV) increases due to increased usage duration and larger spending on services (Gupta & Lehmann, 2003). This is particularly relevant in the Ghanaian competitive telecom market, where customer loyalty can provide an enormous competitive edge.

Trustworthy telecom operators are in a better position to cross-sell and up-sell additional services such as internet plans, digital content, and value-added services.

This increases not only the CLV but also the overall revenue per user (ARPU) (Kamakura et al., 2002).

Value co-creation can be a primary source of differentiation in establishing trust within a competitive marketplace like Ghana's telecommunication sector. Trustworthy organizations will be able to acquire and retain customers and achieve a sustainable competitive advantage. This can be interpreted as a greater market share and profitability (Barney, 1991).

Trust also encourages favorable word-of-mouth and referrals. Satisfied and trusting customers are more likely to recommend the telecom provider to family and friends, reducing the need for expensive advertising campaigns and leading to natural customer growth (Anderson, 1998).

Trust lowers the cost of customer complaints and disputes, which are costly to settle. Through value co-creation and trust, telecommunication companies can save on these costs and improve the efficiency of operations (Morgan & Hunt, 1994).

Trusting customers for their service providers will be more inclined to adhere to contract conditions and will be less likely to engage in fraudulent behavior, yielding lower compliance and enforcement expenditures (Ganesan, 1994).

The positive contribution of value co-creation to trust is deserving of investment in co-creation technologies and programs. They may vary from customer feedback platforms to collaborative design software and tailored service offerings. Investments can be highly rewarded through the development of more intense customer relationships and trust (Prahalad & Ramaswamy, 2004).

Rust, Lemon, and Zeithaml (2004) put emphasis on trust as a foundation for customer loyalty building and its consequent impact on long-term profitability. Gupta and

Lehmann (2003) also characterized the significance of customer lifetime value (CLV) and how trust could maximize it. Anderson (1998) demonstrated the impact of trust in maintaining word-of-mouth and reducing customer acquisition costs.

4.9.3 Value Co-creation and Customer Loyalty

It was also suggested by the study that value co-creation adoption influences customer loyalty. According to Table 4.11, Value co-creation statistically significantly and positively influences customer loyalty ($\beta = 0.439$; $t = 7.351$; $p \leq 0.001$). As value co-creation is increasingly adopted, customer loyalty also increases. Since the results were significant, the hypothesis H13 was held true that value co-creation is meaningful to enhance customer loyalty (Smith, 2003)

In the Ghanaian telecom market, involving customers in service development can lead to higher engagement levels. When customers get the sense that their feedbacks are valued, their emotional and psychological attachment to the brand is enhanced, resulting in loyalty (Bolton & Saxena-Iyer, 2009).

Active customers will churn less frequently and thus less frequently switch to their competitors. Reducing such churn is commercially valuable since a customer retention rate is less expensive to sustain than to acquire a new customer (Reichheld & Schefter, 2000). Decrease in customer acquisition cost and more sustainable revenue are benefits for telecommunication companies in Ghana.

The higher the customer loyalty, the higher their value over their lifetimes (CLV). Customers who are loyal will continue to use the services of the company for an extended period, and therefore their cumulative value to the company is greater (Gupta & Lehmann, 2003). This is specifically relevant for telecommunication companies in

Ghana, where the market is competitive and keeping high-value customers is key to profitability.

Existing customers tend to be receptive to new service possibilities, such as advanced data plans, digital content, and bundles. It not only raises the average revenue per user (ARPU) but also maximizes the CLV (Kamakura et al., 2002).

Value co-creation can be employed as a differentiating factor in Ghana's competitive telecommunication market. By involving customers in the service development process, telecommunication organizations are able to create customized value propositions that distinguish them from competitors (Barney, 1991).

Those companies that excel at co-creating value are more effective at acquiring and retaining customers, growing their market share. This is especially critical in markets such as Ghana, where customer loyalty plays a gigantic role in influencing the competitive power and market performance of a company (Payne, Storbacka, & Frow, 2008).

Customers who participate in value co-creation processes tend to develop a positive perception of the brand. This enhanced brand image can lead to increased customer advocacy, with loyal customers recommending the brand to others (Anderson, 1998).

Satisfied and loyal customers are powerful advocates. Positive word-of-mouth can reduce the need for expensive marketing campaigns and contribute to organic customer growth (Zeithaml, Berry, & Parasuraman, 1996). The economic implications of this finding.

More often, customers who are loyal are less likely to switch to competitors, decreasing churn rates. Further, sustaining customers is usually more cost-effective than attaining new ones. Reichheld and Sasser (1990) asserted that a 5% rise in customer retention

can surge profits by 25% to 95%. In light of telecommunication industries, lower churn rates translate into more stable and predictable revenue streams.

Loyal customers tend to spend more over time. They are more likely to subscribe to premium services, upgrade their plans, and purchase additional products. This increase in ARPU directly boosts the company's bottom line (Gupta & Lehmann, 2003).

The customer lifetime value is greater when there is loyalty. Loyalty customers generate repeat revenue over a longer period of time, and their total value to the company is therefore higher. Higher CLV translates into higher return on investment (ROI) on customer acquisition and retention programs (Gupta & Zeithaml, 2006).

