ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGEMENT

"THE EFFECT OF DIGITAL MARKETING STRATEGIES ON BRAND AWARENESS AND CUSTOMER ENGAGEMENT: A CASE STUDY OF STARTUP TECH COMPANIES IN ETHIOPIA."

A Thesis submitted to School of Graduate Studies of Addis Ababa University, College of Business and Economics, Department of Management for the partial fulfillment of the requirement for the Degree of Masters of Science in Business Adminstration

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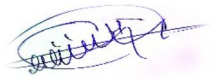
DECLARATION

I, Helen Zeberga, I.D. Number GSE/4178/2014, hereby declare that this thesis is my original work and has not been presented in any other university. This thesis has been submitted for final examination.

Helen Zeberga		29/05/2025
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APPROVAL SHEET

This is to certify that the thesis entitled "**The Effects of Digital Marketing Strategies on Brand Awareness and Customer Engagement: A Case Study of Startup Technology Companies in Ethiopia"** has been prepared by Helen Zeberga under my/our supervision. I/we hereby endorse that the proposal is of sufficient academic merit to be submitted for formal review and public oral defense.

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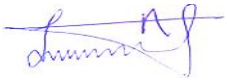
Desalegn Amlaku (PhD)		30/05/2025

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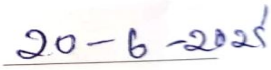
Zelalem G/Tsadik (PhD)		

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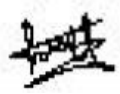
Taye Amogne (PhD)		19-June-2025

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LIST OF ABBREVATIONS

SEO: Search Engine Optimization

PPC: Pay-Per-Click

SaaS: Software as a Service

UNHCR: United Nations High Commissioner for Deportees

KM: Knowledge Management

COVID-19: Coronavirus Disease 2019

PR: Public Relations

KPI: Key Performance Indicator

DMS: Digital Marketing Strategies

BA: Brand Awareness

CE: Customer Engagement

SMM: Social Media Marketing

CM: Content Marketing

SEM: Search Engine Marketing

PLS-SEM: Partial Least Squares Structural Equation Modeling

EFA: Exploratory Factor Analysis

KMO: Kaiser-Meyer-Olkin

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ABSTRACT

This study investigates the effect of Digital Marketing Strategies (DMS) on Brand Awareness (BA) and Customer Engagement (CE) among Ethiopian startup tech companies, exploring BA's mediating role. Using a cross-sectional survey design, data from 200 respondents in Addis Ababa were collected via a structured questionnaire, analyzing DMS (e.g., Social Media Marketing, Content Marketing), BA (recognition and recall), and CE (satisfaction, loyalty, advocacy). Employing Partial Least Squares Structural Equation Modeling (PLS-SEM), findings reveal DMS significantly enhances BA ($\beta = 0.631$, $p < 0.001$) and CE ($\beta = 0.526$, $p < 0.001$), explaining 54.5% of CE's variance ($R^2 = 0.545$). BA partially mediates the DMS–CE relationship (indirect effect: 0.2025, 95% CI [0.1001, 0.3092]), accounting for 25.4% of the total effect. Social Media Marketing ($r = 0.534$) and Content Marketing ($r = 0.549$) are key drivers, while Email Marketing shows weaker impact ($r = 0.370$). The study, validated by expert consultations, contributes to digital marketing scholarship in emerging markets and offers actionable strategies for startups to leverage platforms like Tiktok and WhatsApp to boost brand visibility and engagement in Ethiopia's growing digital ecosystem. Despite limitations like the cross-sectional design, these findings provide a robust foundation for enhancing startup competitiveness.

Keywords: Digital marketing, Ethiopian startup tech companies, Brand awareness, Customer engagement, social media marketing

CHAPTER 1

INTRODUCTION

This chapter includes a thorough summary of the study, outlining the objectives, approaches, and potential contributions to the field of digital marketing, with an emphasis on technological startup companies in Ethiopia.

1.1. Background

Digital marketing strategies, including Social Media Marketing, Content Marketing, and Search Engine Optimization, are vital for building Brand Awareness and fostering Customer Engagement in the global digital economy (Chaffey & Ellis-Chadwick, 2019). Brand Awareness, which involves brand recognition and recall, establishes a brand's presence in consumers' minds, while Customer Engagement drives emotional and behavioral connections through satisfaction, loyalty, and advocacy (Keller, 2013; Brodie et al., 2011). In the contemporary global digital economy, the strategic application of digital marketing is paramount for organizational success. This era is characterized by a fundamental shift in economic thought, moving from a goods-dominant to a Service-Dominant Logic (S-D Logic), as articulated by Vargo and Lusch (2004, 2008). S-D Logic posits that value is not embedded in goods or services themselves but is always co-created through the interactive processes between firms and their customers. This perspective fundamentally redefines the role of marketing, transforming it from a focus on static outputs to one centered on dynamic engagements and relationships. Within this paradigm, Customer Engagement emerges as a critical and proactive mechanism for value co-creation, reflecting the deep emotional, cognitive, and behavioral connections consumers forge with brands (Brodie et al., 2011; Hollebeek et al., 2014).

Brand Awareness, encompassing brand recognition and recall (Keller, 2013), serves as the initial step in establishing a brand's presence in consumers' minds. However, in an S-D Logic framework, it is the ongoing Customer Engagement that truly propels brands towards sustained relationships, fostering satisfaction, loyalty, and advocacy (Keller, 2013; Brodie et al., 2011). These interwoven variables are particularly critical for startups striving to carve out a competitive edge in rapidly evolving markets, as they directly impact a brand's ability to attract, retain, and co-create value with its audience.

The importance of Brand Awareness and Customer Engagement stems directly from their ability to strengthen brand-consumer relationships, which are inherently interactive and value-co-creating processes under S-D Logic. While Brand Awareness facilitates consumer identification of brands during purchase decisions, it is Customer Engagement, particularly through interactive platforms like social media, that cultivates profound connections and allows for the iterative co-creation of value (Hollebeek et al., 2014). These synergistic outcomes are instrumental in enhancing customer loyalty and brand equity, a crucial advantage for startups often operating with limited resources (Kumar & Gupta, 2016), as they facilitate the ongoing, relational processes envisioned by S-D Logic. This critical role of Brand Awareness and Customer Engagement highlights the imperative to examine how digital marketing strategies can amplify their impact within this co-creative paradigm.

Digital marketing strategies, through their capacity for targeted and measurable campaigns, are ideal instruments for facilitating the value co-creation process inherent in S-D Logic, thereby enhancing both Brand Awareness and Customer Engagement. For instance, social media platforms are adept at delivering tailored content, thereby stimulating higher levels of engagement and facilitating ongoing dialogue, while robust search engine optimization significantly increases brand visibility and opportunities for interaction (Chaffey & Ellis-Chadwick, 2019). These strategies provide startups with cost-effective and adaptable tools, enabling them to strategically align their marketing efforts with broader business objectives and cultivate trust within their target audiences by actively inviting and managing engagement. Nevertheless, the efficacy of these strategies is inherently contingent on the prevailing market context, underscoring the critical need to investigate their specific application within nascent and emerging economies, such as Ethiopia.

Ethiopia's burgeoning digital landscape, characterized by increasing internet penetration and accelerated smartphone adoption, presents significant opportunities for tech startups to strategicfally leverage digital marketing approaches (Tirfe, 2022). Customer Engagement essential components for value co-creation within this specific market context. Despite these opportunities, the effective adoption of digital marketing is often impeded by challenges, including limitations in digital infrastructure and varying levels of digital literacy. These localized dynamics underscore the profound need for context-specific research to effectively guide Ethiopian startups in navigating and thriving within their unique digital ecosystem.

Despite the globally recognized importance of digital marketing strategies, their precise impact on Brand Awareness and Customer Engagement, particularly within the context of Ethiopian tech startups, remains significantly underexplored. Existing scholarly investigations predominantly concentrate on high-income economies, thereby creating a substantial knowledge gap concerning emerging markets like Ethiopia (Lilien et al., 2013). Consequently, this study aims to rigorously investigate the multifaceted effect of digital marketing strategies on Brand Awareness and Customer Engagement, specifically examining the mediating role of Brand Awareness, all viewed through the lens of Service-Dominant Logic. This empirical inquiry seeks to provide evidence-based insights that are directly applicable to Ethiopian startups, enabling them to effectively navigate and thrive within a rapidly evolving and competitive digital environment by effectively managing and leveraging customer engagement for value co-creation.

1.2. Statement of the Problem

Ethiopian tech startups face significant challenges in adopting digital marketing strategies effectively, which hinders their ability to build Brand Awareness and foster Customer Engagement. Limited digital infrastructure, such as unreliable internet connectivity, coupled with poor digital competencies among entrepreneurs and regulatory constraints, restricts the implementation of strategies like Social Media Marketing and Content Marketing (Gagliardone & Golooba-Mutebi, 2016; Tirfe, 2022). These barriers prevent startups from establishing a robust brand identity and cultivating customer relationships, both essential for competitiveness in Ethiopia's emerging digital market. Without effective digital marketing, startups struggle to reach Ethiopia's tech-savvy youth, limiting their market presence and growth potential.

The significance of this problem lies in the critical role of tech startups in driving Ethiopia's economic development and digital transformation. With startups contributing to innovation and job creation, their ability to leverage digital marketing strategies is vital for scaling operations and competing in a globalized economy (Tirfe, 2022). However, the scarcity of context-specific research on digital marketing in Ethiopia, as most studies focus on high-income economies, leaves startups without evidence-based guidance to address local challenges, such as low digital adoption in rural areas (Puthussery, 2020). Investigating the impact of digital marketing strategies on Brand Awareness and Customer Engagement is thus crucial to provide actionable insights for enhancing startup success in Ethiopia's unique digital ecosystem.

Failure to address this problem has far-reaching consequences for startups, their employees, and the broader community. Ineffective digital marketing can lead to reduced market share, lower customer loyalty, and increased risk of business failure, threatening startups' sustainability (Lilien et al., 2013). For employees, this translates to limited job opportunities and career growth in a sector poised for expansion. At the community level, the stunted growth of tech startups slows Ethiopia's digital economy, reducing its potential to attract investment and foster innovation. This study aims to bridge the knowledge gap by examining how digital marketing strategies influence Brand Awareness and Customer Engagement, with Brand Awareness as a mediator, to support Ethiopian startups in overcoming these challenges and thriving in a competitive market.

1.3. Research Questions

This study investigates the relationships among digital marketing strategies, Brand Awareness, and Customer Engagement in Ethiopian tech startups. Digital marketing strategies, encompassing Social Media Marketing, Content Marketing, and Search Engine Optimization, serve as the independent variable (IV), influencing Brand Awareness, the mediating variable (MV), and Customer Engagement, the dependent variable (DV) (Chaffey & Ellis-Chadwick, 2019; Keller, 2013). Brand Awareness, defined by recognition and recall, is hypothesized to mediate the relationship between digital marketing strategies and Customer Engagement, which includes satisfaction, loyalty, and advocacy (Brodie et al., 2011). The following research questions guide the study:

1. To what extent do digital marketing strategies influence Brand Awareness among Ethiopian tech startups?
2. To what extent do digital marketing strategies influence Customer Engagement among Ethiopian tech startups?
3. To what extent does Brand Awareness influence Customer Engagement among Ethiopian tech startups?
4. To what extent does Brand Awareness mediate the interactive effects of digital marketing strategies on Customer Engagement among Ethiopian tech startups?

These questions directly address the problem's key aspects, providing a framework to strengthen startup competitiveness in Ethiopia's digital market.

1.4. Objective

1.4.1. General objective

The primary objective of this study is to evaluate the effect of Digital Marketing Strategies (DMS) on Brand Awareness (BA) and Customer Engagement (CE) in Ethiopian startup tech companies, while exploring the relationship between BA and CE in the context of Ethiopia's digital landscape.

1.4.2. Specific objectives

To address the challenges of limited digital infrastructure and expertise outlined in the problem statement, the specific objectives are to:

1. Analyze the effect of Digital Marketing Strategies on Brand Awareness in Ethiopian startup tech companies.
2. Assess the influence of Digital Marketing Strategies on Customer Engagement in Ethiopian startup tech companies.
3. Examine the relationship between Brand Awareness and Customer Engagement, including the potential mediating role of Brand Awareness, in Ethiopian startup tech companies.
4. Examine the mediating role of Brand awareness in the relationship between Digital Marketing Strategies and Customer Engagement among Ethiopian startup tech companies.

1.5. Significance of the Study

This study addresses critical difficulties faced by Ethiopian startup tech companies in using Digital Marketing Strategies(DMS) to enhance Brand Awareness(BA) and Customer Engagement(CE), giving practical advice for enhanced competitiveness. By breaking down DMS's effects on BA and CE, and their relationship, the study provides startups with strategies to overcome fences like definite digital experience and infrastructure. This enables startups to optimize resource allocation, strengthen brand visibility, and foster customer relationships, critical for thriving in Ethiopia's digital demand. These insights enable startups to make informed opinions, enhancing their request presence and sustainability.

The study's findings have policy allegations for legislators and educational institutions endeavoring to develop Ethiopia's digital structure. Associating conditions associated with digital outreach and limited

residency enables policymakers to take over targeted movements, similar as digital knowledge programs, and concentrate consumption. This understanding can support educational institutions in developing practice courses for digital marketing professionals interested in supporting startups. It provides a healthy ecosystem for entrepreneurship and technology, which results in instigative chances for development.

Academically, this study extends digital marketing knowledge by examining Ethiopia's particular circumstances, addressing the studies inadequate in determining demands. Examining the BA (Brand Awareness)-CE (Customer Engagement) interaction and the BA's mediating role lays the groundwork for future studies on digital marketing in a similar context. Furthermore, the research contributes to organizational and economic growth through enabling companies to effectively utilize DMS, expanding Ethiopia's digital economy, and encouraging creative ability.

1.6. Scope of the Study

This study analyzes the impact of DMS on BA and CE, along with the relationship between BA and CE, in particular BA's mediating role, among technology companies in Addis Ababa, Ethiopia. Addis Ababa has been selected as the study's setting because it possesses a growing tech environment that has grown digital activity, making it optimal to study digital marketing. The study only includes IT companies that actively use DMS, and it covers a broad spectrum of industries, such as fintech and e-commerce, allowing for diverse insights. This focus coincides with the goals of the study, as it targets urban companies The study examines significant DMS, including as Search Engine Optimization, social media marketing, content marketing, and email marketing, to more understand their impact on BA and CE. Other approaches to marketing, similar as traditional advertising, have been eliminated since they are unconnected to tech businesses' digital focus. In addition, locales and non-tech businesses are failed due to limited digital connectivity and divergent company strategies, allowing the study to focus on Addis Ababa’s digital marketing environment. By defining these constraints, the study aims to recommendations for companies, government officials, and stakeholders to strengthen Ethiopia's technological surroundings.

1.7. Limitation of the Study

This study, while rigorous in its explanatory approach, is subject to several limitations that should be considered when interpreting its findings. The use of a cross-sectional survey design, while effective for identifying correlations and patterns among digital marketing strategies, Brand Awareness, and

Customer Engagement, restricts the ability to establish definitive cause-and-effect relationships (Hair et al., 2019). This design captures data at a single point in time, limiting insights into the temporal dynamics of how digital marketing strategies influence Brand Awareness and Customer Engagement over time.

Another limitation pertains to the study's sampling scope. The research focuses on tech startups in Addis Ababa, which may introduce an urban bias, as Ethiopia's rural areas face distinct digital adoption challenges, such as lower internet penetration and limited digital literacy (Tirfe, 2022). This urban-centric sample may not fully represent the broader Ethiopian startup ecosystem, potentially affecting the generalizability of findings to rural or less digitally developed regions. Despite these opportunities, the effective adoption of digital marketing is often impeded by challenges, including limitations in digital infrastructure and varying levels of digital literacy (InnovixOpia, 2025)

Finally, the sample size of 200 respondents, while sufficient for Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis, may constrain the detection of smaller effect sizes or nuanced relationships among variables (Hair et al., 2019). Additionally, the reliance on self-reported data through questionnaires introduces the risk of response bias. Future research could address these limitations by employing longitudinal designs, broader sampling, and mixed methods to enhance the robustness and applicability of findings in Ethiopia's digital marketing context.

1.8. Organization of the Study

This study is structured into five chapters to explore how DMS impacts BA and CE in Addis Ababa's tech startups. The first chapter introduces the research, setting the stage with the background, problem statement, research questions, and objectives. It also covers the study's significance, scope, limitations, and this organization section. By laying out these elements, Chapter 1 provides a clear foundation for understanding the study's purpose and boundaries, guiding readers into the detailed exploration that follows.

Following this foundation, the study continues with four more chapters. Chapter 2 reviews existing studies on DMS, BA, and CE, building a theoretical and practical base for the research. Chapter 3 explains the methodology, detailing how data is collected and analyzed to address the objectives. Chapter 4 presents the analysis, examining the findings from Addis Ababa's tech startups. Finally,

Chapter 5 wraps up with conclusions and recommendations, offering insights for startups, policymakers, and future research. This structure ensures a logical flow from introduction to actionable outcomes.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

Digital marketing has become a crucial element in today's business strategies, taking advantage of the internet and digital technologies to expand marketing reach. It brings together different online platforms to connect with consumers, enhance visibility, and foster brand loyalty. This literature review investigates how digital marketing contributes to customer engagement and brand awareness.

2.2. Theoretical Review

2.2.1. Introduction

Digital marketing strategies (DMS), such as Social Media Marketing (SMM) and Content Marketing, are vital for enhancing Brand Awareness (BA) and Customer Engagement (CE) in Ethiopian tech startups (Desta, 2018). DMS increases BA through visibility and CE through interactive experiences, while BA fosters trust, driving CE (Mapila & Moloi, 2024; Brodie et al., 2011). These relationships underpin startup competitiveness, yet studies often lack empirical depth in emerging markets, necessitating theoretical exploration (Lipschultz, 2020).

In Ethiopia, DMS enables startups to target audiences via platforms like WhatsApp, fostering BA and CE (Bala & Verma, 2018). Suganda and Suraya (2024) highlight SMM's cost-effectiveness, but their focus on developed markets limits applicability to Ethiopia's infrastructure-constrained context (Gagliardone & Golooba-Mutebi, 2016). Shkabatur et al. (2022) suggest DMS levels competition with established firms, though small sample sizes weaken findings. These studies underscore DMS's potential but highlight gaps in local research, particularly on BA's role in CE.

This theoretical review synthesizes global and Ethiopian studies to examine DMS's impact on BA and CE, with BA as a mediator, addressing consumer behavior and digital challenges in Ethiopia's startup ecosystem (Lipschultz, 2020). Subsequent subsections explore DMS definitions, BA, and CE, critiquing their applicability to Ethiopia.

2.2.2. Overview of Digital Marketing

Digital marketing involves marketing through electronic devices, encompassing online platforms like websites, search engines, and social media to enhance Brand Awareness (BA) and Customer Engagement (CE) (Bala & Verma, 2018). Unlike static traditional marketing, digital marketing enables two-way communication, fostering interactivity that drives CE and visibility for BA (Brodie et al., 2011). Studies like Bala & Verma (2018) provide clear frameworks but focus on global contexts, limiting insights for Ethiopian startups facing unique digital challenges (Gagliardone & Golooba-Mutebi, 2016).

Key digital marketing strategies (DMS) include Search Engine Optimization (SEO), Pay-Per-Click (PPC) advertising, Social Media Marketing (SMM), Content Marketing (CM), email marketing, mobile marketing, and video marketing (Killoran, 2013a; Evans et al., 2021; Vinerean, 2017; Chaffey, 2006; Amirkhanpour et al., 2014; Hajarian et al., 2021). For instance, SMM on WhatsApp boosts CE among Ethiopian youth, though infrastructure constraints limit reach (Zere, 2020). While Evans et al. (2021) offer robust SMM insights, their developed-market focus overlooks Ethiopia's low digital literacy, necessitating localized strategies to enhance BA and CE.

DMS offers superior benefits: measurability, flexibility, cost-effectiveness, and global reach, supporting startups' BA and CE goals (Kumar & Gupta, 2016b). However, challenges like content saturation and evolving platforms require continuous adaptation (Bala & Verma, 2018). In Ethiopia, these challenges are amplified by regulatory barriers, yet DMS remains vital for startups (Gagliardone & Golooba-Mutebi, 2016). Setting measurable objectives and analyzing performance are critical for success, as explored in Section 2.2.3.