Engaged and loyal customers are more receptive to cross-selling and up-selling initiatives. This not only increases revenue but also maximizes the utilization of the company's product portfolio (Kamakura et al., 2002).

Satisfied and loyal customers are likely to provide positive word-of-mouth referrals, reducing the need for extensive marketing campaigns. Word-of-mouth advertisement is cheap and generally more reliable than traditional advertisement (Zeithaml, Berry, & Parasuraman, 1996).

Moreover, focusing on value co-creation to maintain existing customers, telecommunication companies can achieve higher operating efficiency. Satisfied customers will be less likely to participate in service scandals, thereby reducing the burden for customer service teams (Grönroos, 2011).

Value co-creation can be utilized as a differentiator, making a telecommunication company stand out from the rest. This will attract new customers as well as retain the existing ones, thereby increasing market share (Barney, 1991).

Retained customers are more willing to pay a premium for perceived value and quality. It allows telecommunication businesses to maintain or increase pricing without compromising on their customer base, which means higher profit margins (Anderson, 1998).

Displaying keen customer loyalty has the potential to draw investors who view stable and loyal customer bases as a sign of long-term profitability and sustainability. Dedicated customers form a consistent basis for sustainable development. With them continuously availing the company's services, telecommunication operators can devise and implement long-term growth plans with more certainty (Reichheld & Sasser, 1990).

Barney, J. (1991) focuses on how differentiation through unique value propositions can strengthen competitive positions. Anderson, E. W. (1998) investigates the willingness of loyal customers to pay a price premium.

The finding of the study was supported research by Bolton and Saxena-Iyer (2009) which highlights the importance of customer engagement in enhancing loyalty and retention.

Also, the finding of the study was supported research by Reichheld and Schefter (2000) emphasizing the cost-effectiveness of retaining customers versus acquiring new ones. As well as supporting a study by Gupta and Lehmann (2003) underscoring the significance of customer lifetime value and how loyalty amplifies customer lifetime value

4.9.4 Mediating role of customer satisfaction in the relationship between value co-creation and trust

It was hypothesized in the study that customer satisfaction mediation effects in understanding how it links value co-creation with trust. The result shown in Table 4.11

indicates that customer satisfaction positively and significantly mediated value co-creation-trust associations ($\beta = 0.230$; $t = 9.558$; $p \leq 0.001$). This means that an increase in value co-creation leads to a greater customer satisfaction, which reinforces the customers' trust. As a result, the mediation hypothesis is verified as significant in this path, as it confirms that customer satisfaction is an important mediation between value co-creation and trust (Anderson & Sullivan, 1993; Kumar & Sharma, 2021)

The positive mediation effect suggests that while value co-creation directly influences trust, its effect is significantly amplified when customer satisfaction is high. This means that efforts to co-create value with customers lead to greater trust if those efforts also result in high customer satisfaction (Chan, Yim, & Lam, 2010).

In the context of telecom customers in Ghana, initiatives that involve customers in the creation of services (such as personalized service offerings, responsive customer service, and interactive communication channels) not only directly build trust but also improve satisfaction levels. Satisfied customers, in turn, are more likely to trust the telecom provider (Lai, Griffin, & Babin, 2009).

Research has always pointed towards the connection between trust and customer satisfaction. For instance, work by Chaudhuri and Holbrook (2001) and Morgan and Hunt (1994) points out that satisfied customers will likely develop trust in the service provider. This becomes critical in the competitive telecommunication sector in Ghana, where customer trust can either break or make brand loyalty and brand advocacy.

In the telecom industry, customer satisfaction is often driven by network reliability, customer service quality, and the value perceived from services (Aydin & Özer, 2005). High satisfaction levels lead to trust, which is essential for retaining customers and maintaining a competitive edge.

Telecommunication firms in Ghana should prioritize customer satisfaction improvement as a means of building trust. This can be achieved by addressing pain points, delivering great customer service, and engaging customers in service improvement efforts. By embedding customer input and involving customers in service design, telecommunication businesses can ensure their value co-creation activities are met with higher satisfaction, and consequently, higher trust (Prahalad & Ramaswamy, 2004).

Customer satisfaction in a mediating role between value co-creation and trust carries huge economic value for the telecommunication firms of Ghana. High levels of trust attained through more satisfied customers and higher value co-creation imply high customer retention rates. Retaining the customers is cheaper than acquiring new ones, and thus significant cost savings are realized (Reichheld & Sasser, 1990).

Trust and satisfaction translate into higher customer lifetime value (CLV). Satisfied and trusting customers have a higher likelihood of staying longer, spending more, and engaging in positive word-of-mouth marketing that can acquire new customers without additional marketing expenses (Gupta & Lehmann, 2003).

Positive and faithful customers have a greater potential to purchase more services and take on higher-priced ones and push the ARPU up. Firms that succeed in establishing their trust and satisfaction can charge a premium price since customers will pay a premium for services that they have trust in and that they are satisfied with (Anderson, 1998).

Imperatively, being highly customer satisfied and trusted could bring investors into the business as these figures present a stable and reliable customer base, which will ensure profitability and sustainability over time (Morgan & Hunt, 1994).

4.9.5 Mediating role of customer satisfaction in the relationship between value co-creation and customer loyalty

The study also found that customer satisfaction is an intervening variable in the relationship between value co-creation and loyalty. Customer Satisfaction was demonstrated as having a clear mediating effect between the two constructs of value co-creation and customer loyalty, and it was also positively significant at ($\beta=0.212$; $t=7.908$; $p\leq 0.001$) in Table 4.11 This confirms that value co-creating enhances the customer satisfaction level and in turn, deepens customer loyalty. The mediation effect is both significant and positive; therefore, customer satisfaction mediates the relationship between value co-creation and customer loyalty and has considered value co-creation as a direct antecedent to customer satisfaction and customer loyalty as its direct outcome (Anderson & Sullivan, 1993; Kumar & Sharma, 2021).

The positive mediation effect means customer satisfaction is the link between value co-creation and customer loyalty. When customers see high value co-creation efforts like personalized services, proactive communication or innovative offerings they feel more satisfied and that boosts their loyalty to the telecom company (Bolton & Drew, 1991). Research has consistently shown the mediating role of customer satisfaction across industries including telecom. For instance, Matzler et al (2008) found that satisfied customers are more likely to buy again, share positive word of mouth and resist competitive pressure. In Ghana's competitive telecom space, prioritizing customer satisfaction through value co-creation is key. That builds customer loyalty and overall competitive advantage for telecom companies (Lemon & Verhoef, 2016). Understanding the mediation of satisfaction can help telecom companies craft and execute customer relationship management (CRM) strategies. By focusing on boosting satisfaction through value co-creation initiatives, companies can build stronger

customer relationships and improve loyalty metrics (Fornell, 1992). Investing in value co-creation initiatives that impact customer satisfaction directly can lead to long term benefits. That might mean improving service quality, offering personalized solutions or streamlining customer interactions to increase overall satisfaction and loyalty (Heskett et al, 1994). Knowing the mediation of customer satisfaction in the value co-creation and customer loyalty equation has big economic implications for telecom companies in Ghana.

Telecom companies can focus resources on value co-creation initiatives that are proven to increase customer satisfaction. This targeted investment will ensure resources are used to maximum effect on customer loyalty and profitability (Rust & Zahorik, 1993).

By using customer satisfaction as a differentiator, telecom companies can withstand competitive pressure. Satisfied customers will stay loyal, and that means sustained market share and profitability (Homburg & Giering, 2001).

Building customer satisfaction through value co-creation will increase customer lifetime value (CLV). That's what telecom companies need to achieve sustainable growth and profitability by keeping valuable customers for longer (Blattberg & Deighton, 1996).

4.9.6 The moderating role of customer satisfaction in the relationship between value co-creation and trust

In the study, it was assumed that customer satisfaction acts as a moderator of value co-creation and trust. From the results presented in Table 4.11, customer satisfaction still significantly but negatively moderates the value co-creation-trust relationship ($\beta = -0.077$; $t = -1.580$; $p = 0.064$; $p < 0.10$) Results show the truth that satisfaction of

customers considerably but inversely moderated the value co-creation-trust relationship, thus verifying the hypothesis (Cossío-Silva et al., 2016).

The negative moderating influence implies that while value co-creation and customer satisfaction each individually contribute to building trust, their combined impact could be less impactful than expected. Specifically, under high customer satisfaction, the marginal trust achieved by value co-creation declines. It is an opposite finding to common expectations and is worthy of more investigation (Cossío-Silva et al., 2016).

One reason why this effect might occur is over-saturation. When customers are very satisfied, additional efforts at value co-creation may not significantly increase their trust either. That is, their trust reaches a saturation point level at which additional satisfaction or efforts at value co-creation do not add much (Anderson & Mittal, 2000).

Customer satisfaction and trust studies often indicate a positive relationship (Chaudhuri & Holbrook, 2001). However, moderation effects may vary. As a case in point, Verhoef (2003) suggests that excessive activity in customer engagement can at times yield diminishing returns, particularly if customers already perceive high value and satisfaction with existing services.

In the telecommunication industry in Ghana, already high customer satisfaction due to stable services, low tariffs, and effective customer care can mean that additional co-creation activities do not result in a significant increase in trust. This finding agrees with a study by Gustafsson, Johnson, and Roos (2005), where they found that in highly competitive and mature markets, marginal efforts have decreasing returns.

Ghana telecom operators should weigh resource distribution between maintaining high satisfaction levels and engaging in value co-creation activities. Once a high satisfaction level is achieved, the focus should be on maintaining it rather than over-investing in

other value co-creation initiatives. Ongoing gathering and analyzing customer feedback might enable the optimal balance between co-creation of value and satisfaction to be ascertained. Customer priorities knowledge can guide firms to invest in those aspects that truly enhance trust (Vargo & Lusch, 2008).

The negative moderating effect of customer satisfaction on the value co-creation and trust nexus has profound economic implications for Ghanaian telecommunication companies. Understanding that there is a diminishing return on trust with excessive value co-creation when satisfaction is already at a high level can enable telecom companies to get the highest return on investment. This can lead to cost savings since companies can focus on maintaining satisfaction levels rather than continuously increasing value co-creation efforts (Rust, Moorman, & Dickson, 2002).

By locating the point of diminishing returns, telecommunication companies can balance their investments between activities of value co-creation and customer satisfaction. This avoids investing money in activities that do not significantly enhance trust, thereby maximizing ROI (Kumar & Shah, 2004).