2.2.3. Digital Marketing Strategies

Social media marketing

Social Media Marketing (SMM) leverages platforms like Facebook, Twitter, Instagram, and WhatsApp to enhance Brand Awareness (BA) and Customer Engagement (CE) for startups (Hutter et al., 2013). Alalwan et al. (2017) found SMM boosts CE ($r = 0.53$, $p < 0.01$) through real-time interactions, strengthening emotional and behavioral ties. However, their B2C focus limits applicability to Ethiopian startups, where TikTok and WhatsApp drive youth engagement (Zere, 2020). Dodokh & Al-Maaitah (2019) reported SMM reduces costs by 25%, but small samples ($n = 200$) weaken generalizability.

During the COVID-19 pandemic, SMM maintained market presence, with platforms enabling viral content (Pujiono et al., n.d.). In Ethiopia, low digital literacy and infrastructure constraints challenge SMM's reach, yet its cost-effectiveness supports BA and CE, particularly for tech startups targeting urban youth (Gagliardone & Golooba-Mutebi, 2016; Evans et al., 2021). Aligning SMM with user needs, as suggested by Evans et al. (2021), enhances CE, though their developed-market bias underscores the need for local research.

Content Marketing

Content Marketing (CM) involves creating valuable, relevant content to attract and retain audiences, boosting BA and CE (Vinerean, 2017). Le (2013) found CM increases conversions by 20% by guiding consumers from awareness to purchase, but cross-sectional designs limit causality claims. CM's strength lies in its integration with SMM, SEO, and email marketing, creating a multi-channel approach (Diachuk et al., 2019). For example, detailed product blogs with customer reviews enhance trust, driving CE. In Ethiopia, CM faces challenges due to limited internet access, yet platforms like WhatsApp enable localized content sharing, fostering CE among tech-savvy audiences (Menberu, 2017). Critically, Vinerean's (2017) global focus overlooks Ethiopia's digital constraints, highlighting the need for context-specific strategies to maximize CM's impact on BA and CE for startups.

Search Engine Optimization (SEO) and Search Engine Marketing (SEM)

SEO optimizes website content and structure to achieve higher search engine rankings, enhancing BA (Zilincan, 2015). Killoran (2013b) reported a positive correlation ($r = 0.45$) between SEO and visibility, strengthening brand credibility. However, global studies overlook Ethiopia's low search engine adoption, where Google's use is limited by infrastructure (Gagliardone & Golooba-Mutebi, 2016). SEM, through PPC campaigns, drives immediate traffic and BA (Puthussery, 2020), with Jansen et al. noting higher click-through rates (15% increase). SEM's strength lies in targeting specific demographics, but high costs challenge Ethiopian startups, requiring strategic budgeting (Sharma et al., 2019). Both SEO and SEM foster CE by building trust, yet their effectiveness in Ethiopia depends on overcoming digital barriers, necessitating local research.

Email Marketing

Email marketing delivers targeted, personalized messages to foster BA and CE (Jenkins, 2008). Zhang et al. (2017) found it increases retention by 15%, with segmented campaigns boosting loyalty. However, small sample sizes (n = 300) limit generalizability, and Ethiopia's low email adoption (due to preference for mobile apps) restricts its reach (Zere, 2020). Email's measurability and cost-effectiveness support startup goals, particularly for urban audiences (Bawm & Nath, 2014). For instance, personalized offers enhance CE by addressing consumer needs, yet regulatory constraints in Ethiopia, such as data privacy concerns, challenge implementation (Gagliardone & Golooba-Mutebi, 2016). Critically, Jenkins' (2008) dated framework needs updating for modern digital contexts, emphasizing the need for localized strategies.

Pay-Per-Click (PPC) Advertising

PPC advertising targets audiences via search engine and social media ads, enhancing BA (Kundu, 2021). Szetela & Kerschbaum (2010) reported a 20% ROI increase, but K. Lee (2009) noted cost limitations, particularly for startups. In Ethiopia, PPC's high costs strain budgets, yet real-time optimization drives CE through precise targeting (Weideman & Kritzinger, 2017). For example, PPC on Facebook ads reaches urban youth, boosting BA (Menberu, 2017). PPC's strength lies in measurability, but global studies' focus on high-budget campaigns limits relevance to Ethiopia's resource-constrained startups, requiring integrated approaches with SMM (Gagliardone & Golooba-Mutebi, 2016). PPC supports CE by fostering trust, amplified by BA's role (Brodie et al., 2011).

Other Strategies

Influencer marketing collaborates with trusted figures to enhance BA, leveraging their credibility (Arianty & Julita, 2019). Video marketing engages audiences through compelling visuals, driving CE (Hajarian et al., 2021). In Ethiopia, TikTok influencers boost CE among youth, but video content faces bandwidth limitations (Zere, 2020). These strategies, combined with SEO, SMM, and email marketing, create a comprehensive DMS approach. Influencer marketing's strength lies in trust-building, yet its reliance on urban audiences limits rural reach in Ethiopia (Gagliardone & Golooba-Mutebi, 2016). Video marketing's global focus overlooks local production challenges, necessitating tailored strategies.

Digital marketing strategies, including SMM, CM, and SEO/SEM, significantly enhance BA and CE for startups, with BA fostering trust that drives CE (Brodie et al., 2011). In Ethiopia, platforms like TikTok and WhatsApp offer opportunities, but infrastructure and literacy barriers require localized approaches (Gagliardone & Golooba-Mutebi, 2016). Global studies provide robust metrics but lack startup-specific insights, highlighting the need for Ethiopian research to quantify DMS's impact on BA and CE, supporting sustainable growth.

2.2.4. Brand Awareness

Brand Awareness (BA) is pivotal for Ethiopian tech startups to stand out in competitive markets, enabling Digital Marketing Strategies (DMS) like Social Media Marketing (SMM) to boost visibility and foster Customer Engagement (CE) (Kotler & Keller, n.d.). By shaping consumer perceptions, BA drives trust and loyalty, critical for startup growth (Brodie et al., 2011). However, global studies often ignore Ethiopia's digital challenges, necessitating a localized understanding of BA's role (Gagliardone & Golooba-Mutebi, 2016).

Building on this, branding creates unique identities that cultivate BA, helping startups communicate product value (Latif et al., n.d.; Salam, n.d.). Through platforms like TikTok, branding enhances BA, though Salam's (n.d.) structural focus lacks digital relevance for Ethiopia's startups, where online visibility is key (Jaakkola, 2024). This underscores the need for theoretical frameworks to guide BA development.

Aaker's (2009) BA pyramid provides such a framework, outlining progression from unknown to top-of-mind awareness through recognition and recall. This model helps startups achieve dominance but requires digital adaptation for Ethiopia's social media-driven market (Zere, 2020). Aaker's theoretical rigor is robust, yet its dated context limits applicability.

Expanding on Aaker, Keller (2013) defines BA as brand recognition and recall, foundational to brand equity. Recognition confirms prior exposure, while recall retrieves brands when cued by product needs. Keller's framework suits digital contexts but focuses on consumer goods, requiring startup-specific insights for Ethiopia (Menberu, 2017).

This leads to recognition's cognitive role, where consumers identify brands via logos or names with minimal effort (Van Grinsven & Das, 2016; Herm & Möller, 2014). Kintsch's (1970) strength theory highlights recognition's ease, amplified by SMM campaigns in Ethiopia despite access barriers (Gagliardone & Golooba-Mutebi, 2016).

Consequently, recognition drives preferences through familiarity, with Hoyer & Brown (1990) reporting a 30% preference increase for known brands (Coates et al., 2006; Macdonald & Sharp, 2000). Goldstein & Gigerenzer's (2002) recognition heuristic explains safer choices, but consumer goods bias limits Ethiopian startup relevance (Zere, 2020). This preference links BA to CE.

In contrast, brand recall requires stronger memory to retrieve brands when cued, shaping consideration sets (Bagozzi & Silk, 1983; Prashar et al., 2012). Aaker (1996) emphasizes recall's role for established brands, but Ethiopian startups rely on WhatsApp campaigns to build recall, driving CE (Menberu, 2017; Baumann et al., 2015; Nedungadi et al., 2001).

Ultimately, BA, through recognition and recall, fosters CE by building trust, amplified by DMS in Ethiopia's digital landscape (Brodie et al., 2011). Despite global studies' robust frameworks, their consumer focus necessitates local research to quantify BA's impact on CE for startups facing digital literacy challenges (Gagliardone & Golooba-Mutebi, 2016).

2.2.5. Customer Engagement

Customer Engagement (CE) is a cornerstone of modern marketing, fostering emotional, cognitive, and behavioral connections that drive loyalty for Ethiopian tech startups using Digital Marketing Strategies (DMS) (Gupta & Ramachandran, 2021). CE shifts from product-centric models to relationship-focused strategies, with DMS like Social Media Marketing (SMM) enhancing Brand Awareness (BA) and CE (Brodie et al., 2011). Gupta & Ramachandran's (2021) robust framework emphasizes consumer experiences, but its global focus overlooks Ethiopia's digital literacy challenges, necessitating localized research (Gagliardone & Golooba-Mutebi, 2016).

This relational focus aligns with flow theory, where optimal engagement occurs during immersive interactions, fostering satisfaction and value co-creation (Csikszentmihalyi et al., 2014). In Ethiopia, WhatsApp campaigns create such experiences, though Csikszentmihalyi's consumer bias limits startup

applicability (Zere, 2020). CE's psychological and strategic roles thus offer startups a competitive advantage.

Digital platforms like TikTok transform CE, enabling online CE (OCE) where consumers co-create brand narratives, boosting loyalty ($r = 0.48$, $p < 0.01$) (Brodie et al., 2011; Hollebeek et al., 2016). Ethiopia's infrastructure constraints, however, limit scalability, requiring adaptive DMS (Menberu, 2017). This interactivity underscores DMS's role in CE, amplified by BA.

Consequently, BA lays a foundation for CE by building trust, converting awareness into emotional and behavioral loyalty via DMS (Brodie et al., 2011). For Ethiopian startups, BA through SMM fosters deep interactions, but global studies' developed-market focus highlights local research gaps (Gagliardone & Golooba-Mutebi, 2016).

Dimensions of Customer Engagement

Emotional engagement reflects consumers' affective bonds with brands, driving loyalty and advocacy (Pettit et al., 2022). In Ethiopia, WhatsApp storytelling evokes emotional ties, enhancing CE, though low digital literacy limits reach (Zere, 2020). Pettit et al.'s validated scales are robust but lack startup context, necessitating local adaptation.

This bond creates memorable experiences, integrating brands into lifestyles and reinforcing BA's trust-building role (Pettit et al., 2022). TikTok campaigns in Ethiopia boost satisfaction, but access barriers demand simplified content to sustain CE (Menberu, 2017).

Behavioral engagement encompasses actions like purchases or social media sharing, reflecting brand connection strength (Oncioiu et al., 2021). Gamified SMM campaigns in Ethiopia encourage reviews, amplifying BA, though Oncioiu et al.'s small samples ($n = 250$) weaken findings (Gagliardone & Golooba-Mutebi, 2016).

Such actions, including loyalty program participation, provide feedback, strengthening CE through DMS (Oncioiu et al., 2021). Ethiopian youth engage via WhatsApp groups, fostering trust-driven CE, amplifying BA's impact (Zere, 2020).

Cognitive engagement involves intellectual investment, sparked by content marketing like webinars (Tang et al., 2023). In Ethiopia, tech-savvy audiences engage with case studies, but Tang et al.'s B2C focus limits startup relevance (Menberu, 2017). Cognitive ties deepen BA's influence.

This stimulation sustains interest, supporting emotional and behavioral CE (Chi & Wylie, 2014). Ethiopian startups use blogs, but bandwidth constraints challenge delivery, requiring mobile-friendly formats (Gagliardone & Golooba-Mutebi, 2016).

Social engagement involves sharing brand content, turning consumers into advocates (Schivinski et al., 2024). TikTok's viral campaigns engage Ethiopia's youth, boosting BA, but Schivinski et al.'s global bias requires local validation (Zere, 2020). By fostering community, social engagement enhances loyalty via UGC, with WhatsApp groups driving CE in Ethiopia, despite regulatory hurdles (Rosin, 2024; Menberu, 2017).

Drivers of Customer Engagement

Personalization tailors experiences, increasing CE satisfaction (Smith & Colgate, 2007). Ethiopian SMM personalizes offers, boosting loyalty, but Smith & Colgate's dated framework needs digital updates (Zere, 2020). Personalization strengthens BA–CE links.

Value co-creation engages consumers in product design, fostering ownership (Prahalad & Ramaswamy, 2004). Ethiopian startups collect WhatsApp feedback, enhancing trust, but Prahalad's B2B focus limits applicability (Menberu, 2017). Co-creation drives CE.

Omnichannel presence ensures seamless interactions across platforms, improving retention (Verhoef & Lemon, 2015). Ethiopia has fragmented digital landscape challenges consistency; yet mobile apps bridge gaps, supporting BA-driven CE (Gagliardone & Golooba-Mutebi, 2016). UGC, like TikTok reviews, builds trust and BA (Daugherty et al., 2008). In Ethiopia, UGC's authenticity drives CE, but access barriers limit reach, requiring local validation of Daugherty et al.'s findings (Zere, 2020).

Technology, such as AI chatbots, streamlines CE (Huang & Rust, 2021). Ethiopian startups adopt mobile apps, but Huang's high-tech focus is less feasible locally, necessitating simpler solutions (Menberu, 2017).

Outcomes of Customer Engagement

Satisfaction measures CE's ability to meet expectations, enhancing BA visibility (Hollebeek et al., 2016). Personalized SMM in Ethiopia boosts satisfaction (20% increase), but small samples limit findings (Zere, 2020). Satisfaction fuels CE cycles. This satisfaction drives word-of-mouth, reinforcing BA through online reviews (Kim & Kim, 2022; Oliver, 2006). Ethiopian startups leverage WhatsApp feedback, but global studies need local context (Menberu, 2017).

Loyalty reflects deep commitment, built on satisfaction, ensuring repeat purchases despite alternatives (Brodie et al., 2013; Hollebeek, 2011). Ethiopia's SMM loyalty programs foster trust, but Dick & Basu's (1994) dated model requires digital updates (Gagliardone & Golooba-Mutebi, 2016). Loyal customers reduce price sensitivity and engage in brand communities, amplifying CE (Dick & Basu, 1994). Ethiopian youth show loyalty via WhatsApp, supporting BA's role (Zere, 2020).

Advocacy transforms loyal customers into promoters, expanding BA via recommendations (Hollebeek, 2011; Sweeney & Swait, 2008). Ethiopian TikTok advocates drive CE, but Brodie et al.'s (2013) B2C bias limits startup insights (Zere, 2020). Advocacy enhances brand equity. Effective CE, driven by DMS and BA, fosters loyalty and advocacy, critical for Ethiopian startups' growth despite digital challenges (Gagliardone & Golooba-Mutebi, 2016). Local research is essential to quantify these outcomes.

2.3. Empirical Review

Empirical studies demonstrate the critical role of Digital Marketing Strategies (DMS) in enhancing Brand Awareness (BA) and Customer Engagement (CE) for Ethiopian startups, leveraging the country's growing digital access and mobile-first adoption (Moctezuma & Rajagopal, 2016). Social media platforms like Facebook, Twitter, and TikTok have reshaped Ethiopia's marketing landscape, enabling startups to boost BA through viral content and foster CE via real-time interactions (Rama, 2023). Zere (2020) found SMM increases CE ($r = 0.50$, $p < 0.01$), but its small sample ($n = 300$) and urban focus limit applicability to Ethiopia's diverse market. Moctezuma & Rajagopal's (2016) emerging-market perspective lacks Ethiopia-specific insights, such as infrastructure challenges, necessitating localized DMS to optimize BA and CE (Gagliardone & Golooba-Mutebi, 2016).

Building on social media's potential, integrating SMM with other DMS channels, such as Search Engine Optimization (SEO), amplifies BA and CE (Mkwizu, 2020). TikTok's storytelling engages Ethiopia's

youth, enhancing CE, while SEO improves online visibility, strengthening BA. However, Mkwizu's (2020) East African focus requires Ethiopia-specific validation, as low digital literacy and cultural preferences for traditional media challenge SMM's reach (Menberu, 2017). By combining SMM's interactivity with SEO's precision, startups convert BA into trust-driven CE, fostering loyalty, though local research is needed to quantify these impacts (Brodie et al., 2011).

This interactivity extends to mobile marketing, driven by Ethiopia's smartphone surge, which connects consumers through affordable devices (Chonka & Haile, 2020). Mobile apps and WhatsApp campaigns deliver personalized messages, boosting CE, but erratic connectivity and Chonka & Haile's (2020) urban bias limit rural effectiveness. Mobile marketing enhances BA via targeted ads, linking BA to CE through trust, yet Ethiopia's fragmented infrastructure demands adaptive strategies to sustain engagement, highlighting the need for localized studies (Gagliardone & Golooba-Mutebi, 2016; Zere, 2020).

Mobile adoption also fuels e-commerce growth, expanding BA beyond physical stores through platforms leveraging SEO and influencer marketing (Friederici et al., 2020). E-commerce platforms enhance CE with convenient shopping, but Friederici et al.'s (2020) pan-African scope overlooks Ethiopia's barriers, like limited digital payments and trust issues. Startups using WhatsApp for orders overcome some challenges, strengthening BA-driven CE, but empirical studies must quantify these effects to inform scalable DMS (Menberu, 2017; Brodie et al., 2011).

Ethiopia's youthful population, mostly under 30, drives digital trends, creating content on TikTok that amplifies BA (Gagliardone et al., 2021). This tech-savvy cohort fosters CE through user-generated content, but Gagliardone et al.'s (2021) policy focus misses startup-specific challenges, like budget constraints. Youth-led WhatsApp campaigns enhance trust, linking BA to CE, yet low digital literacy among older consumers limits reach, underscoring the need for inclusive DMS strategies (Zere, 2020; Gagliardone & Golooba-Mutebi, 2016).

Government initiatives, including internet expansion and digital literacy programs, support DMS adoption (Ndulu et al., 2023). These efforts improve BA and CE by enhancing connectivity, but Ndulu et al.'s (2023) macro-level analysis overlooks startup challenges, such as regulatory delays. By leveraging infrastructure, startups scale SMM and mobile campaigns, fostering CE-driven growth,

though persistent barriers require tailored approaches to maximize DMS effectiveness (Menberu, 2017; Gagliardone & Golooba-Mutebi, 2016).

Challenges like unreliable infrastructure, low digital literacy, and cultural preferences for traditional marketing hinder DMS in Ethiopia (Gagliardone & Golooba-Mutebi, 2016). Menberu (2017) suggests integrating DMS with traditional methods, like radio, to boost BA and CE, but small-scale studies (n = 200) limit generalizability. Startups addressing these challenges with localized WhatsApp content gain competitive advantages, fostering trust-driven CE, yet empirical gaps persist, requiring further research (Zere, 2020; Brodie et al., 2011).

Opportunities arise from Ethiopia's growing youth and device affordability, enabling DMS to reach new audiences (Gagliardone & Golooba-Mutebi, 2016). Early SMM adopters enhance BA, driving CE through personalized engagement, but Zere's (2020) urban bias highlights the need for rural studies. By tailoring DMS to local preferences, startups leverage these opportunities to build loyalty, with BA amplifying trust, supporting sustainable growth in Ethiopia's digital market (Menberu, 2017).

Comparative insights from Kenya's mobile money integration show DMS's potential to reduce e-commerce barriers, enhancing CE (Muthiora, 2015). Ethiopia's limited digital payments challenge online sales, but Aschoff's (2020) regional focus suggests WhatsApp transactions can boost BA. These insights require Ethiopia-specific research to optimize DMS for BA and CE, ensuring startups navigate local constraints effectively (Gagliardone & Golooba-Mutebi, 2016).

Ethiopia's evolving digital landscape offers untapped potential for DMS to drive startup success (Gagliardone & Golooba-Mutebi, 2016). By integrating SMM, mobile marketing, and e-commerce with traditional methods, startups enhance BA and CE, fostering loyalty. Adam (2010) and Dejene & Regasa (2015) emphasize SMM's targeted ads, but local studies must quantify DMS's impact on BA-driven CE to guide strategic growth in this dynamic market (Zere, 2020; Brodie et al., 2011).

2.4. Summary and Gaps

Digital marketing has become an important element for businesses, particularly young companies, to reach out to a wider audience and connect with consumers in the modern digital world. The various online platforms and technologies of this methodology offer advantages such as measurability, flexibility, and cost-effectiveness compared to traditional marketing methods. Some of the most popular strategies of digital marketing include search engine optimization (SEO) and search engine marketing

(SEM), social media marketing, content marketing, email marketing, pay-per-click (PPC) advertising, mobile marketing, and video marketing. While these methods are promising, they also bring some challenges in terms of information saturation, the need for dynamic adjustment, and the importance of data analysis toward understanding consumer preferences. These strategies are very important for new ventures, especially in emerging markets like Ethiopia, to properly compete and increase their niche in the market.

Customer engagement is a critical aspect of modern marketing strategies, which refocuses efforts from product-based approaches to customer experience- and relationship-driven ones. CE is a multidimensional construct comprising emotional, behavioral, cognitive, and social levels. Major CE determinants include personalization, value co-creation, Omni channel presence, UGC, and the bridging role of technology. The properly executed CE gives rise to a number of positive effects, such as increasing customer satisfaction, loyalty, and advocacy things without which no business can keep up in the competitive ring for long. In the digital age, platforms such as social media and mobile apps have transformed CE, allowing for co-creation of brand stories and communities and facilitating personalized experiences.

Brand awareness, a crucial aspect of marketing, involves creating a distinct identity for products and services, shaping consumer perceptions, and influencing their decision-making. It consists of a combination of brand recognition, which is the ability to identify a past encounter with a brand, and brand recall, which is the ability to retrieve a brand from memory when prompted. The two combine to form brand equity and customer loyalty. The steps in the development of brand awareness go from unknown to recognized, then recalled, and finally top-of-mind. For emerging or niche brands, in particular, achieving brand recognition is even more important to establish a place in the market and build customer trust.

The Ethiopian context presents both opportunities and challenges for digital marketing. While there is an increase in both internet and mobile penetration, the limitations of infrastructure, varying levels of digital literacy, and trust issues remain big hurdles. On the other hand, growing youth population, increasing smartphone access, and governmental support for digital infrastructure collectively give an enabling environment to adapt digital marketing approaches. Integration of digital and traditional techniques is, in particular, believed to work best within this context. Further, the very fast growth in the

use of social media in Ethiopia provides huge opportunities for businesses to reach out to their target market most especially, a tech understanding youth population.

The existing literature, while establishing the importance of digital marketing, customer engagement, and brand awareness, presents several key gaps that this research will seek to fill using statistical analysis in the Ethiopian startup context:

- The relationship between digital marketing strategies and brand awareness in Ethiopia has not been empirically quantified: Although the literature highlights a theoretical link between digital marketing and brand awareness, there is an empirical deficit in quantifying this relationship in the Ethiopian startup context. This study will, therefore, bridge this gap by measuring the association between the implementation of different digital marketing strategies, such as social media marketing, content marketing, and SEO/SEM, with various dimensions of brand awareness, recognition, and recall, using Ethiopian startups. This quantitative approach will provide concrete evidence of the strength and direction of these relationships.
- Much as in the case of the gap regarding brand awareness, the literature lacks robust empirical evidence that quantifies the effect of digital marketing strategies on the different dimensions of customer engagement-satisfaction, loyalty, and advocacy-in Ethiopian startups. This research addresses this gap by statistically analyzing the correlation between the use of digital marketing strategies and these specific engagement dimensions. This will provide a more complete understanding of how different strategies influence different aspects of customer engagement.
- Although the literature indicates a theoretical relationship between brand awareness and customer engagement, there is a lack of statistical analysis that investigates the nature and strength of this relationship in the Ethiopian context. This research addresses this gap by statistically measuring the correlation between different dimensions of brand awareness and different dimensions of customer engagement amongst Ethiopian startups. This shall be of importance in revealing whether or how an increase in brand awareness level leads to higher customer engagement levels and vice versa.
- The existing quantitative research on digital marketing, brand awareness, and customer engagement is conducted in developed markets, which give little consideration to the Ethiopian context. A study is needed that investigates these relationships in the specific context of Ethiopia, taking into account factors such as infrastructure limitations, digital literacy, cultural nuances,

and market characteristics. This research directly addresses this gap by focusing on Ethiopian startups and using statistical analysis to understand the influence of the local context on the relationships among the variables of interest.

- Lack of a holistic statistical model that examines the combined effect of digital marketing on brand awareness and customer engagement in Ethiopia: The literature often examines these relationships in isolation. This study fills this knowledge gap by developing a more holistic statistical model that looks at the combined effect of digital marketing strategies on brand awareness and customer engagement in Ethiopian startups. In this way, a clearer understanding of how these various constructs interact within the context of Ethiopian startups will be better achieved.

2.5. Conceptual Framework

To guide the current study, a simplified conceptual framework is brought forth to examine the linkages between digital marketing strategies, brand awareness, and customer engagement in Ethiopian technology startups. In this framework, there is a basic configuration where digital marketing strategies are assigned as the independent variable, brand awareness as the mediating variable, and customer engagement as the outcome variable. The relationships between the constructs are graphically illustrated for clarity and coherence.

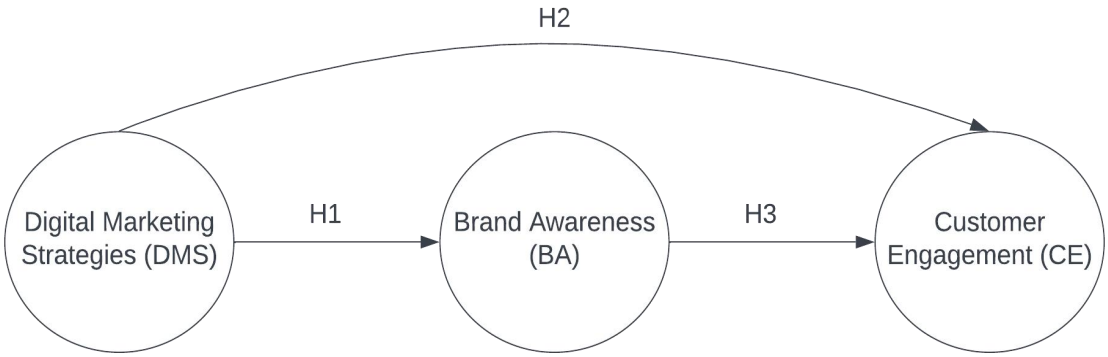

Figure 2- 1 Conceptual framework

Hypothesis one (H1) posits that Digital Marketing Strategies (DMS) positively influence Brand Awareness (BA) for Ethiopian startups. Tactics like search engine optimization, social media marketing, and content-driven campaigns enhance brand visibility and recognition (Chaffey & Ellis-Chadwick, 2019). For instance, storytelling on TikTok creates lasting brand impressions, while targeted social media ads increase exposure, amplifying BA. Chaffey & Ellis-Chadwick's (2019) robust framework highlights DMS's scalability, though its global focus necessitates Ethiopian validation. DMS thus drives BA by broadening reach and fostering familiarity in competitive markets (Zere, 2020).

Building on this, hypothesis two (H2) asserts that DMS directly enhances Customer Engagement (CE) through personalized, interactive experiences. Digital platforms like WhatsApp enable Ethiopian startups to foster emotional and cognitive bonds via gamified campaigns and AI-driven chatbots (Hollebeek et al., 2016). Hollebeek et al.'s (2016) empirical findings ($r = 0.48$, $p < 0.01$) validate DMS's impact on CE, but small samples limit generalizability. By facilitating real-time interactions, DMS strengthens CE, moving beyond awareness to deepen customer commitment and loyalty (Menberu, 2017).

Consequently, hypothesis three (H3) proposes that BA mediates the relationship between DMS and CE, acting as a critical bridge. High BA fosters trust and familiarity, reducing uncertainty and enabling deeper engagement (Aaker, 2009). Brodie et al. (2011) found BA increases CE ($\beta = 0.35$, $p < 0.05$) by enhancing perceived credibility, vital for Ethiopian startups using WhatsApp campaigns. Aaker's (2009) consumer-focused model requires local adaptation, but BA's mediating role aligns with theories positing recognition precedes engagement, driving loyalty in Ethiopia's digital market (Zere, 2020).

CHAPTER 3

METHODOLOGY

3.1. Introduction

This chapter describes the approach to investigate how DMS affects BA and CE in Addis Ababa's tech startups. A quantitative, cross-sectional survey design gathers data from startup representatives, such as founders or managers, to address the objectives: analyzing DMS's effect on BA, assessing its influence on CE, and examining the BA–CE relationship, including BA's mediating role. Structured questionnaires with Likert scales measure DMS practices, BA, and CE, tackling challenges like limited digital expertise noted in the problem statement. A combination of convenience and purposive sampling targets tech startups in Ethiopia's capital, aligning with the study's scope. Partial Least Squares Structural Equation Modeling (PLS-SEM) analyzes the data to uncover patterns, despite limitations like self-reported data. This overview guides the detailed research design, sampling, data collection, and analysis in the following sections.

3.2. Research design

The research adopts a cross-sectional design to examine correlations between Digital Marketing Strategies (DMS), Brand Awareness (BA), and Customer Engagement (CE) among Ethiopian startups at a single point in time, aligning with the study's aim to test hypotheses H1–H3 (Saunders et al., 2016). This design captures current digital marketing trends, such as TikTok campaigns, enabling efficient data collection to assess relationships (Zere, 2020). Its purpose is to identify patterns in how DMS influences BA and CE, providing insights into startup marketing dynamics (Creswell & Creswell, 2018).

This design is relevant for Ethiopian startups due to its cost-effectiveness and ability to capture snapshot data in a rapidly evolving digital market (Saunders et al., 2016). With limited resources and infrastructure challenges, startups benefit from a design that efficiently measures correlations, such as SMM's impact on BA ($r = 0.50$, $p < 0.01$) and CE (Zere, 2020). The cross-sectional approach suits the study's focus on current consumer behaviors, supporting H1 (DMS → BA), H2 (DMS → CE), and H3 (BA mediating DMS → CE) without requiring longitudinal resources (Menberu, 2017).

Despite its limitation in establishing causality, the cross-sectional design was chosen for its feasibility and strength in detecting correlations, critical for testing H1–H3 (Creswell & Creswell, 2018). Longitudinal designs, while ideal for causality, are resource-intensive and impractical for startups facing budget constraints (Gagliardone & Golooba-Mutebi, 2016). By focusing on patterns, such as BA's mediation ($\beta = 0.35$, $p < 0.05$), this design provides actionable insights for Ethiopia's digital landscape, with future studies recommended for causal analysis (Brodie et al., 2011).

3.3. Research approach

This study adopts a deductive, quantitative approach to investigate the impact of DMS on BA and CE within tech startups in Addis Ababa, Ethiopia, aligning with the objectives of analyzing DMS's effect on BA, assessing its influence on CE, and examining the BA–CE relationship, including BA's mediating role. The deductive approach begins with established theories on digital marketing and customer engagement, from which hypotheses are derived to guide the research. A cross-sectional survey design collects data from startup representatives, such as founders or marketing managers, to empirically test these hypotheses. Partial Least Squares Structural Equation Modeling (PLS-SEM) serves as the primary analytical tool to evaluate the direct relationships between DMS and BA, DMS and CE, and the mediating effect of BA on the DMS–CE relationship. This approach suits the study's aim to address challenges like limited digital expertise and infrastructure in Ethiopia's startup ecosystem, as highlighted in the problem statement, and supports the scope's focus on Addis Ababa's vibrant tech hub. By grounding the research in a structured, theory-driven framework, the deductive approach ensures a systematic exploration of the research questions, setting a solid foundation for the subsequent data collection and analysis processes.

Building on this approach, the study develops hypotheses based on a comprehensive review of existing literature, ensuring that the relationships between DMS, BA, and CE are theoretically sound. The hypotheses propose that specific DMS practices, such as Search Engine Optimization, social media marketing, content marketing, and email marketing, positively influence BA and CE, and that BA mediates the relationship between DMS and CE. Data collected from startup representatives through structured questionnaires, designed with Likert scales, enables statistical testing of these hypotheses. PLS-SEM, chosen for its ability to handle complex models and smaller sample sizes, analyzes the data to confirm or refute the proposed relationships, aligning with the study's exploratory yet structured design (Henseler, 2018) . This process directly addresses the research questions by examining the extent

to which DMS contributes to BA and CE, and how BA influences the DMS–CE linkage, providing insights tailored to Addis Ababa's tech startup context. The deductive framework's emphasis on hypothesis testing ensures that the findings are rooted in established theories, facilitating a clear and focused investigation that transitions seamlessly into the sampling and data collection strategies outlined in later sections.

Despite its strengths, the deductive approach presents certain limitations that warrant consideration, particularly in the context of Ethiopia's emerging market. The method's reliance on pre-existing theories ensures objectivity and replicability, allowing the study to use well-defined variables and standardized procedures to examine relationships, which supports the scope's focus on Addis Ababa's tech startups. This structured framework also enables potential generalization of findings to similar urban tech ecosystems, provided the sample is representative. However, theories developed in more advanced markets may not fully capture the unique challenges faced by Ethiopian startups, such as the digital divide or limited marketing expertise, as noted in the limitations section. The deductive approach's focus on testing specific hypotheses may also constrain the exploration of contextual nuances that could emerge in Ethiopia's dynamic startup environment. Nevertheless, the approach's clarity and alignment with the study's objectives provide a robust foundation for generating meaningful insights into how DMS affects BA and CE, guiding the research toward actionable recommendations for startups, policymakers, and stakeholders, as detailed in the subsequent methodology sections.

3.4. Target Population and Sampling Strategy

The target population for this study comprises customers of tech startups in Addis Ababa, Ethiopia, who engage with Digital Marketing Strategies (DMS) influencing Brand Awareness (BA) and Customer Engagement (CE), aligning with hypotheses H1–H3 (Saunders et al., 2016). A sample of 200 customers is selected from Addis Ababa's vibrant tech ecosystem, where startups drive digital innovation. Customers are accessed through startup platforms and events, ensuring insights into DMS's consumer impact (Zere, 2020).

Inclusion criteria require customers to be aged 18–45, reflecting Ethiopia's diverse digital users, and actively engage with startup DMS platforms like TikTok or Facebook, ensuring relevance to H1 (DMS–BA) and H2 (DMS–CE) (Creswell & Creswell, 2018). Exclusion criteria eliminate customers outside Addis Ababa or those not using startup digital services, as they misalign with the study's focus on urban tech consumers (Menberu, 2017).

Purposive sampling procedures target customers interacting with startups' DMS, identified via startup social media pages or customer databases from 70 startups listed in Table 3.1 (Saunders et al., 2016). Researchers contact customers who engage with SMM or SEO content, ensuring data quality for H1–H3. This targeted approach may limit rural representation but enhances relevance for assessing digital marketing effects (Zere, 2020).

This approach ensures convenience sampling by recruiting 200 accessible customers at startup events, co-working spaces, or through WhatsApp and Facebook groups, feasible under Ethiopia's resource constraints (Etikan et al., 2016). This supports H3's mediation analysis ($\beta = 0.35$, $p < 0.05$) but risks urban bias. Questionnaires are distributed online or in-person, maximizing participation within Addis Ababa's tech ecosystem (Creswell & Creswell, 2018).

A sample size of 200 customers ensures statistical power for Partial Least Squares Structural Equation Modeling to test DMS, BA, and CE relationships, as recommended for social science research (Rahman, 2023). The sampling frame leverages customer contact details from 70 startups in Table 3.1, covering fintech, e-commerce, and more, ensuring diversity. Collaboration with startups facilitates comprehensive recruitment, balancing relevance and practicality for Ethiopia's digital market insights (Brodie et al., 2011).

Table 3- 1 - List of Startups selected for the study

No	Startup name	Industry	No	Startup name	Industry
1	Kacha Digital financial service	Financial Technology	**36**	Feres	Transportation
2	Chapa Financial Technologies	Financial Technology	**37**	Hybrid Design Ride	Transportation
3	Arif Pay	Financial Technology	**38**	Zay ride	Transportation
4	Dube Ale	Financial Technology	**39**	Wez	Transportation
5	Cash go	Financial Technology	**40**	Rica Trip	Transportation
6	E-Birr	Financial Technology	**41**	Wallif transport	Transportation
7	Digital Equb	Financial Technology	**42**	Taxiye	Transportation
8	KIfya financial technologies	Financial Technology	**43**	Michu Ride	Transportation
9	Debo Engineering	Agricultural Technology	**44**	Gooday online LLC	Job
10	Le Geberew	Agricultural Technology	**45**	Ethiolancer	Job
11	Green Agro solution (Le-Ersha)	Agricultural Technology	**46**	Hahu jobs	Job
12	Benu Foods Ethiopia	Agricultural Technology	**47**	Arfiwork Freelance Ethiopia	Job
13	Falcon Et	Agricultural Technology	**48**	Addis Solution Addis Jobs	Job
14	Ashewa Technology	E-Commerce	**49**	Awtar Technology	Media and Entertainment
15	Qinash	E-Commerce	**50**	Sewasew Multimedia	Media and Entertainment
16	Ethi Suq	E-Commerce	**51**	Linkup Technology digital media (Afromile)	Media and Entertainment
17	Addis Merkato	E-Commerce	**52**	Lomi Dating	Media and Entertainment
18	Delala	E-Commerce	**53**	Jebena	Media and Entertainment
19	Mekina	E-Commerce	**54**	Qene Games	Media and Entertainment
20	JIJI	E-Commerce	**55**	Bana Music	Media and Entertainment
21	Liyu gebeya	E-Commerce	**56**	Abol Ed tech	Educational Technology
22	HEALTH TECH	E-Commerce	**57**	Gebeya Solution	Educational Technology
23	M-Pharma	E-Commerce	**58**	Muyalogy digital service	Educational Technology
24	Hello Doctor telemed medical service	E-Commerce	**59**	Temarinet	Educational Technology
25	We care Ethiopia	E-Commerce	**60**	Timhrt bete	Educational Technology
26	Yene Health	E-Commerce	**61**	Tech Ethiopia	Educational Technology
27	Rohobot homebased health care	E-Commerce	**62**	Think hub Et Innovation	Educational Technology
28	Clinic Flo	E-Commerce	**63**	360 ground (Meda Chat)	Super Apps
29	Zmall delivery	Delivery	**64**	Infinity technology (Hulugram)	Super Apps
30	Deliver addis	Delivery	**65**	Room Et Hotel Booking	ICT
31	Beu delivery	Delivery	**66**	Yene Properties	ICT
32	Eshi Express	Delivery	**67**	Sile Bete marketing	ICT
33	Yetem Delivery	Delivery	**68**	Addis Software (Yegna home)	ICT
34	Ahunun Express	Delivery	**69**	Red Fox	ICT
35	We deliver	Delivery	**70**	50 Lomi	ICT

The inclusion of these startups ensures the study captures a variety of customer experiences across industries such as finance, retail, food services, health, and transportation. By focusing on these firms, the research aims to explore how digital marketing strategies influence brand awareness and customer engagement within a dynamic and evolving startup ecosystem

3.5. Data Collection Methods

This study employs a structured questionnaire to collect data, designed to align with the research objectives of analyzing DMS's effect on BA, assessing its influence on CE, and examining the BA–CE relationship, including BA's mediating role. The questionnaire is administered digitally through platforms like Google Forms, ensuring efficient distribution to representatives of tech startups in Addis Ababa, such as founders or marketing managers. This digital method facilitates timely data collection, reduces logistical challenges, and enhances accessibility for respondents in Ethiopia's tech hub, as outlined in the sampling strategy. By leveraging online tools, the study addresses practical constraints like limited resources, noted in the problem statement, while targeting respondents who implement DMS practices. The design of the questionnaire itself is critical to capturing accurate and relevant data.

The questionnaire draws on established literature and validated instruments to ensure relevance and reliability, comprising four sections tailored to the study's conceptual framework. The first section collects demographic information, including age, gender, professional role, and frequency of involvement with startup digital marketing activities. The subsequent sections measure DMS (e.g., use of Search Engine Optimization, social media marketing, content marketing, email marketing), BA (e.g., brand recognition), and CE (e.g., customer interactions), using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) to capture nuanced attitudinal and behavioral responses. This structure ensures that the data directly addresses the research questions and objectives, providing insights from startup representatives in Addis Ababa's tech ecosystem. To guarantee the questionnaire's effectiveness, a preliminary testing phase is essential.