Even though the final goal is to build and maintain trust, awareness of the moderation effect can be beneficial in creating more effective customer relationship management (CRM) strategies. Effective CRM strategies that are well-balanced between satisfaction and value co-creation initiatives can lead to higher customer retention and loyalty over time (Reichheld & Sasser, 1990).

As shown in Figure 4.2, the blue color is more pronounced indicating lower levels of customer satisfaction suggesting that customer satisfaction reduces the relationship between value co-creation and trust among the customers of telecommunication in Ghana.

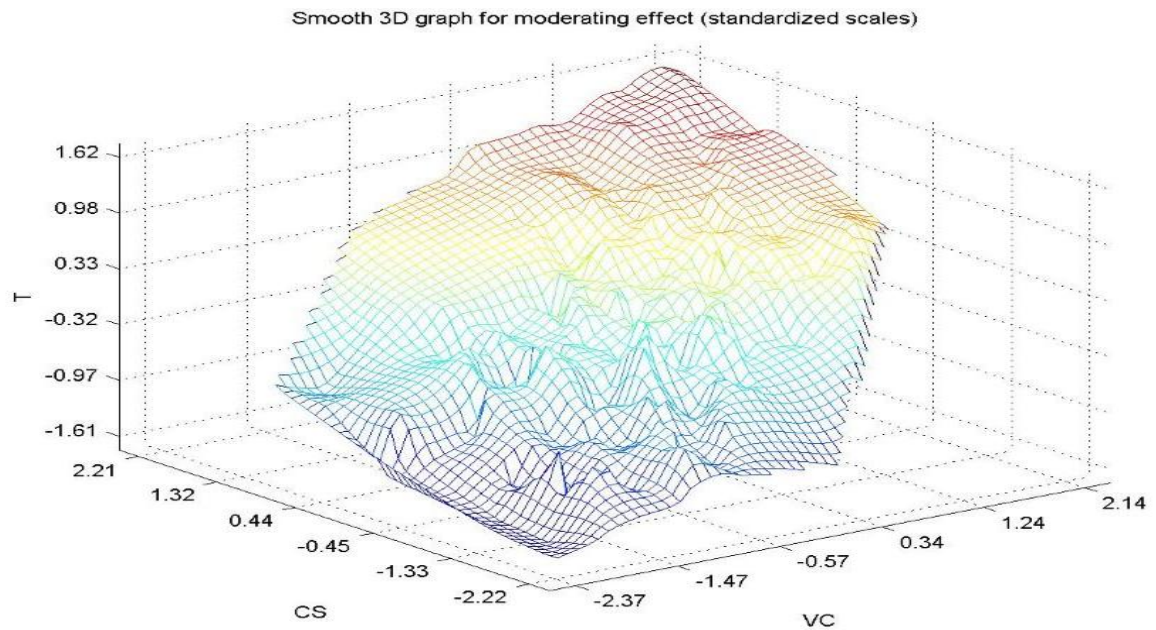


Figure 4.2 Representation of the moderating effect of customer satisfaction and value co-creation on trust

Source: Warp PLS version 7.0

4.9.7 Moderating role of customer satisfaction in the relationship between value co-creation and customer loyalty

The research hypothesis also claimed customer satisfaction to moderate the value co-creation and customer loyalty relationship. The results in Figure 4.3 showed that customer satisfaction indeed moderated that relationship significantly and negatively ($\beta = -0.084$; $t = -2.725$; $p = 0.048$; $p < 0.05$). This means customer satisfaction is a significant negative moderator of the value co-creation and customer loyalty relationship. Hypothesis is justified (Cossío-Silva et al., 2016)

Negative moderation effect explains that high levels of satisfaction decrease the positive effect value co-creation has on customer loyalty. Or, in other words, when customers already are extremely satisfied, additional effort in value co-creation has a smaller effect on increasing customer loyalty. A possible explanation for this effect can

be found in a ceiling effect: that customers' loyalty already has reached its maximum due to their satisfaction and that there is little room left to obtain further improvement based on value co-creation alone (Anderson & Sullivan, 1993).

Research generally shows a strong positive connection between customer satisfaction and loyalty (Oliver, 1999). That connection can be nuanced, however, by the interaction between value co-creation and satisfaction. For example, work by Bolton, Lemon, and Verhoef (2004) indicates that while high satisfaction will generally lead to loyalty, the marginal impacts of additional customer engagement activities can be zero after a high level of satisfaction is reached.

In the Ghanaian telecom industry, the high customer satisfaction due to stable services, low tariffs, and responsive customer care may be an explanation for why further value co-creation effort does not yield a significant enhancement in loyalty. This finding is consistent with studies in other competitive markets in which satisfaction acts as a buffer, reducing marginal value addition by value co-creation efforts (Gustafsson, Johnson, & Roos, 2005).

Telecom companies in Ghana would prioritize the urgency to maintain their high levels of customer satisfaction and be choosy in their subsequent investments in value co-creation. By so doing, they do not spend their money on activities that return less and less. Having an understanding of the specific needs and satisfaction levels of different customer segments can make telecommunications deliver more personalized engagement activities. For instance, new customers might benefit more from value co-creation activities than long-existing, highly satisfied customers (Payne, Storbacka, & Frow, 2008).