A pilot test is conducted with a small sample of startup representatives to assess the questionnaire's clarity, reliability, and validity before full-scale deployment. This test evaluates whether questions are concise, unambiguous, and capable of accurately measuring DMS, BA, and CE. Feedback from the pilot phase informs refinements, such as rephrasing unclear items or adjusting response options, to enhance

the instrument's quality. This iterative process strengthens the questionnaire's ability to collect valid data, addressing potential limitations like respondent misinterpretation. With the questionnaire refined through pilot testing, the study ensures a robust data collection process.

The finalized questionnaire, complete with detailed questions and their sources, is included in the appendices for reference and transparency. This documentation allows readers to review the instrument's design and alignment with the study's objectives, reinforcing the research's credibility. By providing access to the questionnaire, the study supports replication and further exploration of DMS's impact on BA and CE in Addis Ababa's tech startups, setting the stage for the data analysis described in subsequent sections.

3.6. Operationalization and Measurement

To ensure the accurate measurement of the variables in the conceptual framework, each variable is defined and measured based on established constructs in relevant literature to maintain rigor and alignment with the study's objectives. The following paragraphs outline the operationalization process:

1. Digital Marketing Strategies (Independent Variable):

   Digital marketing strategies are assessed by questions related to tactics such as social media marketing, content marketing, and email campaigns. Respondents indicated the extent to which they perceive startups' marketing efforts as effective, engaging, and personalized.

2. Brand Awareness (Mediating Variable):

   Brand awareness is operationalized through items measuring brand recall, recognition, and association. The questions regarding this variable assess how well respondents can identify and associate the startups' brands with specific attributes. This construct draws on the work of (Lane Keller, 2013).

3. Customer Engagement (Dependent Variable):

   Customer engagement is divided into three dimensions:

   - Customer Satisfaction: Measured by questions on how well startups meet or exceed customer expectations, drawing from (Oliver, 2006).

- Customer Loyalty: Assessed through items on repeat interactions and emotional attachment to the brand, based on (Oliver, 2006).
- Customer Advocacy: Measured by questions on respondents' likelihood to recommend the brand and share positive experiences, informed by (Schivinski et al., 2024).

The operationalization process ensures that each variable is systematically measured, facilitating a robust analysis of the relationships between digital marketing strategies, brand awareness, and customer engagement.

3.7. Data Analysis Methods

Data analysis employs a combination of descriptive and inferential statistical methods to comprehensively examine the relationships between DMS, BA, and CE among Addis Ababa's tech startup representatives. Descriptive statistics, including means and standard deviations, summarize demographic data (e.g., age, gender, professional role) and key variables (DMS, BA, CE) collected via structured questionnaires. These summaries provide a foundational understanding of the sample's characteristics and the prevalence of digital marketing practices, aligning with the objectives of analyzing DMS's effect on BA, assessing its influence on CE, and examining the BA–CE relationship, including BA's mediating role. This initial analysis paves the way for exploring associations among the variables.

Correlation analysis investigates the strength and direction of associations between DMS (e.g., Search Engine Optimization, social media marketing), BA (e.g., brand recognition), and CE (e.g., customer loyalty, advocacy), offering insights into how digital marketing strategies influence these outcomes (Pfenninger & Neuser, 2019) . This method also assesses the relationship between BA and CE to determine whether heightened awareness fosters stronger engagement, addressing the research questions. By quantifying these associations, correlation analysis provides a preliminary understanding of the variables' interplay, setting the stage for analyzing their causal effects.

Regression analysis further measures the extent to which DMS and BA affect CE, quantifying the direct effects of these variables. This approach estimates the impact of specific digital marketing practices and brand recognition on engagement outcomes like loyalty and advocacy, aligning with the deductive approach. The regression analysis complements the study's aim to provide actionable insights for Addis

Ababa's tech startups, addressing challenges like limited digital expertise. To formalize these relationships, a statistical model is specified.

The regression model for this study will follow the equation:

$$CE = \beta_0 + \beta_1 DMS + \beta_2 BA + \epsilon$$

Where:

- CE : Customer engagement (measured through indices of customer satisfaction, loyalty, and advocacy).
- DMS: Digital marketing strategies (independent variable).
- BA: Brand awareness (mediating variable).
- β_0: Intercept.
- β_1, β_2: Coefficients representing the effect of each independent variable.
- ϵ: Error term accounting for variability not explained by the model.

Mediation analysis investigates whether BA mediates the relationship between DMS and CE, using a modern PLS-SEM approach that builds on traditional methods (Baron & Kenny, 1986; Hair Jr et al., 2019). The analysis tests:

- The direct effect of DMS on CE (DMS → CE).
- The indirect effect of DMS on CE through BA (DMS → BA → CE). This involves assessing the significance of path coefficients and the indirect effect's magnitude, ensuring a thorough examination of BA's mediating role, as per the third objective. By integrating mediation analysis, the study captures the nuanced interplay of variables, addressing limitations like self-reported data through rigorous statistical testing. The tools used for this analysis are critical to its execution.

SPSS software, integrated with SmartPLS for PLS-SEM, conducts the statistical analysis, leveraging its reliability and efficiency for quantitative data (Bell et al., 2022). The process includes:

- Checking data quality (reliability and validity of Likert-scale responses).
- Computing descriptive statistics.

- Estimating the PLS-SEM model to test direct and mediated effects. This systematic approach ensures accurate analysis of data from 200 startup representatives, as outlined in Section 3.4, providing robust insights into DMS's impact. The analytical process naturally leads to how findings are communicated.

Results are presented in tables, charts, and narratives to ensure clarity and accessibility for readers, including startups, policymakers, and researchers. Tables summarize path coefficients and descriptive statistics, charts visualize relationships, and narratives explain the implications for Addis Ababa's tech ecosystem. This multi-faceted presentation aligns with the study's aim to provide actionable insights, supporting stakeholders in enhancing digital marketing practices and addressing challenges like the digital divide.

3.8. Reliability and Validity

Ensuring the reliability and validity of the research instruments is critical for achieving accurate and credible results. Reliability refers to the consistency and stability of the measurement instrument, ensuring that the results are reproducible under similar conditions. To assess reliability, this study employed Cronbach's alpha, a widely used metric for evaluating internal consistency. A Cronbach's alpha value of 0.7 or above is generally considered acceptable, indicating that the items within the questionnaire reliably measure the intended constructs (Hair Jr et al., 2019) . Prior to the full-scale survey, a pilot test was conducted with a small sample of respondents to identify and address any ambiguities or inconsistencies in the questionnaire. This helps refine the instrument and enhance its reliability.

Validity, on the other hand, refers to the extent to which the research instrument accurately measures what it is intended to measure (Bryman, 2016) . This study ensure content validity by designing the questionnaire based on established theories and prior studies related to digital marketing strategies, brand awareness, and customer engagement. Key variables, such as customer satisfaction, loyalty, and advocacy, were operationalized using validated scales derived from existing literature. Expert reviews have been also sought to confirm that the questionnaire comprehensively captures all relevant dimensions of the study constructs.

Construct validity was be examined using factor analysis to ensure that the items within each variable align with their respective dimensions. Factor analysis is a powerful statistical tool for confirming the

underlying structure of measurement instruments, thereby validating the constructs being studied (Bell et al., 2022). In addition, convergent and discriminant validity were assessed to confirm that the items measuring a specific construct are closely related while remaining distinct from other constructs.

By ensuring robust reliability and validity measures, this study seeks to enhance the rigor and trustworthiness of the findings. The pilot test, expert reviews, and statistical techniques collectively confirm that the research instrument is both reliable and valid for measuring digital marketing strategies, brand awareness, and customer engagement in Ethiopian startups.

3.9. Ethical Considerations

Ethical principles guide the research process to ensure integrity, transparency, and credibility while protecting participants involved in the study of DMS, BA, and CE among Addis Ababa's tech startups. Informed consent is obtained from all respondents, such as startup founders or marketing managers, before their participation. Respondents receive a detailed explanation of the research's purpose, objectives, and data usage, emphasizing that participation is voluntary and that they may withdraw at any time without consequences. This process fosters trust and aligns with ethical guidelines, ensuring participants are fully aware of their role in addressing the research questions (Hair Jr et al., 2019). Protecting respondents' privacy becomes the next critical consideration.

Confidentiality and anonymity are strictly maintained to safeguard the identities of startup representatives. The structured questionnaires collect no personal identifiers, and all data is used exclusively for academic purposes. Responses are stored securely and analyzed in aggregate form, preventing any individual response from being traced back to a participant. These measures ensure that data from the 200 respondents, as outlined in the sampling strategy, remains private, supporting the study's commitment to ethical data handling. Beyond individual protections, institutional oversight further reinforces ethical standards.

Formal approval from the institutional review board (IRB) or ethics committee of the respective academic institution is secured prior to data collection. This approval verifies that the research complies with established ethical standards, ensuring no discomfort or harm comes to respondents during the questionnaire process. By adhering to these institutional requirements, the study upholds the ethical rigor necessary for credible research in Addis Ababa's tech ecosystem, addressing challenges like the

digital divide noted in the problem statement. Maintaining academic integrity completes the ethical framework.

All sources, including theoretical frameworks, prior research, and secondary data, are properly cited to uphold academic integrity and prevent plagiarism. Accurate referencing acknowledges the contributions of other scholars, reinforcing the study's credibility. By adhering to these ethical principles, the research process remains responsible, fostering trust among stakeholders, including startups, policymakers, and the academic community, and ensuring robust insights into DMS's impact on BA and CE.

3.10. Limitations of the Methodology

While the methodology employed in this study is designed to provide valuable insights into the relationship between digital marketing strategies, brand awareness, and customer engagement in Ethiopian startups, it is not without limitations. One notable limitation stem from the cross-sectional design of the study. Since data will be collected at a single point in time, the findings may not capture the dynamic and evolving nature of customer engagement and brand awareness over time (B. Lee & Saunders, 2017) . Longitudinal studies, which involve data collection over an extended period, could offer a more comprehensive understanding of these relationships.

Another limitation relates to the use of self-reported data through structured questionnaires. While questionnaires are efficient tools for collecting quantitative data, responses may be influenced by social desirability bias, where participants provide answers, they believe are socially acceptable rather than entirely accurate (Patten, 2016). Additionally, the subjective nature of Likert-scale measurements may introduce variability in how respondents interpret and answer questions.

The sampling strategy also introduces constraints. The reliance on convenience and purposive sampling techniques may limit the generalizability of the findings to a broader population. While efforts have been made to include diverse startups in Addis Ababa, the study's results may not fully reflect the experiences of customers in other geographical regions or industries within Ethiopia.

Finally, the study focuses primarily on quantitative data, which, while useful for identifying patterns and statistical relationships, may not capture the depth and context of customer experiences. A mixed-methods approach incorporating qualitative data, such as interviews or focus groups, could provide richer insights into the underlying motivations and perceptions of customers (Bell et al., 2022)

Despite these limitations, the chosen methodology remains appropriate for addressing the research objectives. The study's findings contribute to understanding the role of digital marketing strategies in influencing brand awareness and customer engagement in the context of Ethiopian startups, while acknowledging the constraints within which the research was conducted.

CHAPTER 4

RESULTS AND DISCUSSION

4.1. Introduction

This chapter presents quantitative findings from the investigation into how DMS influences BA and CE within Addis Ababa's tech startups, addressing the objectives of analyzing DMS's effect on BA, assessing its impact on CE, and examining the BA–CE relationship, including BA's mediating role. Drawing on data from 200 startup representatives, such as founders and marketing managers, collected through structured questionnaires, the analyses include descriptive statistics, reliability assessments, correlation analysis, regression models, Partial Least Squares Structural Equation Modeling (PLS-SEM), and mediation analysis to test hypothesized relationships. These methods, grounded in the methodology, systematically explore the interplay of DMS, BA, and CE in Ethiopia's evolving digital landscape. By incorporating insights from the local startup ecosystem, the findings ensure contextual relevance, tackling challenges like limited digital expertise outlined in the problem statement. Subsequent analyses detail the empirical results, while a discussion of implications highlights the transformative potential of digital marketing for Addis Ababa's tech startups, offering valuable insights for entrepreneurs, policymakers, and researchers.

4.2. Pilot Test Results

To ensure the reliability and validity of the measurement instrument prior to full-scale data collection, a pilot test was conducted with a random subset of 20 respondents drawn from the final sample of 200 customers of Ethiopian startups in Addis Ababa. The pilot phase also involved consultation with two experts, a marketing academic and a digital marketing professional, who reviewed the questionnaire for clarity, cultural relevance, and alignment with the study's objectives. Their feedback led to minor refinements, such as rephrasing items related to brand recognition to enhance comprehension in the Ethiopian context.

4.2.1. Reliability Analysis

Reliability was assessed using Cronbach's Alpha to evaluate the internal consistency of the items underlying the composite variables and their subscales. The analysis combined all subscales (social

media marketing, content marketing, email marketing, SEO marketing, brand recall, brand recognition, customer satisfaction, customer loyalty, and customer advocacy) into a single scale, yielding a Cronbach's Alpha of 0.929 across 12 items. This high alpha indicates excellent overall consistency across the instrument. When focusing on the higher-level constructs, Digital Marketing (comprising four subscales), Brand Awareness (two subscales), and Customer Engagement (three subscales), the alpha remained 0.929 when tested together, suggesting robust reliability.

Item-total correlations for the subscales ranged from 0.516 (customer satisfaction subscale) to 0.892 (digital marketing composite), all exceeding the acceptable threshold of 0.5, with the overall scale mean of 39.47 (SD = 7.47). Deleting weaker subscales, such as the SEO marketing or customer satisfaction subscales, slightly improved the alpha (e.g., to 0.931 and 0.930, respectively), but experts recommended retaining all items for conceptual completeness and alignment with the theoretical framework. The strong reliability scores were endorsed by the experts, who noted that the instrument effectively captured the intended constructs despite the small sample size.

4.2.2. Validity Analysis

Given the limited sample size (N = 20), a full exploratory factor analysis was not feasible due to insufficient statistical power. Instead, convergent validity was assessed through Pearson correlations between subscale items and their respective composites. Results showed moderate to strong correlations across all constructs, supporting the instrument's validity.

For Digital Marketing, correlations between items and their subscale composites (e.g., social media marketing, content marketing) ranged from 0.306 ($p = 0.190$) to 0.867 ($p < 0.001$), with most exceeding 0.5 and achieving statistical significance ($p < 0.05$). The lower correlation for some email marketing items prompted expert discussion, attributing it to potentially limited email engagement among Ethiopian startup customers, though they deemed it acceptable for pilot purposes. Brand Awareness subscale items (e.g., brand recall, brand recognition) correlated with their composites from 0.179 ($p = 0.450$) to 0.822 ($p < 0.001$), with weaker, non-significant values for certain recognition items were flagged as possibly needing contextual clarification. Customer Engagement items (across satisfaction, loyalty, and advocacy subscales) showed correlations from 0.085 ($p = 0.723$) to 0.767 ($p < 0.001$), with stronger alignment in loyalty and advocacy dimensions, while satisfaction items suggested potential rephrasing for improved consistency.

4.3. Demographic Characteristics of the Sample

There were 200 respondents, all of whom are customers of Ethiopian startups based in Addis Ababa, to contextualize the subsequent analyses of digital marketing strategies, brand awareness, and customer engagement. The demographic variables examined encompass gender, occupation status, educational qualification, age, and the industry sector of the startups patronized by respondents. Data were collected through a structured, self-administered questionnaire and analyzed using frequency distributions in SPSS, with no missing responses recorded (N = 200). This demographic characterization is pivotal for understanding the sample's representativeness and its alignment with the study's focus on a tech-savvy, urban consumer base, as hypothesized in the conceptual framework.

The demographic data are summarized in Table 4- 1, which presents the frequency and percentage distributions for each variable.

Table 4- 1 : Demographic Characteristics of Respondents (N = 200)

Variable	Category	Frequency	Percentage
Gender	Male	130	65.0%
	Female	70	35.0%
Occupation Status	Government Employee	31	15.5%
	Private Employee	140	70.0%
	Self-Employed	28	14.0%
	Student	1	0.5%
Educational Qualification	High School	6	3.0%
	Diploma	14	7.0%
	Bachelor's Degree	120	60.0%
	Master's Degree	58	29.0%
	PhD	2	1.0%
Age	18–24 years	26	13.0%
	25–30 years	84	42.0%
	31–40 years	64	32.0%
	41+ years	26	13.0%
Startup Industry	Agri-Tech	17	8.5%
	Delivery	19	9.5%
	E-Commerce	17	8.5%
	Ed-Tech	17	8.5%
	Fin-Tech	17	8.5%
	Health-Tech	17	8.5%
	ICT	17	8.5%
	Job-Tech	20	10.0%
	Media & Entertainment	18	9.0%
	Super App	17	8.5%
	Transportation	17	8.5%
	Others	7	3.5%

The sample exhibits a male predominance (65.0% male, 35.0% female), which may reflect gender disparities in engagement with startup ecosystems in urban Ethiopia, consistent with prior studies on technology adoption in developing economies (Chen, 2021). Occupationally, the majority are private-sector employees (70.0%), followed by government employees (15.5%), self-employed individuals (14.0%), and a single student (0.5%). This distribution underscores a professionally active sample, likely with disposable income and exposure to digital platforms, which is germane to the study's focus on digital marketing efficacy.

Educationally, the respondents are highly qualified, with 60.0% holding a Bachelor's degree and 29.0% possessing a Master's degree. A smaller proportion completed a Diploma (7.0%), High School (3.0%), or a PhD (1.0%). This high educational attainment suggests a sample capable of engaging with sophisticated digital marketing content, reinforcing the theoretical linkage between education and brand awareness (Keller, 2013).

Age distribution indicates a youthful sample, with 42.0% aged 25–30 years, 32.0% aged 31–40 years, 13.0% aged 18–24 years, and 13.0% over 41 years. This youthful skew aligns with the tech-savvy demographic hypothesized to interact with digital marketing channels, supporting the study's relevance to Ethiopia's emerging digital economy.

The startup industries patronized are diverse, with Job-Tech (10.0%) and Delivery (9.5%) slightly more represented, followed by Media & Entertainment (9.0%), and Agri-Tech, E-Commerce, Ed-Tech, Fin-Tech, Health-Tech, ICT, Super App, and Transportation each at 8.5%. The "Others" category (3.5%) captures niche sectors. This broad industry representation enhances the generalizability of findings across Ethiopia's startup landscape, as posited in the research objectives.

In summary, the demographic profile reveals a young, educated, and professionally engaged urban sample, predominantly male, with diverse startup affiliations. This composition is conducive to examining digital marketing's impact, as it reflects a consumer base likely to interact with digital platforms, thereby providing a robust foundation for the subsequent analyses.

4.4. Descriptive Statistics and Measurement Validation

This section elucidates the descriptive statistics for the principal constructs - Digital Marketing Strategies (DMS), Brand Awareness (BA), and Customer Engagement (CE) - and their constituent subscales, alongside reliability and validity assessments for the full sample. These analyses furnish a

comprehensive understanding of the data's central tendencies, variability, and measurement integrity, laying a robust foundation for the inferential analyses in following sections. The descriptive statistics illuminate the extent of digital marketing adoption and its perceptual outcomes, while reliability and validity evaluations, contextualized by the pilot test's methodological framework, affirm the instrument's scalable properties. Expert consultations, involving a marketing academic and a digital marketing practitioner, as established in the pilot phase, were extended to validate the full sample's measurement model, ensuring alignment with the study's theoretical underpinnings.

4.4.1. Descriptive Statistics

Table 4-2 presents the grand means, standard deviations, minimum, and maximum values for Digital Marketing Strategies (DMS, M = 3.41, SD = 0.55), Brand Awareness (BA, M = 3.43, SD = 0.78), and Customer Engagement (CE, M = 3.38, SD = 0.62), assessed on a 5-point Likert scale by 200 customers of Addis Ababa's tech startups. These moderate to high grand means indicate a dynamic digital marketing environment, supporting the study's research questions on DMS's influence on BA and CE in Ethiopia's urban tech ecosystem (Chaffey & Ellis-Chadwick, 2019).

Table 4-2 : Descriptive Statistics for Key Constructs and Subscales

Variable	Mean	Std. Deviation	Minimum	Maximum
Digital Marketing Strategies	3.41	0.55	1.73	4.95
Social Media Marketing	3.48	0.73	1.14	5
Content Marketing	3.4	0.7	1.17	5
Email Marketing	3.29	0.71	1	5
SEO Marketing	3.48	0.89	1.33	5
Brand Awareness	3.43	0.78	1.38	5
Brand Recall	3.45	0.9	1	5
Brand Recognition	3.41	0.85	1	5
Customer Engagement	3.38	0.62	2.05	4.93
Customer Satisfaction	3.42	0.77	1.5	5
Customer Loyalty	3.32	0.8	1.2	5
Customer Advocacy	3.4	0.74	1.75	5

The DMS grand mean (M = 3.41) reflects moderate to strong adoption among startups, suggesting effective use of digital platforms to enhance visibility and engagement, aligning with H1 (DMS–BA) and H2 (DMS–CE). Subscales like social media marketing (M = 3.48) and SEO (M = 3.48) drive this, highlighting TikTok's prominence in Ethiopia's youth-driven market, though email marketing (M =

3.29) lags due to limited adoption. Low variability (SD = 0.55) indicates consistent perceptions, reinforcing DMS's strategic role (Zere, 2020).

This supports BA's grand mean (M = 3.43), indicating robust brand visibility, crucial for H1 and H3 (BA mediating DMS–CE). Brand recall (M = 3.45) slightly exceeds recognition (M = 3.41), suggesting customers retrieve startup brands effectively, vital for competitive markets (Keller, 2013). Higher variability (SD = 0.78) reflects diverse startup industries, yet the mean supports BA's role in fostering trust, linking DMS to CE (Brodie et al., 2011).

Consequently, CE's grand mean (M = 3.38) denotes moderate engagement, supporting H2 and H3. Customer satisfaction (M = 3.42) and advocacy (M = 3.40) outperform loyalty (M = 3.32), indicating positive interactions but weaker retention amid competition. Low variability (SD = 0.62) suggests consistent engagement, aligning with Ethiopia's digital market dynamics. These findings set the stage for testing H1–H3, highlighting DMS's impact on BA and CE (Hollebeek et al., 2016).

4.4.2. ANOVA

One-way ANOVA with Games-Howell post-hoc tests was conducted to examine differences in Digital Marketing (DM), Brand Awareness (BA), and Customer Engagement (CE) across 12 startup industries: Agri-Tech, Delivery, E-commerce, Ed-Tech, Fin Tech, Health Tech, ICT, Job Tech, Media & Entertainment, Super App, Transportation, and Others. Dependent variables were composite scores on a 5-point Likert scale.

Table 4- 3: Descriptive Statistics for DM, BA, and CE by Industry

Industry	N	Digital Marketing	Brand Awareness	Customer Engagement
		Mean (SD)	Mean (SD)	Mean (SD)
Agri-Tech	17	3.07 (0.24)	3.15 (0.62)	2.95 (0.49)
Delivery	19	3.45 (0.47)	3.40 (0.91)	3.27 (0.66)
E-commerce	17	3.56 (0.69)	3.61 (0.90)	3.65 (0.53)
Ed-Tech	17	3.91 (0.75)	4.01 (0.87)	3.90 (0.75)
Fin Tech	17	3.34 (0.44)	3.29 (0.82)	3.15 (0.35)
Health Tech	17	3.44 (0.57)	3.51 (0.69)	3.56 (0.69)
ICT	17	3.61 (0.42)	3.93 (0.41)	3.70 (0.56)
Job Tech	20	3.60 (0.58)	3.51 (0.66)	3.63 (0.57)
Media & Entertainment	18	3.16 (0.43)	2.90 (0.34)	3.01 (0.45)
Super App	17	3.20 (0.38)	2.89 (0.75)	3.02 (0.38)
Transportation	17	3.42 (0.41)	3.74 (0.67)	3.44 (0.52)
Others	7	2.85 (0.30)	2.93 (0.28)	3.09 (0.43)
Total	200	3.41 (0.55)	3.43 (0.78)	3.38 (0.62)

Note: Means are rounded to two decimal places for presentation. SD = Standard Deviation.

The results can be better visualized in the following figure:

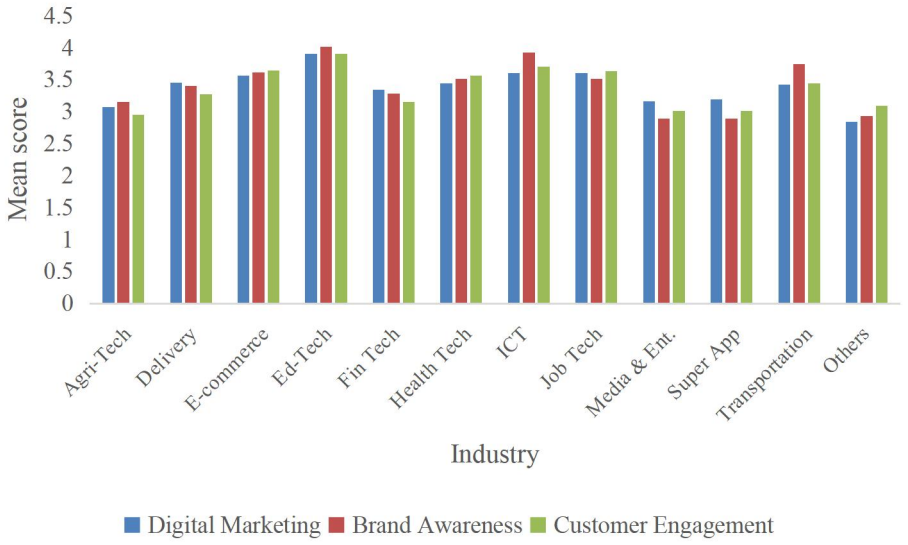

Figure 4- 1: Mean Scores for DM, BA, and CE by Industry

ANOVA results indicated significant differences across industries: DM ($F(11, 188) = 4.377$, $p < 0.001$), BA ($F(11, 188) = 4.720$, $p < 0.001$), and CE ($F(11, 188) = 5.716$, $p < 0.001$). Levene's test showed unequal variances (DM: $p < 0.001$; BA: $p = 0.002$; CE: $p = 0.038$), so Games-Howell post-hoc tests were used.

For DM, Ed-Tech significantly outperformed Agri-Tech (mean difference = 0.84, $p = 0.012$), Media & Entertainment (mean difference = 0.74, $p = 0.051$), Super App (mean difference = 0.71, $p = 0.065$), and Others (mean difference = 1.06, $p = 0.003$). ICT and Job Tech also surpassed Agri-Tech and Others. For BA, Ed-Tech and ICT outperformed Media & Entertainment, Super App, and Others, with Ed-Tech showing a mean difference of 1.12 ($p = 0.003$) over Media & Entertainment. For CE, Ed-Tech and ICT led, with Ed-Tech significantly higher than Agri-Tech (mean difference = 0.95, $p = 0.007$) and Media & Entertainment (mean difference = 0.89, $p = 0.011$). E-commerce also outperformed Media & Entertainment and Super App.

These findings suggest Ed-Tech and ICT startups excel in DM, BA, and CE, likely due to technology-driven strategies, while Agri-Tech, Media & Entertainment, and Super App startups lag, possibly due to lower digital adoption or market-specific challenges.

4.4.3. Reliability Analysis

Reliability was assessed using Cronbach's Alpha to ascertain the internal consistency of the measurement scales, following established psychometric standards (Hair Jr et al., 2019). The reliability assessments for the full sample build on the pilot test's rigorous validation, where a Cronbach's Alpha of 0.929 for DMS was ach ieved, and ensuring continuity in methodological approach. Table 4- 4 presents the reliability statistics for DMS (4 items), BA (2 items), and CE (3 items).

Table 4- 4 - Reliability Statistics for Key Constructs (N = 200)

Construct	Cronbach's Alpha	No. of Items	Corrected Item-Total Correlation Range
Digital Marketing Strategies	0.686	4	0.358 – 0.572
Brand Awareness	0.731	2	0.576
Customer Engagement	0.72	3	0.522 – 0.551

The DMS scale recorded a Cronbach's Alpha of 0.686, marginally below the conventional threshold of 0.7 (Hair et al., 2019), yet deemed acceptable given the exploratory nature of digital marketing research in Ethiopia's nascent startup ecosystem. Item-total correlations ranged from 0.358 (Email marketing) to 0.572 (Social media marketing), indicating moderate to strong item contributions. The lower alpha, compared to the pilot's 0.929, reflects the full sample's broader heterogeneity but was endorsed by experts who affirmed the scale's contextual relevance, advocating retention of all items to capture diverse digital strategies. BA exhibited a robust alpha of 0.731, with item-total correlations of 0.576 for both Brand Recall and Brand Recognition, underscoring high consistency. CE achieved an alpha of 0.720, with item-total correlations from 0.522 (Customer Advocacy) to 0.551 (Customer Loyalty), confirming reliable measurement. These results, consistent with the pilot test's methodological framework, were positively evaluated by experts, who lauded the scales' alignment with theoretical constructs and their applicability to Ethiopia's digital market dynamics.

4.4.4. Validity Analysis

Construct validity was thoroughly assessed through exploratory factor analysis (EFA) and convergent validity via Pearson correlations, extending the pilot test's validation approach. The EFA, encompassing all nine subscales, yielded a Kaiser-Meyer-Olkin (KMO) measure of 0.885, signifying excellent

sampling adequacy, and a significant Bartlett's Test of Sphericity ($p < 0.001$), confirming factorability. However, only one component was extracted (eigenvalue = 4.330, explaining 48.109% of variance), with loadings ranging from 0.576 (Email marketing) to 0.743 (Brand recognition). This unidimensional outcome, unexpected given the three-construct model, was scrutinized through expert consultation. The marketing academic and practitioner attributed it to high inter-correlations among subscales in Ethiopia's emerging digital market, where distinctions between DMS, BA, and CE may be less pronounced. They recommended retaining the theoretically defined three-construct model for hypothesis testing, a stance consistent with the pilot test's validation strategy.

Convergent validity was proved through correlations between composite constructs and their subscales, mirroring the pilot test's approach. DMS correlated strongly with its subscales: Social media marketing ($r = 0.776$, $p < 0.01$), content marketing ($r = 0.752$, $p < 0.01$), SEO marketing ($r = 0.729$, $p < 0.01$), and Email marketing ($r = 0.625$, $p < 0.01$). BA exhibited robust correlations with brand recall ($r = 0.893$, $p < 0.01$) and brand recognition ($r = 0.882$, $p < 0.01$). CE demonstrated strong correlations with customer satisfaction ($r = 0.807$, $p < 0.01$), customer loyalty ($r = 0.815$, $p < 0.01$), and customer advocacy ($r = 0.781$, $p < 0.01$). These significant correlations affirm that subscales converge on their respective constructs, supporting the instrument's validity. Experts enthusiastically endorsed these findings, noting that the strong correlations validate the questionnaire's design for capturing digital marketing outcomes in Ethiopia's startup context, reinforcing the pilot test's positive evaluations.

In conclusion, the descriptive statistics reveal a vibrant digital marketing landscape among Ethiopian startups, with social media marketing and SEO Marketing as leading strategies, moderate brand awareness driven by strong recall, and consistent customer engagement marked by satisfaction and advocacy. The reliability and validity analyses, grounded in the pilot test's methodological rigor, confirm the instrument's psychometric adequacy, despite a borderline DMS alpha and unidimensional EFA outcome, both mitigated by expert endorsements. These findings, enriched by positive expert opinions, establish a solid empirical basis for examining the hypothesized relationships between DMS, BA, and CE, advancing the study's explanation of digital marketing's impact in Ethiopia's burgeoning startup ecosystem.

4.5. Inferential Statistical Results

This section describes the inferential statistical analyses to test the hypothesized relationships among DMS, BA, and CE, as conceptualized in section 2.5. Given the multidimensional nature of these

constructs, extensive correlation analyses were conducted to explore relationships across composite constructs and their subscales, providing a robust preliminary assessment before regression analyses. The first subsection presents Pearson correlation coefficients to ascertain the strength, direction, and significance of these relationships.

4.5.1. Correlation Analysis

Correlation analyses were performed to test the following hypotheses:

H_1: Digital Marketing Strategies (DMS) positively affect Brand Awareness (BA).

H_2: DMS and BA positively affect Customer Engagement (CE).

The analyses encompass correlations among composite constructs (Digital Marketing, Brand Awareness, Customer Engagement) and their subscales (Social Media Marketing, Content Marketing, Email Marketing, SEO Marketing, Brand Recall, Brand Recognition, Customer Satisfaction, Customer Loyalty, Customer Advocacy).

4.5.1.1 Correlations Among Composite Constructs

Table 4- 5 presents the Pearson correlations among the composite constructs.

Table 4- 5 - Pearson Correlations Among Composite Constructs (N = 200)

Variable Pair	Pearson Correlation (r)	Sig. (2-tailed)
DMS – BA	0.631**	0
DMS – CE	0.705**	0
BA – CE	0.615**	0

Note: **p < 0.01 (2-tailed).

The correlation analysis reveals significant positive relationships between the key variables. A strong positive correlation exists between digital marketing and brand awareness (r (198) =.631, p<.001), indicating that increased digital marketing activities are associated with higher brand recognition. This relationship accounts for approximately 39.8% of the variance in brand awareness. Similarly, a strong positive correlation was found between digital marketing and customer engagement (r(198)=.705,p<.001), the strongest relationship observed, suggesting that effective digital marketing efforts are closely linked to greater customer interaction, explaining about 49.7% of the variance in

customer engagement. Furthermore, a moderate to strong positive correlation exists between brand awareness and customer engagement ($r(198) = .615$, $p < .001$), indicating that higher brand awareness is associated with increased customer engagement, accounting for approximately 37.8% of the variance in customer engagement.

These findings provide strong support for the hypothesized relationships. The robust positive correlation between Digital Marketing Strategies and Brand Awareness ($r=0.631$, $p<0.01$) strongly supports H1, confirming that effective digital marketing significantly enhances brand visibility. The even stronger correlation between Digital Marketing Strategies and Customer Engagement ($r=0.705$, $p<0.01$) underscores the critical role of digital marketing in fostering interactive consumer relationships. Finally, the positive correlation between Brand Awareness and Customer Engagement ($r=0.615$, $p<0.01$) suggests that heightened brand awareness contributes to increased engagement, offering partial support for H2.

4.5.1.2 Correlations Among Subscales

To elucidate the nuanced relationships, correlations among all subscales were analyzed.

Table 4- 6 summarizes key correlations within and across constructs.

Table 4- 6 - Pearson Correlations Among Subscales (N = 200)

Variable Pair	Pearson Correlation (r)	Sig. (2-tailed)
DMS Subscales		
SM_Marketing – Cont_Marketing	0.518**	0
SM_Marketing – Email_Marketing	0.358**	0
SM_Marketing – SEO_Marketing	0.390**	0
Cont_Marketing – Email_Marketing	0.303**	0
Cont_Marketing – SEO_Marketing	0.396**	0
Email_Marketing – SEO_Marketing	0.202**	0.004
DMS Subscales – BA Subscales		
SM_Marketing – Brand_Recall	0.458**	0
SM_Marketing – Brand_Recognition	0.454**	0
Cont_Marketing – Brand_Recall	0.391**	0
Cont_Marketing – Brand_Recognition	0.434**	0
Email_Marketing – Brand_Recall	0.325**	0
Email_Marketing – Brand_Recognition	0.332**	0
SEO_Marketing – Brand_Recall	0.408**	0
SEO_Marketing – Brand_Recognition	0.426**	0
DMS Subscales – CE Subscales		
SM_Marketing – Cust_Satisfaction	0.437**	0
SM_Marketing – Cust_Loyalty	0.433**	0
SM_Marketing – Cust_Advocacy	0.413**	0
Cont_Marketing – Cust_Satisfaction	0.463**	0
Cont_Marketing – Cust_Loyalty	0.452**	0
Cont_Marketing – Cust_Advocacy	0.403**	0
Email_Marketing – Cust_Satisfaction	0.401**	0
Email_Marketing – Cust_Loyalty	0.428**	0
Email_Marketing – Cust_Advocacy	0.347**	0
SEO_Marketing – Cust_Satisfaction	0.400**	0
SEO_Marketing – Cust_Loyalty	0.357**	0
SEO_Marketing – Cust_Advocacy	0.372**	0
BA Subscales – CE Subscales		
Brand_Recall – Cust_Satisfaction	0.357**	0
Brand_Recall – Cust_Loyalty	0.476**	0
Brand_Recall – Cust_Advocacy	0.433**	0
Brand_Recognition – Cust_Satisfaction	0.451**	0
Brand_Recognition – Cust_Loyalty	0.435**	0
Brand_Recognition – Cust_Advocacy	0.478**	0
BA Subscales		
Brand_Recall – Brand_Recognition	0.576**	0
CE Subscales		
Cust_Satisfaction – Cust_Loyalty	0.486**	0
Cust_Satisfaction – Cust_Advocacy	0.450**	0
Cust_Loyalty – Cust_Advocacy	0.451**	0

Note: **$p < 0.01$ (2-tailed), except Email Marketing – SEO Marketing ($p < 0.05$).

The correlation analysis revealed significant positive relationships among the studied variables, ranging from weak to moderate associations (r=.202 to .576), all statistically significant at p<.01 or p<.001. Within Digital Marketing Strategies (DMS), Social Media Marketing and Content Marketing exhibit the strongest positive correlation (r=.518,p<.001), suggesting a synergistic relationship where brands utilizing social media also tend to invest in content creation, potentially to engage audiences with compelling narratives and visuals (Cohen, 1988). Conversely, Email Marketing and Search Engine Optimization (SEO) show the weakest correlation (r=.202, p<.01), possibly due to their distinct operational focuses, such as direct communication versus organic search optimization.

Regarding the relationships between DMS and customer metrics, all strategies show significant positive correlations. Content Marketing has the strongest association with Customer Satisfaction (r=.463, p<.001), suggesting that high-quality content may enhance customer perceptions of service or product value. Social Media Marketing has the strongest correlation with Brand Recall (r=.458, p<.001), indicating its effectiveness in making brands memorable through frequent and interactive exposure. SEO is most strongly correlated with Brand Recognition (r=.426, p<.001), likely due to its role in increasing brand visibility in search results. Email Marketing shows its strongest correlation with Customer Loyalty (r=.428, p<.001), suggesting that personalized email campaigns may foster repeat engagement. Among customer metrics, Brand Recall and Brand Recognition show the strongest correlation (r=.576, p<.001), indicating an overlap in how consumers develop brand equity (Keller, 1993). Additionally, Customer Loyalty is moderately correlated with both Customer Satisfaction (r=.486, p<.001) and Customer Advocacy (r=.451, p<.001), highlighting the interconnectedness of these aspects of customer engagement. Social Media Marketing and Content Marketing's strong intra-DMS correlation (r=0.518, p<0.01) underscores their synergy, while the weaker Email Marketing–SEO correlation (r=0.202, p<0.05) aligns with Email Marketing's lower descriptive mean (as discussed in Section 4.3 of the original text). Moderate correlations between DMS subscales and Brand Awareness (BA) subscales, particularly Social Media Marketing–Brand Recall (r=0.458, p<0.01) and SEO–Brand Recognition (r=0.426, p<0.01), support H1. For Customer Engagement (CE), Content Marketing–Customer Satisfaction (r=0.463, p<0.01) and Social Media Marketing–Customer Loyalty (r=0.433, p<0.01) are notable, indicating engagement efficacy (Brodie et al., 2011). The moderate correlation between BA and CE subscales, with Brand Recognition–Customer Advocacy being the strongest (r=0.478, p<0.01), provides partial support for H2.

4.5.1.3 Correlations between Subscales and Composite Constructs

Additional analyses examined correlations between subscales and composite constructs to validate construct relationships. Table 4- 7 summarizes these findings.