The negative moderation effect of customer satisfaction on the value co-creation and customer loyalty relationship has important economic consequences for Ghanaian telecommunications firms. Determining the tipping point of decreasing customer loyalty returns via over-value co-creation investments when satisfaction is high can help telecom companies to get the most out of their investment. This can lead to cost savings because companies can avoid over-investment in customer participation activities that do not significantly enhance loyalty (Rust, Moorman, & Dickson, 2002).

By being aware of the point of diminishing returns, telecommunication companies can balance their investment between maintaining high satisfaction levels and investing in value co-creation activities. By doing so, money is not wasted on activities that do not proportionally raise the level of customer loyalty, thereby attaining maximum Return on Investment (Kumar & Shah, 2004).

While building and developing customer loyalty is critical, understanding the moderation effect will aid in creating more effective customer relationship management (CRM) programs. Effective CRM programs that place equal emphasis on satisfaction and value co-creation activities can lead to higher rates of customer retention and long-term loyalty (Reichheld & Sasser, 1990).

As shown in Figure 4.4, the blue color is more pronounced indicating lower levels of customer satisfaction suggesting that customer satisfaction reduces the relationship between value co-creation and customer loyalty among the customers of telecommunication in Ghana.

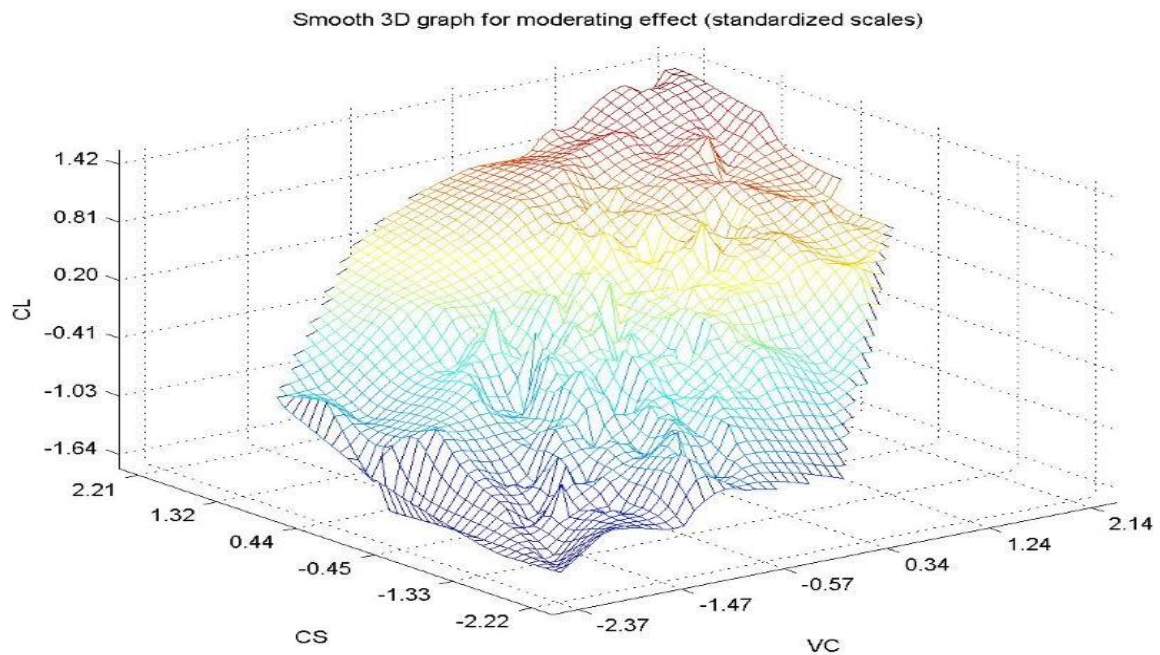


Figure 4.3 Representation of the moderating effect of customer satisfaction on the interaction between customer satisfaction and value co-creation on customer loyalty

Source: Warp PLS version 7.0

4.10 Model Evaluation

Model testing is vital in structural equation modeling as a means of verifying the validity and precision of the hypothesized model. It involves discriminant validity testing, which checks that constructs are distinct, and model fit testing, which examines the quality of the model in fitting the data. This research focuses on these elements so intensely in order to highlight their significance in making SEM models stable and reliable.

4.10.1 Discriminant Validity

Discriminant validity measures the extent of different constructs are which are distinct and not strongly correlated. For discriminantly valid constructs, they should exhibit

stronger correlations with their own indicators than they do with the indicators of the other constructs (Hair et al., 2021). Further, other ways to evaluate discriminant validity are the Fornell-Larcker criterion, Heterotrait-Monotrait ratio (HTMT), cross-loadings, and the confidence interval approach (Henseler et al., 2015; Franke & Sarstedt, 2019). This study used the HTMT correlation method to test the validity of the constructs.