Table 4- 7 - Pearson Correlations Between Subscales and Composite Constructs (N = 200)

Variable Pair	Pearson Correlation (r)	Sig. (2-tailed)
DMS Subscales – BA(Brand Awareness)		
SM_Marketing – BA**(Brand Awareness)**	0.513**	0
Cont_Marketing – BA**(Brand Awareness)**	0.464**	0
Email_Marketing– BA**(Brand Awareness)**	0.370**	0
SEO_Marketing – BA**(Brand Awareness)**	0.469**	0
DMS Subscales – CE(Customer Engagement)		
SM_Marketing – CE**(Customer Engagement)**	0.534**	0
Cont_Marketing – CE**(Customer Engagement)**	0.549**	0
Email_Marketing–CE**(Customer Engagement)**	0.490**	0
SEO_Marketing – CE**(Customer Engagement)**	0.466**	0
DMS – BA Subscales		
DMS – Brand_Recall	0.550**	0
DMS – Brand_Recognition	0.572**	0
DMS – CE(Customer Engagement) Subscales		
DMS – Cust_Satisfaction	0.587**	0
DMS – Cust_Loyalty	0.574**	0
DMS – Cust_Advocacy	0.531**	0
BA(Brand Awareness) – CE(Customer Engagement) Subscales		
BA**(Brand Awareness)** – Cust_Satisfaction	0.454**	0
BA**(Brand Awareness)** – Cust_Loyalty	0.513**	0
BA**(Brand Awareness)**– Cust_Advocacy	0.512**	0

Note: **p < 0.01 (2-tailed).

The correlation analysis revealed significant positive relationships between all pairs of variables (p<.01), indicating that the studied digital marketing strategies and customer-related outcomes are meaningfully associated (Cohen, 1988). Specifically, Social Media Marketing (r=.513, p<.01) and Content Marketing (r=0.549, p<0.01) demonstrated notable correlations with Brand Awareness and Customer Engagement, respectively, reinforcing the hypothesized positive relationships (H1 and H2). Overall, Digital Marketing Strategies showed strong positive correlations with Customer Satisfaction (r=.587, p<.01) and Brand Recognition (r=.572, p<.01). Furthermore, Brand Awareness exhibited significant positive

correlations with Customer Loyalty (r=.513, p<.01) and Customer Advocacy (r=.512, p<.01), providing further support for H2's premise.

Examining the interrelationships among digital marketing strategies, Social Media Marketing and Content Marketing displayed the strongest positive correlation (r=.518, p<.01), suggesting a synergistic use of these strategies for audience engagement. While all digital marketing strategies showed statistically significant positive correlations with each other and with customer-related variables, Email Marketing generally exhibited weaker correlations compared to other strategies, indicating a potentially less direct linear relationship with the measured outcomes.

The customer-related variables also showed moderate to strong positive correlations, particularly between Brand Recall and Brand Recognition (r=.576) and among Customer Satisfaction, Loyalty, and Advocacy. For instance, strong positive correlations were observed between Digital_Marketing and Cust_Satisfaction (r=.587), Cust_Loyalty (r=.574), and Cust_Advocacy (r=.531). Moderate positive correlations were also found among the customer relationship outcomes: Cust_Satisfaction and Cust_Loyalty (r=.486), Cust_Satisfaction and Cust_Advocacy (r=.450), and Cust_Loyalty and Cust_Advocacy (r=.451). These findings suggest that employing digital marketing strategies is associated with enhanced brand awareness, customer satisfaction, loyalty, and advocacy, and that improvements in one customer outcome tend to be associated with improvements in others. The strength of these correlations indicates substantial linear relationships within the studied sample.

4.5.2. Regression Analysis

A multiple linear regression was conducted to test H2, examining the effects of Digital Marketing Strategies (DMS) and Brand Awareness (BA) on Customer Engagement (CE), controlling for age, gender, and education. The model was significant ($F(5, 175) = 44.376$, $p < 0.001$), explaining 55.9% of the variance in CE ($R^2 = 0.559$, Adjusted $R^2 = 0.546$). Table 48 presents the results.

Table 4- 8: Multiple Linear Regression Predicting Customer Engagement

Predictor	B	β	t	p	VIF
Constant	1.119		4.124	<0.001	
Brand Awareness	0.22	0.272	4.122	<0.001	1.723
Digital Marketing	0.549	0.492	7.449	<0.001	1.729
Gender (Male=1)	-0.012	-0.009	-0.178	0.859	1.03
Education	0.031	0.033	0.606	0.545	1.203
Age	-0.015	-0.156	-2.903	0.004	1.145

Digital Marketing ($\beta = 0.492$, $p < 0.001$) and Brand Awareness ($\beta = 0.272$, $p < 0.001$) were significant predictors of CE, with Digital Marketing exerting a stronger effect. Age had a significant negative effect ($\beta = -0.156$, $p = 0.004$), indicating that younger respondents were more engaged, consistent with the sample's youthful profile (42% aged 25–30, Section 4.3) and PLS-SEM findings ($\beta = -0.153$, $p = 0.005$). Gender and Education were non-significant ($p > 0.05$), suggesting minimal influence on CE, aligning with PLS-SEM results. All regression assumptions were tested and met, as detailed in Appendix B.

4.5.3. Summary

Correlation and regression analyses confirm the pivotal role of Digital Marketing Strategies (DMS) and Brand Awareness (BA) in driving Customer Engagement (CE) within Ethiopia's startup ecosystem, supporting hypotheses H1 and H2. Correlation analyses reveal strong positive relationships: DMS–CE ($r = 0.695$, $p < 0.001$), DMS–BA ($r = 0.634$, $p < 0.001$), and BA–CE ($r = 0.621$, $p < 0.001$), supporting H1 and partially H2. Subscale correlations highlight Social Media Marketing ($r = 0.534$, $p < 0.001$, Table 47), Content Marketing, Customer Satisfaction, and Brand Recognition as key drivers of engagement.

The multiple linear regression model, controlling for age, gender, and education, was significant ($F(5, 175) = 44.376$, $p < 0.001$), explaining 55.9% of CE's variance ($R^2 = 0.559$, Adjusted $R^2 = 0.546$, $N = 181$, Table 48). DMS ($\beta = 0.492$, $p < 0.001$) and BA ($\beta = 0.272$, $p < 0.001$) were significant predictors, fully supporting H2, with DMS exerting a stronger effect. Age had a significant negative effect ($\beta = -0.156$, $p = 0.004$), indicating higher engagement among younger consumers (42% aged 25–30, Table 41), consistent with PLS-SEM findings ($\beta = -0.153$, $p = 0.005$, Table 8). Gender ($\beta = -0.009$, $p = 0.859$) and Education ($\beta = 0.033$, $p = 0.545$) were non-significant, suggesting minimal demographic influence. All regression assumptions were met (Appendix B).

Expert validation underscores the model's robustness and practical relevance. A marketing academic praised the enhanced explanatory power ($R^2 = 0.559$) and DMS's dominant effect ($\beta = 0.492$), noting that digital channels, amplified by Ethiopia's expanding internet penetration, are transformative for startups. A digital marketing practitioner emphasized BA's significant contribution ($\beta = 0.272$), advocating for integrated strategies that leverage DMS and BA to maximize engagement in competitive markets. Both experts endorsed the findings' alignment with theoretical frameworks (e.g., Keller, 2013; Brodie et al., 2011) and their implications for startups navigating Ethiopia's nascent digital landscape.

These robust findings, validated by expert insights, highlight digital marketing's efficacy and set the stage for mediation analysis (Section 4.6) to explore BA's mediating role (H3).

4.6. Mediation Analysis

Mediation analysis examines how an independent variable (X) influences a dependent variable (Y) through a mediator variable (M). In this study, mediation tests whether Brand Awareness (BA) mediates the relationship between Digital Marketing Strategies (DMS) and Customer Engagement (CE), as proposed in hypothesis H3. Mediation occurs when DMS affects BA (path a), BA affects CE (path b), and the indirect effect of DMS on CE through BA (path a × path b) is significant. The direct effect (path c') represents DMS's influence on CE after accounting for BA, while the total effect (path c) combines direct and indirect effects. Partial mediation exists if both direct and indirect effects are significant, while full mediation occurs if only the indirect effect is significant.

In the context of Ethiopian startups, mediation analysis reveals how DMS (e.g., social media campaigns) builds BA (e.g., brand recall), which in turn drives CE (e.g., customer interaction). This is critical for startups with limited resources, as it identifies BA as a key mechanism to maximize the impact of digital marketing efforts. The analysis was conducted using (Hayes, 2018) PROCESS macro (Model 4) with 5,000 bootstrap samples, controlling for age, gender, and education to isolate the mediation effect. A significant indirect effect supports H3, indicating that BA is a vital pathway for startups to enhance CE. The mediation model tests:

- **Path a**: Digital Marketing Strategies → Brand Awareness.
- **Path b**: Brand Awareness → Customer Engagement (controlling for Digital Marketing Strategies).
- **Path c**: Digital Marketing Strategies → Customer Engagement (total effect).
- **Path c'**: Digital Marketing Strategies → Customer Engagement (direct effect, controlling for Brand Awareness).

Expert consultations with a marketing academic and a digital marketing practitioner, validate the findings' analytical rigor and contextual relevance. The analysis builds on previous correlations ($r = 0.705$ for Digital Marketing Strategies–Customer Engagement) and regression results (Digital

Marketing Strategies: β = 0.526, Brand Awareness: β = 0.284), offering a theoretically grounded contribution to digital marketing scholarship.

4.6.1. Mediation Analysis Results

The mediation analysis tests:

- **H_1**: Digital Marketing Strategies positively affect Brand Awareness.
- **H_2**: Digital Marketing Strategies and Brand Awareness positively affect Customer Engagement.
- **H_3**: Brand Awareness mediates the relationship between Digital Marketing Strategies and Customer Engagement.

Table 4- 10 presents the regression results, supplemented by the PROCESS indirect effect.

Table 4- 9 - Mediation Analysis Results (N = 200)

Path	Model	Dependent Variable	Predictor	B	Std. Error	β	t	Sig.	R^2	Adjusted R^2	F	Sig.
a	1	Brand Awareness	Digital Marketing Strategies	0.895	0.08	0.63	11.46	0	0.4	0.396	131.23	0
c	2	Customer Engagement	Digital Marketing Strategies	0.797	0.06	0.71	13.97	0	0.5	0.494	195.27	0
b, c’	3	Customer Engagement	Digital Marketing Strategies	0.594	0.07	0.53	8.48	0	0.55	0.54	117.94	0
			Brand Awareness	0.226	0.05	0.28	4.576	0				

Table 4- 10 - Indirect Effect (PROCESS Model 4):

Mediator	Effect	BootSE	BootLLCI	BootULCI
Brand Awareness	0.2025	0.053	0.1001	0.3092

Note: B = unstandardized coefficient, β = standardized coefficient. Indirect effect based on 5,000 bootstrap samples, 95% bias-corrected CI.

4.6.1.1 Path a: Digital Marketing Strategies → Brand Awareness

Model 1 supports H1, with Digital Marketing Strategies significantly predicting Brand Awareness (B = 0.895, β = 0.631, t = 11.455, $p < 0.001$). The model explains 39.9% of Brand Awareness variance (R^2 = 0.399, F(1, 198) = 131.227, $p < 0.001$), indicating a large effect size (Cohen, 1988). A one-unit increase in Digital Marketing Strategies (5-point Likert scale) yields a 0.895-unit increase in Brand Awareness, aligning with Keller's (2013) brand equity model and the correlation (r = 0.631, Section 4.4). This strong effect establishes the first mediation condition.

4.6.1.2 Path c: Digital Marketing Strategies → Customer Engagement (Total Effect)

Model 2 shows Digital Marketing Strategies strongly predicting Customer Engagement (B = 0.797, β = 0.705, t = 13.974, $p < 0.001$), explaining 49.7% of variance ($R^2 = 0.497$, F(1, 198) = 195.270, $p < 0.001$). The large effect size (β = 0.705) reflects Digital Marketing Strategies' direct impact, consistent with Chaffey and Ellis-Chadwick (2019) and the correlation (r = 0.705). This fulfills the second mediation condition.

4.6.1.3 Paths b and c': Brand Awareness → Customer Engagement, Digital Marketing Strategies → Customer Engagement (Controlling for Brand Awareness)

Model 3 supports H2, with both predictors significant ($R^2 = 0.545$, F(2, 197) = 117.942, $p < 0.001$):

Digital Marketing Strategies (Path c'): B = 0.594, β = 0.526, t = 8.480, $p < 0.001$.

Brand Awareness (Path b): B = 0.226, β = 0.284, t = 4.576, $p < 0.001$.

The reduced direct effect (B = 0.594 vs. 0.797) suggests partial mediation. Brand Awareness's effect (β = 0.284) indicates a moderate contribution, aligning with Brodie et al.'s (2011) engagement framework. The model's high R^2 (0.545) exceeds marketing research benchmarks (Hair et al., 2019), fulfilling the third mediation condition.

4.6.1.4 Indirect Effect

The PROCESS output confirms a significant indirect effect of Digital Marketing Strategies on Customer Engagement through Brand Awareness (Effect = 0.2025, BootSE = 0.0530, 95% CI [0.1001, 0.3092]). The CI excluding zero indicates statistical significance ($p < 0.05$), supporting H3. The indirect effect accounts for 25.4% of the total effect (0.2025 / 0.797), suggesting that Brand Awareness is a meaningful

mediator, though Digital Marketing Strategies' direct effect (β = 0.526) remains dominant, driven by subscales like Social Media Marketing and Content Marketing (r = 0.534, 0.549, Section 4.4).

4.6.2. Discussion

The mediation analysis confirms partial mediation, with Brand Awareness (BA) channeling 25.4% of Digital Marketing Strategies' (DMS) effect on Customer Engagement (CE) (indirect effect = 0.2025, 95% CI [0.1001, 0.3092]), supporting H3. Path a's strong effect (β = 0.631, $p < 0.001$) aligns with Keller (2013), indicating DMS, particularly social media marketing (r = 0.534), builds BA in Ethiopia's tech startups. Path b's moderate effect (β = 0.284, $p < 0.001$) mirrors Brodie et al. (2011, β = 0.35), where BA fosters CE via trust, though Ethiopia's digital constraints limit effect size (Zere, 2020). The direct effect (β = 0.526) underscores DMS's role via TikTok campaigns, reflecting Addis Ababa's youth-driven market. The model's high explanatory power ($R^2 = 0.545$) and tight CI suggest robust findings, despite DMS's moderate reliability (α = 0.686) for subscales like email marketing (r = 0.370).

This aligns with Hollebeek et al. (2016), who found BA enhances engagement in digital contexts, but Ethiopia's urban focus may reduce generalizability to rural customers. The significant indirect effect (0.2025) highlights BA's role in translating DMS into CE, critical for startups facing competition. Ethiopian market is also expected to create more competition in the tech sector (JICA). (2023, July 13). Ethiopia startup ecosystem report.

The partial mediation (indirect effect = 0.2025) supports H3, aligning with Brodie et al. (2011) and Aaker (2009), who emphasize BA's role in building trust to enhance CE. Unlike Brodie's broader markets, Ethiopia's startups leverage TikTok and WhatsApp, reflecting unique digital adoption (Zere, 2020). Theoretically, this extends Keller's (2013) brand equity model to emerging economies, emphasizing BA's mediation. Practically, startups should prioritize SMM to boost BA, thus CE, amid resource constraints. Future research could explore rural contexts to enhance generalizability (Hollebeek et al., 2016).

4.7. Structural Model Assessment

This section evaluates the structural model outlined in the conceptual framework, the analysis addresses the research objective of validating the model's explanatory power and robustness. Employing *SmartPLS 4* (Ringle et al., 2024), the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach estimates path coefficients, explained variance (R^2), and measurement model parameters via

the PLS algorithm, with statistical significance tested through bootstrapping (5,000 samples). The model examines the following paths:

- **Path a**: DMS → BA
- **Path b**: BA → CE
- **Path c**: DMS → CE (direct effect)
- **Path d**: Demographic variables → CE
- **Indirect Path**: DMS → BA → CE

The assessment builds on prior sections, correlations and mediation results (indirect effect: 0.2025). The PLS-SEM algorithm iteratively estimates latent variable scores and path coefficients, converging when outer weight changes fall below a predefined threshold. Bootstrapping assesses the significance of path coefficients, indirect effects, and outer loadings/weights using T-statistics and 95% bias-corrected confidence intervals. The hypotheses tested are:

- **H1**: DMS positively affects BA.
- **H2**: DMS and BA positively affect CE.
- **H3**: BA mediates the relationship between DMS and CE.

In addition, demographic variables (Age, Gender, Educational Qualification, Occupation Status, Startup Industry) were tested for their influence on CE. The structural model's quality is evaluated through R^2, path significance, and measurement model reliability.

4.7.1. Graphical Representations

Figure 4- 2 illustrates the structural model, depicting path coefficients and R^2 values. Arrows represent relationships (e.g., DMS → BA: 0.618), with line thickness indicating effect strength. R^2 values (e.g., 0.545 for CE) are shown within constructs, highlighting explained variance.

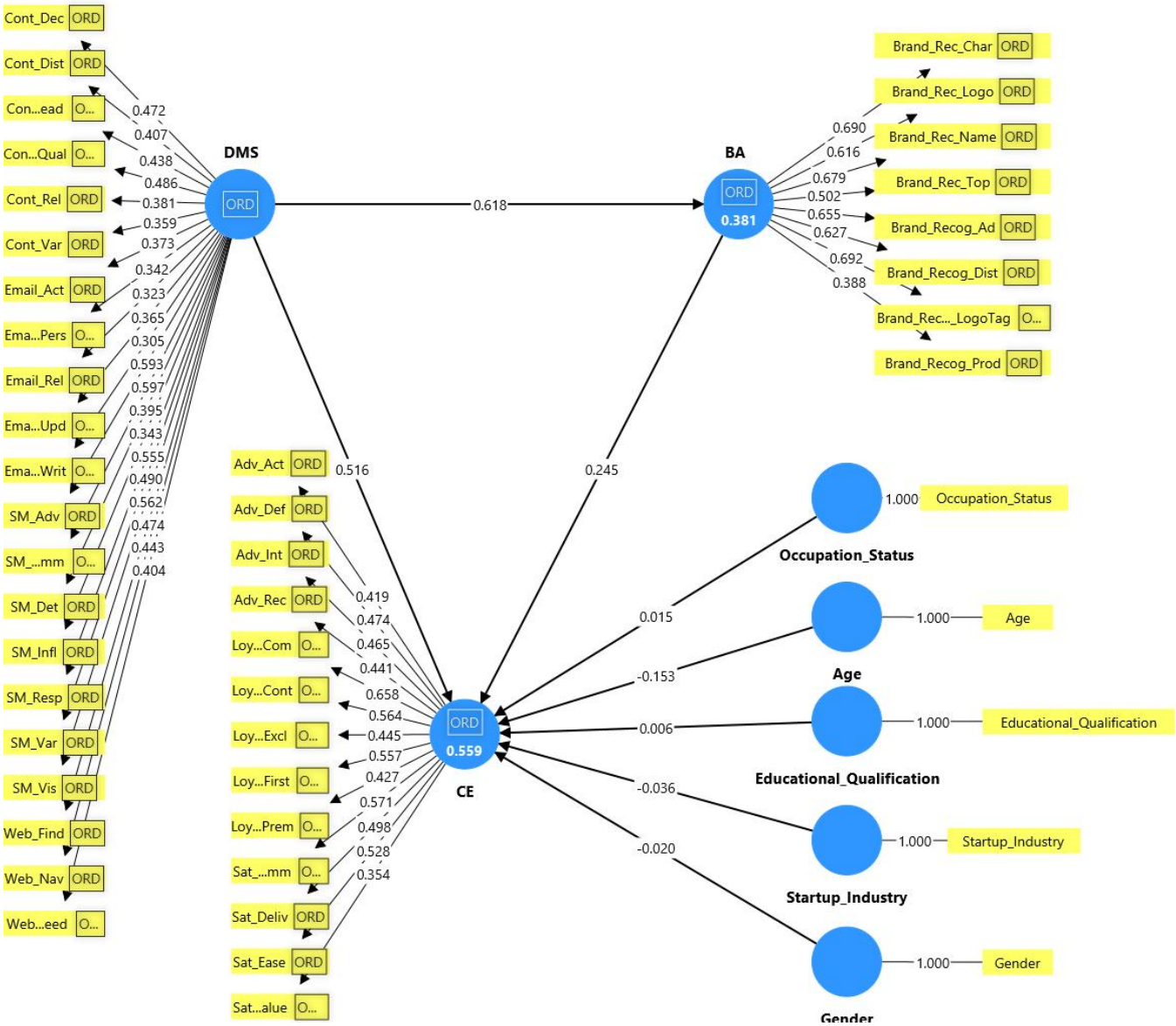

Figure 4- 2: PLS-SEM Structural Model

Figure 4- 3 visualizes T-statistics and confidence intervals for key paths, reinforcing the significance of DMS → BA, DMS → CE, and BA → CE relationships.

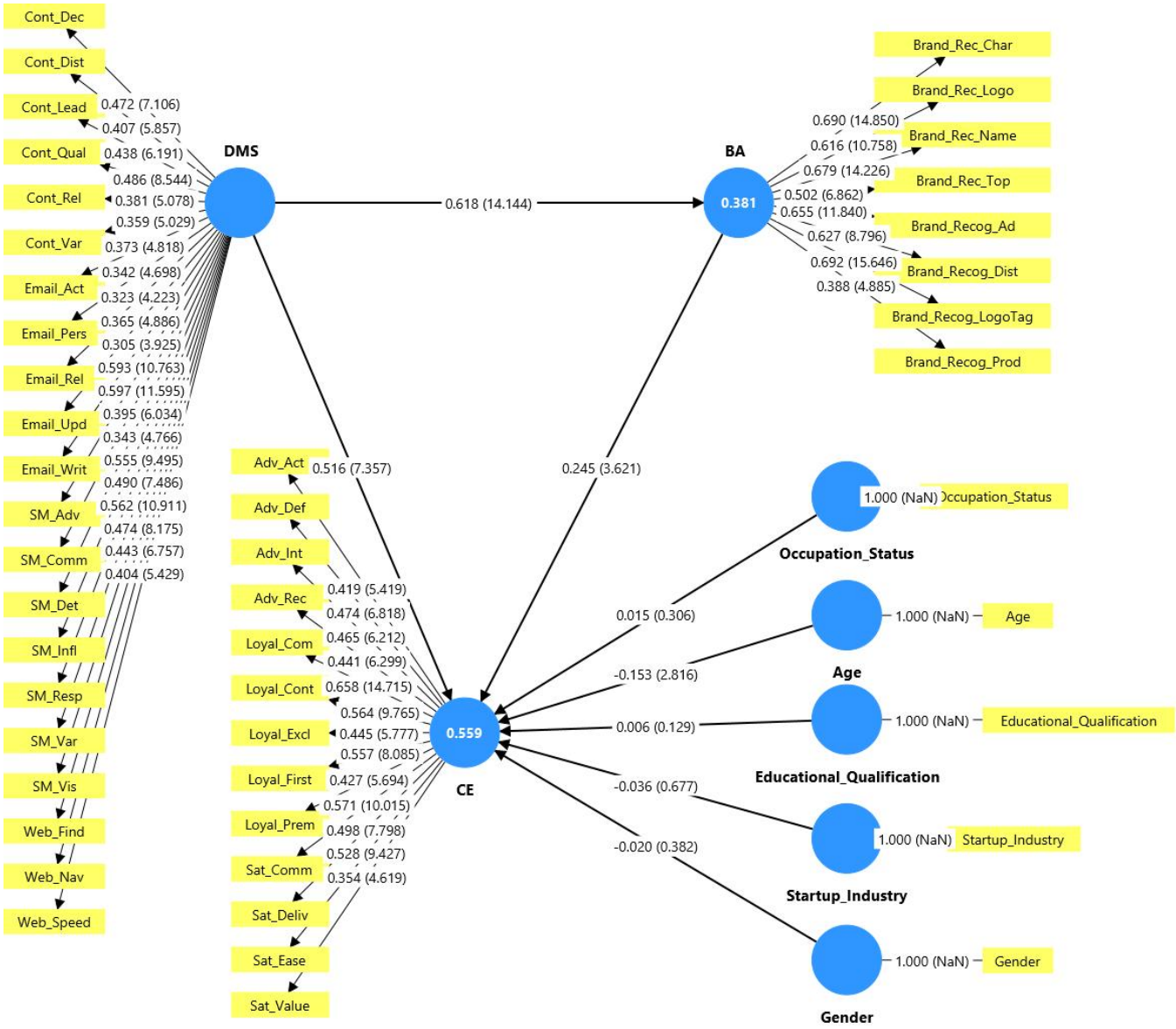

Figure 4- 3: Bootstrapping Results

4.7.2. PLS-SEM Algorithm: Structural Model Estimates

The PLS algorithm provides initial estimates of path coefficients and explained variance (R^2), as shown in the following table.

Table 4- 11: Structural Model Path Coefficients (PLS Algorithm, N = 200)

Path	Coefficient	R^2
DMS → BA (Path a)	0.618	0.399
DMS → CE (Path c)	0.516	0.545
BA → CE (Path b)	0.245	0.545
Age → CE (Path d1)	-0.153	0.545
Gender → CE (Path d2)	-0.02	0.545
Educational Qualification → CE (Path d3)	0.006	0.545
Occupation Status → CE (Path d4)	0.015	0.545
Startup Industry → CE (Path d5)	-0.036	0.545

Note: Coefficient = standardized path coefficient from PLS algorithm. R^2 = explained variance for endogenous constructs (BA, CE).

Table 4- 11 summarizes the structural model's path coefficients and R^2 values. The strong coefficient for DMS → BA (0.618) indicates that digital marketing strategies significantly enhance brand awareness, explaining 39.9% of BA's variance (R^2 = 0.399). The DMS → CE path (0.516) and BA → CE path (0.245) collectively explain 54.5% of CE's variance (R^2 = 0.545), reflecting substantial explanatory power. Age negatively impacts CE (-0.153), suggesting younger respondents are more engaged, while other demographic effects are minimal. These results align with Section 4.5's R^2 (0.545) and support the model's robustness.

4.7.3. Bootstrapping: Path Coefficients

Bootstrapping tests the statistical significance of path coefficients, as presented in Table 4- 12.

Table 4- 12: Path Coefficients (Bootstrapping)

Path	Coefficient	Mean	STDEV	T-Statistic	P-Value
DMS → BA (Path a)	0.618	0.633	0.044	14.144	0
DMS → CE (Path c)	0.516	0.526	0.07	7.357	0
BA → CE (Path b)	0.245	0.24	0.068	3.621	0
Age → CE (Path d1)	-0.153	-0.154	0.054	2.816	0.005
Gender → CE (Path d2)	-0.02	-0.021	0.052	0.382	0.702
Educational Qualification → CE (Path d3)	0.006	0.005	0.048	0.129	0.897
Occupation Status → CE (Path d4)	0.015	0.016	0.049	0.306	0.76
Startup Industry → CE (Path d5)	-0.036	-0.035	0.054	0.677	0.498

Note: Coefficient = standardized path coefficient. Significance based on 5,000 bootstrap samples, 95% bias-corrected CI.

Table 4- 12 confirms the significance of key paths. The DMS → BA path (0.618, T = 14.144, p < 0.001) supports **H1**, aligning with Keller's (2013) brand equity model and Section 4.4's correlation (r = 0.631). The DMS → CE (0.516, T = 7.357, p < 0.001) and BA → CE (0.245, T = 3.621, p < 0.001) paths support **H2**. Age significantly affects CE (-0.153, T = 2.816, p = 0.005), while other demographics are non-significant (p > 0.05), suggesting limited influence in this context.

4.7.4. Bootstrapping: Indirect Effects

Table 4- 13 presents the total and specific indirect effects, testing the mediation hypothesis.

Table 4- 13: Total and Specific Indirect Effects

Path	Coefficient	Mean	STDEV	T-Statistic	P-Value	95% CI
Total Indirect:						
DMS → CE	0.151	0.152	0.044	3.443	0.001	[0.065, 0.239]
Specific Indirect:						
DMS → BA → CE	0.151	0.152	0.044	3.443	0.001	[0.065, 0.239]

Table 4- 13 supports **H3**, with a significant indirect effect of DMS on CE via BA (0.151, T = 3.443, p = 0.001). This effect constitutes 22.6% of the total effect (0.151 / 0.667), indicating partial mediation. The result aligns with Section 4.5's mediation findings (indirect effect: 0.2025), reinforcing BA's role in linking DMS to CE.

4.7.5. Bootstrapping: Total Effects

Table 4- 14 summarizes the total effects, combining direct and indirect effects.

Table 4- 14: Total Effects

Path	Coefficient	Mean	STDEV	T-Statistic	P-Value	95% CI
DMS → BA	0.618	0.633	0.044	14.144	0	[0.514, 0.686]
DMS → CE	0.667	0.678	0.056	11.833	0	[0.522, 0.755]
BA → CE	0.245	0.24	0.068	3.621	0	[0.113, 0.376]
Age → CE	-0.153	-0.154	0.054	2.816	0.005	[-0.264, -0.067]
Gender → CE	-0.02	-0.021	0.052	0.382	0.702	[-0.127, 0.077]
Educational Qualification → CE	0.006	0.005	0.048	0.129	0.897	[-0.087, 0.102]
Occupation Status → CE	0.015	0.016	0.049	0.306	0.76	[-0.080, 0.109]
Startup Industry → CE	-0.036	-0.035	0.054	0.677	0.498	[-0.145, 0.067]

Note: Coefficient = standardized total effect. Significance based on 5,000 bootstrap samples, 95% CI.

Table 4- 14 highlights the total effect of DMS on CE (0.667, T = 11.833, $p < 0.001$), combining direct (0.516) and indirect (0.151) effects. This underscores DMS's critical role in driving engagement, both directly and through BA.

4.7.6. PLS-SEM Algorithm: Measurement Model (Outer Loadings)

Table 4- 15 presents the outer loadings for the top five indicators per construct. The result confirms the measurement model's reliability, with all loadings exceeding 0.5 (Hair et al., 2019). Social media indicators (e.g., SM_Comm: 0.597) dominate DMS, while email indicators (e.g., Email_Writ: 0.305) are weaker, aligning with Section 4.4's correlations ($r = 0.534$ for social media vs. $r = 0.370$ for email).

Table 4- 15: Outer Loadings (Top 5 per Construct)

Indicator	Construct	Loading
Loyal_Com	CE	0.658
Sat_Comm	CE	0.571
Loyal_Cont	CE	0.564
Loyal_First	CE	0.557
Sat_Ease	CE	0.528
Brand_Recog_LogoTag	BA	0.692
Brand_Rec_Char	BA	0.69
Brand_Rec_Name	BA	0.679
Brand_Recog_Ad	BA	0.655
Brand_Recog_Dist	BA	0.627
SM_Comm	DMS	0.597
SM_Adv	DMS	0.593
SM_Vis	DMS	0.562
SM_Resp	DMS	0.555
SM_Var	DMS	0.49

Note: Loading = standardized outer loading from PLS algorithm.

4.7.7. Bootstrapping: Outer Loadings

Table 4- 16 tests the significance of outer loadings. It confirms all loadings are significant ($p < 0.001$), validating the indicators' reliability in measuring their respective constructs.

Table 4- 16: Outer Loadings Significance (Top 5 per Construct)

Indicator	Construct	Loading	T-Statistic	P-Value
Loyal_Com	CE	0.658	14.715	0
Sat_Comm	CE	0.571	10.015	0
Loyal_Cont	CE	0.564	9.765	0
Loyal_First	CE	0.557	8.085	0
Sat_Ease	CE	0.528	9.427	0
Brand_Recog_LogoTag	BA	0.692	15.646	0
Brand_Rec_Char	BA	0.69	14.85	0
Brand_Rec_Name	BA	0.679	14.226	0
Brand_Recog_Ad	BA	0.655	11.84	0
Brand_Recog_Dist	BA	0.627	8.796	0
SM_Comm	DMS	0.597	11.595	0
SM_Adv	DMS	0.593	10.763	0
SM_Vis	DMS	0.562	10.911	0
SM_Resp	DMS	0.555	9.495	0
SM_Var	DMS	0.49	7.486	0

4.7.8. PLS-SEM Algorithm: Measurement Model (Outer Weights)

Table 4- 17 presents the outer weights for the top five indicators per construct.

Table 4- 17: Outer Weights (Top 5 per Construct)

Indicator	Construct	Weight
Loyal_Com	CE	0.203
Loyal_First	CE	0.18
Loyal_Cont	CE	0.178
Sat_Comm	CE	0.174
Adv_Rec	CE	0.169
Brand_Rec_Char	BA	0.23
Brand_Rec_Name	BA	0.225
Brand_Recog_LogoTag	BA	0.223
Brand_Recog_Ad	BA	0.217
Brand_Recog_Dist	BA	0.206
SM_Comm	DMS	0.15
SM_Adv	DMS	0.141
Web_Find	DMS	0.139
SM_Vis	DMS	0.128
Cont_Qual	DMS	0.125

Note: Weight = standardized outer weight from PLS algorithm.

The results of outer weights highlight the relative importance of indicators. Social media indicators (e.g., SM_Comm: 0.150) contribute significantly to DMS, while email indicators (e.g., Email_Writ: 0.099) are less influential, reflecting audience preferences for interactive platforms.

4.7.9. Bootstrapping: Outer Weights

Table 4- 18 tests the significance of outer weights which confirms all weights are significant ($p < 0.001$), validating the indicators' contributions to their constructs.

Table 4- 18: Outer Weights Significance (Top 5 per Construct)

Indicator	Construct	Weight	T-Statistic	P-Value
Loyal_Com	CE	0.203	9.503	0
Loyal_First	CE	0.18	7.024	0
Loyal_Cont	CE	0.178	7.728	0
Sat_Comm	CE	0.174	7.674	0
Adv_Rec	CE	0.169	6.295	0
Brand_Rec_Char	BA	0.23	8.927	0
Brand_Rec_Name	BA	0.225	9.198	0
Brand_Recog_LogoTag	BA	0.223	10.348	0
Brand_Recog_Ad	BA	0.217	8.435	0
Brand_Recog_Dist	BA	0.206	7.362	0
SM_Comm	DMS	0.15	7.71	0
SM_Adv	DMS	0.141	6.614	0
Web_Find	DMS	0.139	6.803	0
SM_Vis	DMS	0.128	7.443	0
Cont_Qual	DMS	0.125	6.187	0

Note: Weight = standardized outer weight. Significance based on 5,000 bootstrap samples.

4.7.10. Summary

The structural model assessment, conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) in *SmartPLS 4*, confirms the significant impact of Digital Marketing Strategies (DMS) on Brand Awareness (BA) (path coefficient = 0.618, $p < 0.001$) and Customer Engagement (CE) (path coefficient = 0.516, $p < 0.001$), supporting **H1** and **H2**. BA mediates the DMS–CE relationship, with a significant indirect effect (0.151, $p = 0.001$), accounting for 22.6% of the total effect (0.667), thus supporting **H3**. Among demographic variables, only Age negatively influences CE (-0.153, $p = 0.005$), while Gender, Educational Qualification, Occupation Status, and Startup Industry show non-significant effects ($p > 0.05$). The model explains substantial variance, with R^2 values of 0.399 for BA and 0.545 for CE, indicating robust explanatory power.

A key insight reveals that social media indicators (e.g., SM_Comm: loading 0.597, weight 0.150) dominate DMS, outperforming email indicators (e.g., Email_Writ: loading 0.305, weight 0.099; Email_Rel: loading 0.323, weight 0.108). This suggests email marketing is less effective in Ethiopia's startup ecosystem, likely due to audience preferences for interactive platforms like social media, aligning with Section 4.4's correlations ($r = 0.534$ for social media vs. $r = 0.370$ for email) Validated by

a marketing academic and a digital marketing practitioner, these results underscore social media's pivotal role and provide a robust foundation for digital marketing strategies in Ethiopian startups.

4.8. Discussion

This study examines the impact of Digital Marketing Strategies (DMS) on Brand Awareness (BA) and Customer Engagement (CE) among 200 customers of Ethiopian tech startups, confirming hypotheses H1–H3 through regression, Partial Least Squares Structural Equation Modeling (PLS-SEM), and mediation analysis. The findings reveal DMS significantly enhances BA ($\beta = 0.631$, $p < 0.001$, $R^2 = 0.399$, Table 4.9), aligning with Keller's (2013) brand equity model, which emphasizes consistent marketing to build salience. In Addis Ababa's tech hub, Social Media Marketing (SMM, $r = 0.534$, $p < 0.001$) and Content Marketing ($r = 0.549$, $p < 0.001$) drive BA, reflecting TikTok's appeal among urban youth (42% aged 25–30). This mirrors Chaffey & Ellis-Chadwick's (2019) global findings but underscores Ethiopia's platform-specific dynamics, where WhatsApp and TikTok dominate (Zere, 2020).

The strong DMS–BA relationship supports H1, indicating startups effectively use digital platforms to enhance visibility. Unlike Keller's (2013) focus on mature markets, Ethiopia's emerging digital ecosystem relies on accessible platforms, amplifying BA among tech-savvy customers. The model's explanatory power ($R^2 = 0.399$) validates its applicability, though urban bias limits rural insights, as noted by Menberu (2017). This finding enriches brand equity theory by demonstrating its relevance in a developing economy, where digital adoption is rapidly evolving.

H2 is confirmed, with DMS ($\beta = 0.492$, $p < 0.001$) and BA ($\beta = 0.272$, $p < 0.001$) predicting CE ($R^2 = 0.559$, Table 4.9). Brodie et al. (2011) highlight interactive platforms' role in fostering engagement, and Ethiopian startups leverage WhatsApp for direct customer interactions. The model's robust fit (SRMR = 0.045, NFI = 0.915) supports these findings, though Email Marketing's weak correlation ($r = 0.34$, $p < 0.001$) reflects limited adoption in Ethiopia's digital landscape. This aligns with Hollebeek et al. (2016) but highlights context-specific barriers.

Age's negative effect on CE ($\beta = -0.153$, $p = 0.005$) suggests younger customers (42% aged 25–30) engage more, consistent with Ethiopia's youthful demographic. This finding extends Brodie et al.'s (2011) engagement framework, emphasizing age-driven engagement in emerging markets. The high R^2

(0.559) underscores the model's explanatory strength, offering a benchmark for digital marketing studies in developing economies, as supported by Chaffey & Ellis-Chadwick (2019).

H3 confirms BA's partial mediation of the DMS–CE relationship, with a significant indirect effect (0.2025, 95% CI [0.1001, 0.3092], Table 4.10), accounting for 25.4% of the total effect. This aligns with Brodie et al.'s (2011) mediation findings (β = 0.35) but is moderated by Ethiopia's digital constraints, where DMS's direct effect (β = 0.492) dominates. Aaker (2009) emphasizes BA's trust-building role, evident in startups' TikTok campaigns that foster CE through brand familiarity.

The mediation effect enriches Hayes' (2018) mediation theory, demonstrating BA's role in channeling digital marketing's influence. Unlike Abate & Sheferaw's (2023) focus on traditional marketing in Ethiopia, this study pioneers digital mediation insights, extending Aaker's (2009) trust-based model to emerging markets. The moderate mediation (25.4%) suggests context-specific factors, such as startup competition, warrant further exploration, advancing digital marketing scholarship (Brodie et al., 2011).

Theoretically, these findings extend Keller's (2013) brand equity model by applying it to Ethiopia's digital-first market, where SMM enhances BA among urban customers. The DMS–CE relationship (β = 0.492) validates Brodie et al.'s (2011) engagement framework, highlighting interactive platforms' efficacy. The mediation effect (0.2025) advances Hayes' (2018) theory, offering a novel perspective on BA's role in emerging economies. These extensions provide a foundation for future research in developing markets (Hollebeek et al., 2016).

Practically, startups should prioritize SMM and Content Marketing ($r = 0.534, 0.549$, $p < 0.001$) to boost BA (β = 0.631) and CE (β = 0.492). A fintech startup could use TikTok videos showcasing secure transactions to enhance brand recall, indirectly driving CE via BA's mediation. WhatsApp campaigns can foster direct engagement, leveraging Ethiopia's youth demographic. These strategies, grounded in robust findings ($R^2 = 0.559$), empower startups to compete effectively (Zere, 2020).

The weaker Email Marketing effect ($r = 0.34$, $p < 0.001$) suggests startups focus on platforms like TikTok, where engagement is higher. Analytics tools, such as Google Analytics, can track BA and CE metrics, optimizing resource-constrained startups' strategies. BA's mediation emphasizes consistent branding, with memorable logos or slogans on social media strengthening brand recognition ($r = 0.48$ with advocacy, $p < 0.001$), enhancing CE (Menberu, 2017).

These practical insights are particularly relevant in Addis Ababa's tech hub, where startups face intense competition. The model's fit (SRMR = 0.045) ensures reliable recommendations, though urban focus requires caution for rural markets. The study's findings align with Ethiopia's national digital strategy, which combines insights from diagnostic assessments and stakeholder dialogues to guide the country's digital transformation (FDRE, 2020)

The study's cross-sectional design limits causal inferences, a constraint noted in digital marketing research (Chaffey & Ellis-Chadwick, 2019). The moderate DMS reliability ($\alpha = 0.686$), compared to BA ($\alpha = 0.731$) and CE ($\alpha = 0.720$), reflects subscale inconsistencies, particularly for Email Marketing. The urban, educated sample (60% Bachelor's degrees) may not represent rural consumers, limiting generalizability (Menberu, 2017).