4.10.2 Heterotrait-Monotrait ratio (HTMT) Correlation

The Heterotrait-Monotrait ratio (HTMT) method was used to mitigate the weaknesses of the Fornell-Larcker criterion for discriminant validity. According to Henseler et al. (2015), the Fornell-Larcker method does not adequately measure discriminant validity when constructs are closely related thereby lacking validity (Radomir & Moisescu, 2019). Therefore, Henseler et al. (2015) identified the HTMT correlation as a better approach for examining validity. The HTMT method explores the average correlation between the indicators of different constructs. Hair et al. (2020) suggest a HTMT threshold of 0.90; relationships between distinct constructs should fall below this threshold and is especially true when constructs are similar conceptually (Henseler et al., 2015). As illustrated in Table 4.12, all HTMT values were below the 0.90 threshold, therefore discriminant validity was established.

Table 4.12 HTMT Correlation

	1	2	3	4
Value Co-creation	1			
Customer Loyalty	0.698	1		
Customer Satisfaction	0.658	0.695	1	
Trust	0.745	0.829	0.756	1

Source: Field Survey (2024)

4.10.3 Model Fit

Goodness-of-fit statistics of the structural equation model are included in Table 4.13. These range from widely used fit indices such as the CFI, NNFI, RMSEA and SRMR as prescribed by Hair et al. (2006). These indexes allow to measure the degree to which the data are adjusted to the model. According to Hair et al. (2006) a CFI score of 0.90 or greater is indicative of acceptable fit whereas scores of 0.95 or higher represent excellent fit. Likewise, $NNFI \geq 0.90$ is acceptable, and $NNFI \geq 0.95$ indicates a good fit of the model. For RMSEA, a value of 0.08 or below is deemed acceptable and values of 0.06 or lower reflect good fit. An SRMR of 0.08 or less indicates that the model is a good fit.

Table 4.13: Fit Indices Results

Tests of model fit	CFI	NNFI	RMSEA	SRMR
	0.933	0.912	0.073	0.041

Note: CFI, NNFI, RMSEA, SRMR represent Comparative fit index, Non-normed fit index, Root mean square error of approximation, standardized root mean square residual respectively

The fit statistics of the model reflect good overall fit to the data. At Table 4.13, Comparative Fit Index (CFI) of 0.933 and a Non-Normed Fit Index (NNFI) of 0.912 provide strong relative fit, using values over 0.90 as being generally suitable (Hair, 2006). Root Mean Square Error of Approximation (RMSEA) value of 0.073 reports moderate fit, and less than 0.08 will be reported to represent an acceptable fit (Hair, 2006). Furthermore, the Standardized Root Mean Square Residual (SRMR) value of 0.041 presents a wonderful fit as a value less than 0.05 indicates a close fit between the model and data (Hair, 2006).

4.11 Chapter Summary

This chapter took a good look at the data and showed how value co-creation really boosts customer satisfaction, trust, and loyalty. It also pointed out that customer satisfaction has an important role in all these interrelationships. The study linked these results to other studies and shared some useful takeaways for telecom companies in Ghana. In the next chapter, the study wrap everything up with a summary, conclusions, recommendations, and ideas for future research.



CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

This chapter gives a rundown of the main findings from the study, shares some conclusions based on the evidence, and suggests practical advice for decision makers in the telecom industry in Ghana. It also points out the study's limitations and suggests areas where more research could be done.

5.1 Summary

The study looked at how value co-creation, customer satisfaction, trust, and loyalty connect for telecommunication customers in Greater Accra, Ghana. It used a quantitative approach and a specific type of analysis called Partial Least Squares Structural Equation Modeling (PLS-SEM) to check out how customer satisfaction plays a role in these connections.

The first focus of this thesis was on the effect of value co-creation on customer satisfaction, trust and customer loyalty of telecommunication users in Ghana and it is clear from the findings that value co-creation has a positive and significant influence on customer satisfaction, trust and customer loyalty among telecommunication customers in Ghana (Prahalad & Ramaswamy, 2004).

Also, the second research objective of this study was to investigate the mediating role of customer satisfaction on trust, value co-creation, and customer loyalty among Ghanaian telecommunication customers. Customer satisfaction has a meaningful and positive mediating role in the relationship between trust, value co-creation, and customer loyalty among telecommunication customers in Ghana (Anderson & Sullivan, 1993; Kumar & Sharma, 2021).

Again, the third purpose of the study was to test the moderating effect of customer satisfaction on value co-creation, trust, and customer loyalty among telecommunication customers in Ghana. The evidence supports that customer satisfaction has a negative and significant moderating effect on value co-creation, trust, and customer loyalty among telecommunication customers in Ghana (Cossío-Silva et al., 2016).

Finally, the telecommunications customer base in Greater Accra is predominantly young and educated, emphasizing the importance of digital and personalized value co-creation strategies (Ghana Statistical Service, 2021).

5.2 Conclusions

This thesis covered the interrelationship of value co-creation, customer satisfaction, trust and loyalty among telecommunications customers in Ghana. Findings from the thesis suggested that value co-creation contribute substantially towards achieving positive customer outcomes because it had a positive and significant effect on customer satisfaction, trust and loyalty.

Starting, the finding suggests that when customers actively participate in the value-creation process by co-creating with the company, through customization of services and through participation in decision making, their customer satisfaction generally increases, hence, they are more likely to increase the level of trust in the telecom provider and consequently also to higher levels of loyalty over time.

Also, the study showed the extraordinary role of customer satisfaction as a mediating factor. Customer satisfaction substantially influences the relationship between value co-creation, trust and loyalty. Thus, the benefits of value co-creation can be fully realized when customers' satisfaction is high. Satisfied customers not only have higher trust in their telecom provider, but also are more likely to remain loyal and this shows the

importance of customer satisfaction as the barrier to converting co-created value into realizations for business.

Finally, the thesis explored the moderating role of customer satisfaction these relationships. The results show that customer satisfaction strongly and negatively moderate the relationship between value co-creation, trust and loyalty meaning that customer satisfaction is significant in modulating these relationships whereas its moderating effect indicates the strength of relationships between value co-creation, trust, and loyalty will decrease the relationship. This finding suggests there may be a point at which increased satisfaction does not necessarily strengthen the connection between value co-creation and customer loyalty, perhaps because of diminishing returns or increased customer expectations.

5.3 Recommendation

First and foremost, it will be imperative that telecommunications service companies such as MTN, AirtelTigo and Telecel consider the highest priority on developing and implementing their value co-creation strategies, by engaging the customer as a co-creator of their products and services throughout the development and evolution journey. The engagement should also be enabled by clear and effective customer feedback processes, focus groups, and interactive digital customer media such as forums, apps, or social media. If customers can contribute their input, preferences and ideas on new products and services, then a distinct interactive process or platform may emerge whereby customers discover their feedback considered, welcomed and somehow appreciated. Telecommunication service companies such as MTN, AirtelTigo and Telecel allow use of what they learned to tailor their products to achieve customer's ambitions ultimately achieving customer loyalty.

Furthermore, employee involvement is important to deliver value to customers, particularly within value co-creation. Telecommunication companies such as MTN, AirtelTigo and Telecel should invest time and resources into comprehensive training for staff that educate employees on value co-creation approaches and experiences. The training would include educating and developing skills in areas of customer involvement and engagement in value co-creation, customer service through active listening and empathy, and problem solving through collaborative means with customers. Notably, training would also facilitate employee development in the areas of creativity and innovation to allow employee development with customers that enable the employees to work with customers to develop new ideas and solutions collaboratively. Value co-creation is based on a customer centric approach which will assist in employee regular collaboration to deliver value and reinforced trust and satisfaction by customers.

Also, telecommunications companies such as MTN, AirtelTigo and Telecel should continue a focus on providing services of high quality. Quality includes making sure that all of the customer's interactions leave positive impressions and potentially exceed their expectations based on their prior experience, no matter if it is in the areas of customer service, network performance or after sales. Telecommunications companies such as MTN, AirtelTigo and Telecel could also adopt or take advantage of available technology and data analytics to secure and make improvements to the service quality and to identify pain points or customer experience opportunities. Service improvement entails maintaining and updating infrastructure, expanding coverage, and focusing on innovative digital solutions that will improve the way customers experience the company's various services. A consistent focus on the quality of services will lead to improved customer satisfaction and customer loyalty.

In addition, Telecommunication companies have to develop effective monitoring systems to support value co-creation processes and assess their impact on customer satisfaction with different touch points. These systems have to utilize real-time data collected through surveys, feedback forms, social media observation and customer reviews. Where negative feedback occurs, this feedback must be addressed quickly with the assistance of customer service teams that are responsive and work with customers in resolving the problems. Telecommunication companies, for example MTN, AirtelTigo, Telecel do have to realize that negative feedback should help them improve products & services, resolve shortcomings in engagement and service and use the feedback to offer better value for their customers. By closing the loop on feedback, companies are able to build better relationships with their customers by showing that they value their opinions and that they are always on the lookout for customer feedback. Again, establishing lasting relationships with customers goes beyond transactional relationships; it requires a deeper emotional relationship. Telecommunication companies such as MTN, AirtelTigo and Telecel will need to commit to building relationships through relationship marketing, loyalty programs, personalized communication, and give back exclusives to customers who are long-term customers. When it comes to fostering an emotional bond with a customer also to develop a community around the brand, thereby allowing customers to feel valued and connected to something bigger in the society. When customers feel involved in the susceptible area of community and the feeling of trust and loyalty can be sustained in the long run. It would be great to be able to engage with customers frequently through newsletters, personalized updates, appreciation of customers through different days set up by the company.

Lastly, telecommunication operators like MTN, AirtelTigo and Telecel should also look into applying innovative methods for digital engagement to further engage customers and foster co-creation opportunities. Such examples may include: virtual customer advisory boards, gamifying the feedback experience, or even simply interactive methods that allow customers to create their own service plans. Furthermore, digital innovation can relate to creating mobile applications with a simple and easy to use interface, while maintaining a seamless digital experience for customers to check account balances, submit feedback, access tailored services etc. Being proactive about digital developments gives Telecommunication operators the opportunity to provide additional and tailored experiences for customers who can often become easily dissatisfied if competing offers are available.

5.4 Limitations of the study

The information obtained by means of questionnaires relies on self-reported responses from the sample, which can lead to some biases including social desirability bias. Participants offered responses that they thought were socially acceptable that may lead to slight distortions of the data and ensuing findings of the study.

Additionally, the study focuses solely on quantitative approach, which could not have adequately captured the full depth and perspective of each participant's individual experiences. Although it allowed for analysis at a broader, more general level, the consideration of some qualitative elements of data collection would have helped to elaborate on the contextual elements of findings.

Moreover, the study is conducted in the context of the specific telecommunication industry in Ghana, which characteristically has varying cultural, economic, and regulatory factors. So, the study findings and results are not directly transferable to

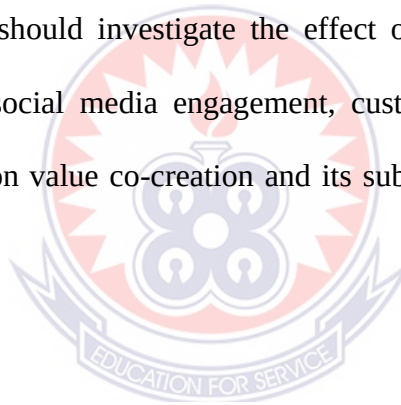
telecommunication markets in other parts of the country or region(s) with different contextual features.

5.5 Suggestions for Future Studies

Future research should explore additional demographic variables such as income levels, regional differences, and digital literacy to gain deeper insights into their effect on trust and loyalty in the telecom sector.

Also, future studies should conduct a comparative study across different regions of telecom providers within Ghana and in other developing countries to generalize findings and understand regional differences in customer behavior.

Lastly, future studies should investigate the effect of various customer interaction touchpoints, such as social media engagement, customer service interactions, and mobile app usability, on value co-creation and its subsequent effects on satisfaction, trust, and loyalty.



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6. How many years have you been using your mobile network? a. Less than 5 years [] b. 5 – 7 years [] c. 8 – 10 years [] d. Above 10 years []

7. Please indicate the factor that you considered in using MTN in addition to other mobile networks. a. Widest network coverage [] b. Quality of service [] c. Low call rates []

d. Widespread use by my family and friends []

SECTION B: Value Co-creation

Please indicate the level of degree of your agreement with the following statements by ticking (✓) the appropriate number 1=Strongly disagree, 2= Disagree, 3= Neutral, 4= Agree, and 5= Strongly Agree

Statements		Score				
Value Co-creation: Dialogue						
D1	Telecommunication dialogue with customers about the difficulties in using their services	1	2	3	4	5
D2	Telecommunication dialogue with customers in providing new services	1	2	3	4	5
D3	Telecommunication dialogue with customers in redesigning old services	1	2	3	4	5
D4	Telecommunication engages in dialogue with customers regarding the establishment of facilities for the use of their service	1	2	3	4	5

	Value Co-creation: Access to information					
A1	Customers have access to information regarding the creation of new services of the telecommunication	1	2	3	4	5
A2	Customers have information about the difficulties in using the services of the telecommunication	1	2	3	4	5
A3	Customers have information regarding the redesign of old telecommunication services	1	2	3	4	5
	Value Co-creation: Risk assessment					
R1	New products of telecommunication are tested with focus groups	1	2	3	4	5
R2	Customers feel safe when using innovative new service	1	2	3	4	5
R3	Customers trust the telecommunication's security system	1	2	3	4	5
R4	Telecommunication informs customers about risks when using their services	1	2	3	4	5
	Value Co-creation: Transparency					
T1	Telecommunication is transparent to customers about the difficulties in using their services	1	2	3	4	5
T2	The telecommunication has a system of transparency toward customers' proposals	1	2	3	4	5
T3	Customers are informed about the steps taken concerning their suggestions	1	2	3	4	5

Section C: Customer Satisfaction

Please indicate the level of degree of your satisfaction with the following statements by ticking (✓) the appropriate number 1= Not at all satisfied, 2= Slightly satisfied, 3= Moderately satisfied, 4= Very satisfied, and 5= Completely satisfied

Statements		Score				
Customer Satisfaction						
CS1	How satisfied are you with your telecommunication?	1	2	3	4	5
CS2	How do you rate the quality of service of your telecommunication?	1	2	3	4	5
CS3	How do you evaluate the value of the telecommunication service to price?	1	2	3	4	5
CS4	How satisfied are you with the telecommunication's responsibility for your questions or concerns about their services?	1	2	3	4	5

Section D: Trust

Please indicate the level of degree of your agreement with the following statements by ticking (✓) the appropriate number 1=Strongly disagree, 2= Disagree, 3= Neutral, 4= Agree, and 5= Strongly Agree

Statements		Score				
Trust						
T1	I trust my telecommunication to solve customers' problems	1	2	3	4	5
T2	The telecommunication correctly provides the services that I need	1	2	3	4	5
T3	I trust the advice given by my telecommunication	1	2	3	4	5
T4	I believe this telecommunication worry about my needs	1	2	3	4	5

Section E: Customer Loyalty

Please indicate the level of degree of your agreement with the following statements by ticking (✓) the appropriate number 1=Strongly disagree, 2= Disagree, 3= Neutral, 4= Agree, and 5= Strongly Agree

Statements		Score				
Customer Loyalty						
CL1	I use telecommunication services and I rarely think about changing my service provider	1	2	3	4	5
CL2	I recommend the service of my telecommunication to someone who seeks my advice	1	2	3	4	5
CL3	The telecommunication I use is my favorite	1	2	3	4	5
CL 4	I encourage friends and relatives to do business with my telecommunication	1	2	3	4	5

Thank You!