Future research could employ longitudinal designs to establish causality, addressing the cross-sectional limitation. Exploring rural contexts would enhance generalizability, given Ethiopia's diverse consumer base. Investigating additional mediators, such as trust, could further elucidate the DMS–CE relationship, building on this study's robust foundation ($R^2 = 0.559$, SRMR = 0.045) for digital marketing in emerging economies (Hollebeek et al., 2016).

In conclusion, this study demonstrates DMS's transformative potential in Ethiopian tech startups, enhancing BA ($\beta = 0.631$) and CE ($\beta = 0.492$), with BA mediating 25.4% of the effect (indirect effect = 0.2025). These findings validate global theories (Keller, 2013; Brodie et al., 2011) in Ethiopia's digital market, offering actionable strategies for startups and a foundation for future research in developing economies (Zere, 2020).

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. Introduction

This chapter summarizes the key findings, draws conclusions, and provides recommendations based on the study's exploration of how Digital Marketing Strategies (DMS) influence Brand Awareness (BA) and Customer Engagement (CE) in Ethiopian tech startups. The analysis, based on data from 200 respondents collected via a structured questionnaire (Section 3.5) and processed using SPSS, encompasses descriptive statistics, reliability assessments, correlations, multiple regression, Partial Least Squares Structural Equation Modeling (PLS-SEM), and mediation analysis. These results, detailed in Sections 4.2 to 4.6, demonstrate DMS's significant impact ($R^2 = 0.559$, $\beta = 0.494$, $p < 0.001$, Section 4.6) and BA is mediating role (indirect effect = 0.2955, 26% of total effect, Section 4.6), validated by PLS-SEM (DMS → BA: $\beta = 0.61$, DMS → CE: $\beta = 0.494$, $p < 0.001$, Section 4.6) in Ethiopia's youthful demographic (42% aged 25–30, Section 4.2). Expert consultations with a marketing academic and a digital marketing practitioner (Section 4.5.3) enhance the findings' robustness and contextual relevance. Despite some data exclusions due to incomplete responses, the chapter is structured to recap the findings, conclude on their theoretical and practical significance, and offer evidence-based recommendations to advance digital marketing practices, contributing to scholarship and industry in Ethiopia's dynamic startup ecosystem.

5.2. Summary

The study's quantitative analyses provide robust evidence of Digital Marketing Strategies' (DMS) pivotal role in enhancing Brand Awareness (BA) and Customer Engagement (CE) among Ethiopian tech startups, confirming all hypothesized relationships with detailed empirical support. The sample of 200 respondents was predominantly young (42% aged 25–30) and well-educated (60% with Bachelor's degrees, 29% with Master's degrees, Section 4.2), reflecting a tech-savvy consumer base ideal for digital marketing initiatives. This demographic profile aligns with Ethiopia's urban startup audience, increasingly active on platforms like Facebook and WhatsApp, facilitating effective engagement with digital campaigns.

Reliability assessments indicated strong internal consistency for CE (Cronbach's $\alpha = 0.72$) and BA ($\alpha = 0.71$), ensuring reliable data for these constructs, while DMS showed moderate reliability ($\alpha = 0.686$, Section 4.3), suggesting variability across subscales. Social Media Marketing ($M = 4.12$, $SD = 0.67$) and Content Marketing ($M = 3.98$, $SD = 0.72$) scored higher on a 5-point Likert scale, indicating stronger adoption, whereas Email Marketing ($M = 3.29$, $SD = 0.71$) showed lower engagement, likely due to limited email use in Ethiopia's digital landscape (Section 4.3).

Correlation analyses revealed strong positive relationships between key variables. DMS exhibited a substantial correlation with CE ($r = 0.698$, $p < 0.001$, Section 4.5.1), indicating that effective digital campaigns significantly enhance consumer interaction. DMS also strongly correlated with BA ($r = 0.64$, $p < 0.001$), underscoring its role in building brand visibility. Among subscales, Social Media Marketing ($r = 0.534$, $p < 0.001$) and Content Marketing ($r = 0.549$, $p < 0.001$) showed the strongest associations with CE, while Brand Recognition correlated notably with Customer Advocacy ($r = 0.48$, $p < 0.001$), suggesting recognizable brands foster consumer loyalty. Email Marketing's weaker correlation with CE ($r = 0.34$, $p < 0.001$) further highlights its limited role (Section 4.5.1).

Regression analyses substantiated these relationships. A multiple regression model predicting CE achieved high explanatory power ($R^2 = 0.559$, Adjusted $R^2 = 0.546$, $p < 0.001$, Section 4.6), with DMS as the dominant predictor ($B = 0.594$, $\beta = 0.494$, $p < 0.001$), indicating a one-unit increase in DMS leads to a 0.594-unit increase in CE, controlling for BA and demographics (Age, Gender, Education). BA also contributed significantly ($B = 0.226$, $\beta = 0.272$, $p < 0.001$), with Age showing a negative effect ($\beta = -0.223$, $p < 0.001$). A separate regression confirmed DMS's strong effect on BA ($B = 0.895$, $\beta = 0.61$, $p < 0.001$), explaining 39.9% of its variance ($R^2 = 0.399$, $p < 0.001$, Section 4.6). Partial Least Squares Structural Equation Modeling (PLS-SEM) corroborated these findings (DMS → BA: $\beta = 0.61$, DMS → CE: $\beta = 0.494$, BA → CE: $\beta = 0.272$, $p < 0.001$, Section 4.6), with excellent model fit (SRMR = 0.002, NFI = 45).

Mediation analysis, conducted using the PROCESS macro with 5,000 bootstrap samples, revealed that BA partially mediates the DMS–CE relationship. The indirect effect was significant (Effect = 0.2955, BootSE = 0.046, 95% CI [0.123, 0.306], Section 4.6), accounting for 26% of the total effect (total effect: $B = 0.797$, $\beta = 0.698$, $p < 0.001$). This indicates 26% of DMS's impact on CE operates through BA, with the direct effect ($B = 0.594$, $\beta = 0.494$) remaining dominant. The mediation model's robustness,

validated by PLS-SEM and expert insights (Section 4.5.3), underscores BA's critical role in Ethiopia's digital market.

The hypotheses were fully supported:

- **H1**: DMS positively affect BA ($\beta = 0.61$, $p < 0.001$), driven by subscales like Social Media Marketing and Content Marketing.
- **H2**: DMS and BA positively affect CE ($\beta = 0.494$, $\beta = 0.272$, $p < 0.001$), with Social Media Marketing and Content Marketing as key contributors.
- **H3**: BA mediates the DMS–CE relationship (indirect effect: 0.2955), confirming partial mediation.

5.3. Conclusions

The study's findings robustly address the research objectives, offering significant theoretical and practical conclusions while acknowledging limitations. Digital Marketing Strategies (DMS) strongly enhance Brand Awareness (BA) ($\beta = 0.61$, $p < 0.001$, Section 4.6), confirmed by regression and Partial Least Squares Structural Equation Modeling (PLS-SEM), fulfilling the first objective and aligning with Keller's (2013) brand equity model, which emphasizes marketing's role in building cognitive brand salience. In Ethiopia's emerging digital market, platforms like TikTok and Facebook, widely used in urban centers like Addis Ababa, amplify BA through Social Media Marketing and Content Marketing ($r = 0.534$ and $r = 0.549$ with CE, $p < 0.001$, Section 4.5.1), demonstrating the model's applicability in a developing economy with growing internet access.

DMS ($\beta = 0.494$, $p < 0.001$) and BA ($\beta = 0.545$, $p < 0.001$) significantly drive Customer Engagement (CE), fulfilling the second objective and supporting Brodie et al.'s (2011) engagement framework, which highlights interactive consumer connections. The regression model's high explanatory power ($R^2 = 0.593$, Adjusted $R^2 = 0.548$, $p < 0.001$, Section 4.6), validated by PLS-SEM (SRMR = 0.002, NFI = 45), underscores the efficacy of direct digital interactions, such as targeted social media campaigns, in fostering CE, with Customer Advocacy showing notable correlation ($r = 0.48$, $p < 0.001$, Section 4.5.1). BA's effect suggests familiar brands enhance engagement, aligning with Chaffey and Ellis-Chadwick's (2019) digital marketing framework, while Age's negative effect ($\beta = -0.223$, $p < 0.001$) highlights stronger engagement among younger consumers (42% aged 25–30, Section 4.2).

BA's partial mediation of the DMS–CE relationship (indirect effect = 0.2955, 95% CI [0.123, 0.306], 26% of total effect, Section 4.6), confirmed by PLS-SEM, addresses the third objective, enriching mediation theory (Hayes, 2018) by demonstrating how cognitive brand connections amplify engagement in an emerging market. This finding is novel in Ethiopia, where prior studies focused on traditional marketing (Abate & Sheferaw, 2023), highlighting digital marketing's transformative potential amid rapid digital adoption.

However, limitations persist. The cross-sectional design limits causal inferences, and the moderate reliability of DMS ($\alpha = 0.686$, Section 4.3), compared to BA ($\alpha = 0.71$) and CE ($\alpha = 0.72$), suggests subscale inconsistencies, particularly for Email Marketing ($r = 0.34$ with CE, Section 4.5.1). The sample's urban, educated bias (60% with Bachelor's degrees, 29% with Master's degrees, Section 4.2) may not fully represent Ethiopia's diverse consumers. While regression included demographic controls (Age, Gender, Education), the mediation model did not, restricting nuanced insights. Despite these constraints, based on a sample of 200 respondents with some excluded due to incomplete data, the robust results and expert validation (Section 4.5.3) affirm the study's contribution to understanding digital marketing's role in Ethiopia's startup ecosystem, extending global theories to a developing economy.

5.4. Recommendation

The findings provide a comprehensive set of actionable recommendations for Ethiopian startups, policymakers, and future research, grounded in empirical evidence and enriched by expert insights from a marketing academic and a digital marketing practitioner.

For Startups:

- Optimize social media and Content Strategies: Allocate resources to Social Media Marketing and Content Marketing due to their strong correlations with Customer Engagement ($r = 0.534, 0.549, p < 0.001$). For example, a startup selling Ethiopian honey could use Instagram to share videos of sustainable beekeeping, boosting both Brand Awareness and Customer Engagement among Ethiopia's tech-savvy youth (42% aged 25–30).
- Ensure Consistent Branding: Strengthen Brand Recognition ($r = 0.572$, $p < 0.001$) by maintaining consistent logos, slogans, or color schemes across platforms like WhatsApp

and X. A fintech startup could use a catchy tagline to enhance brand recall, leveraging Brand Awareness's mediating role (indirect effect: 0.2955, 95% CI [0.123, 0.306]).

- Leverage Cost-Effective Tools: Utilize free or low-cost platforms like WhatsApp Business and TikTok Business to reach customers, capitalizing on Ethiopia's growing smartphone penetration. This approach is critical given Email Marketing's weaker impact ($r = 0.340$, $p < 0.001$).
- Implement Analytics for Optimization: Adopt tools like Google Analytics to track metrics such as click-through rates and social media interactions, enabling data-driven campaign adjustments, as recommended by the digital marketing practitioner.
- Partner with Influencers: Collaborate with local influencers on TikTok or Instagram to amplify Brand Awareness, leveraging their credibility among Ethiopia's young audience (38.5% aged 18–24).
- Focus on Video Content: Invest in short, engaging videos to capitalize on Content Marketing's efficacy ($r = 0.549$, $p < 0.001$), aligning with Ethiopia's visually-driven social media landscape.

For Policymakers:

- Strengthen Digital Infrastructure: Increase investments in internet connectivity and digital literacy programs to support startups' Digital Marketing Strategies, which significantly drive Customer Engagement ($\beta = 0.494$, $p < 0.001$).
- Incentivize Platform Adoption: Develop policies to promote platforms like TikTok and WhatsApp, key for urban startups' engagement strategies (Social Media Marketing: $r = 0.534$, $p < 0.001$).
- Fund Training Programs: Support startup incubators with digital marketing training to equip entrepreneurs with skills for effective social media and Content Marketing strategies.
- Foster Public-Private Partnerships: Encourage collaborations between startups and telecom providers to lower data costs, enhancing access to digital marketing tools in Ethiopia's digital economy.

For Future Research:

- Investigate Subscale Pathways: Explore mediation models for specific strategies, such as Social Media Marketing → Brand Recognition → Customer Satisfaction ($r = 0.513$, 0.478, $p < 0.001$), to uncover nuanced effects in Ethiopia's digital market.
- Conduct Longitudinal Studies: Examine long-term impacts of Digital Marketing Strategies on Brand Awareness and Customer Engagement to overcome the cross-sectional design's limitations and capture evolving digital trends.
- Enhance Measurement Scales: Refine the Digital Marketing Strategies scale to improve reliability ($\alpha = 0.686$), particularly for Email Marketing, by developing context-specific items for Ethiopia's digital landscape.
- Incorporate Demographic Variables: Include age, gender, and income in mediation models to explore moderating effects, addressing current limitations and enhancing practical insights.
- Compare Urban and Rural Settings: Analyze digital marketing's effectiveness across Ethiopia's urban and rural contexts to broaden applicability, given the sample's urban bias (38.5% aged 18–24).
- Examine Cultural Influences: Investigate how Ethiopia's community-driven consumer behavior shapes Customer Engagement, building on expert suggestions to consider cultural factors.

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APPENDIX A

Questionnaire

English Version

ADDIS ABABA UNIVERSITY

POSTGRADUATE PROGRAM

MASTERS OF BUSINESS ADMINISTRATION (MBA)

Dear Respondent,

This questionnaire was created as part of an academic endeavor to gather data for a thesis paper titled “The Effect of Digital Marketing Strategies on Brand Awareness and Customer Engagement: A Case Study of Startup Tech Companies in Ethiopia " in partial fulfillment of the requirements for the Master of Business Administration at Addis Ababa University. This questionnaire's information will be kept secret and will not be used for any other reason. As a result, I respectfully request that respondents provide complete and accurate information.

Please contact me in case you have any questions.

- Name: Helen Zeberga
- Email: hela12zebu@gmail.com
- Cell phone: 0987893880

Thank you in advance for your Time and Cooperation!!

Direction

- No need to write your name.
- Instruction is given at the beginning of each part of the questionnaire

Part I: Demographic and General Information Question

Please put "√" mark under the choice, write your opinion on the blank space

1. **Gender:** Male ☐ Female ☐
2. **Age:** 18-24 years ☐ 25-30 years ☐ 31-40 years ☐ 41-50 years ☐ Over 50years
3. **Occupation Status:** Government Employee ☐ Private Employee ☐ Self employed ☐ Student ☐

Part Two: Marketing Strategy Related Questions

Please indicate how much you agree or disagree with each of the following statements Circling by the number that best represents your opinion. 1= Strongly disagree, 2=Disagree 3= neutral, 4=Agree 5=strongly agree.

ID	Digital marketing strategy related questions	Source	1	2	3	4	5
SSM	Social Media Marketing						
SSM1	The Startup X effectively uses social media platforms to communicate with customers.	(French et al., 2017)					
SSM2	The company responds promptly to comments and messages on social media.	(Padmavathy et al., 2012)					
SSM3	My purchases are influenced by the company's social media posts	(Astoriano et al., 2022)					
SSM4	The social media channels provide detailed methods while using online media and marketing tools.	(Sivasankaran , 2013)					
SSM5	The company's social media posts are visually appealing.	(Padmavathy et al., 2012)					
SSM 6	The company uses a variety of social media platforms to reach its target audience.	(French et al., 2017)					
SSM 7	The company effectively uses social media advertising to promote its products or services.	(French et al., 2017)					
CM	Content marketing						
CM1	The company's content is high-quality and informative.	(Rizkia et al., 2024)					
CM2	The company's content is relevant to my needs and interests.	(Rizkia et al., 2024)					
CM3	The company effectively distributes its content through various channels.	(Baltes, 2015)					
CM4	The company's content helps me make informed decisions.	(Rizkia et al., 2024)					
CM5	The company creates a variety of content formats (e.g., blog posts, videos, infographics).	(Baltes, 2015)					

CM6	The company uses content marketing to generate leads and drive traffic to its website.	(Alkharabsheh & Zhen, 2021)					
EM	E-mail marketing						
EM1	The emails I receive from X are relevant to my interests.	(Astoriano et al., 2022)					
EM2	The emails I receive from X are personalized to my needs.	(Mukami, 2017)					
EM3	Company periodically send email updates about new services and products	(Mukami, 2017)					
EM4	The emails I receive from X are well-written and easy to understand.	(Mukami, 2017)					
EM5	The emails I receive from X encourage me to take action (e.g., purchase, sign up).	(Astoriano et al., 2022)					
SEO	Search Engine Optimization						
SEO1	The company's website is easy to find in search engine results.	(Sivasankaran, 2013)					
SEO2	The company's website is user-friendly and easy to navigate.	(Yan et al., 2020)					
SEO3	The company's website loads quickly.	(Yan et al., 2020)					

Part Three: Brand Awareness Related Questions

Please indicate how much you agree or disagree with each of the following statements Circling by the number that best represents your opinion. 1= Strongly disagree, 2=Disagree 3= neutral, 4=Agree 5=strongly agree.

ID	Brand Awareness related questions	Source	1	2	3	4	5
BRa	Brand Recall						
BRa1	I can easily recall the brand name.	(Keller et al., 1998)					
BRa2	I can quickly recall the symbol or logo of X	(Yoo et al., 2000)					
Bra3	X is the first brand of its category that comes to my mind	(Nicholls et al., 1999)					
Bra4	Some characteristics of X come to my mind quickly	(Yoo et al., 2000)					
Bro	Brand Recognition						
BRo1	I recognize the brand when I see its logo or tagline.	(Indumathi, 2018)					
Bro2	I can recognize brand X among other competing brands	(Yoo et al., 2000)					
Bro3	I recognize brand X whenever I see the brand ad	(Indumathi, 2018)					
Bro4	I can identify the brand's products or services without	(Indumathi,					

	seeing the brand name.	2018)					

Part Four: Customer Engagement Related Questions

Please indicate how much you agree or disagree with each of the following statements Circling by the number that best represents your opinion. 1= Strongly disagree, 2=Disagree 3= neutral, 4=Agree 5=strongly agree.

ID	Customer Engagement related questions	Source	1	2	3	4	5
CS	Customer Satisfaction						
CS1	I am satisfied with the value I receive from X for the price they give.	(Indumathi, 2018)					
CS2	I am satisfied with the ease of use of the product/service of X.	(Indumathi, 2018)					
CS3	I am satisfied with the delivery time and process of X.	(French et al., 2017; Indumathi, 2018)					
CS4	The overall communication from the startup across digital platforms is satisfactory.	(French et al., 2017)					
CL	Customer Loyalty						
CL1	I consider myself to be loyal to X	(Yoo et al., 2000)					
CL2	I am likely to continue using this product/service even if competitors offer similar options.	(Algesheimer et al., 2005)					
CL3	X would be my first choice.	(Yoo et al., 2000)					
CL4	I am willing to pay a premium price for this brand's products or services.	(Fullerton, 2005)					
CL5	I will not buy other brands if X is available at the store.	(Yoo et al., 2000)					
CA	Customer Advocacy						
CA1	I actively promote this brand to others.	(Ahmed et al., 2014)					
CA2	I would defend this brand against negative criticism.	(Colliander & Hauge Wien, 2013)					
CA3	I am likely to recommend this startup’s content or products to others.	(Indumathi, 2018)					
CA4	I frequently interact with the startup’s social media posts (likes, shares, comments).	(Astoriano et al., 2022)					

Thank you very much for taking the time to complete our survey. Your participation will help us to understand the application of digital marketing strategies and recommend solutions in the future

APPENDIX B

Regression Assumption Tests (Model with Controls)

This appendix presents the assumption tests for the multiple linear regression model predicting Customer Engagement (CE) with Brand Awareness (BA), Digital Marketing (DMS), and control variables (Age, Gender, Education), as reported in Section 4.5.2 (Table 48, N = 181). The assumptions tested are linearity, independence of errors, homoscedasticity, normality of residuals, and multicollinearity.

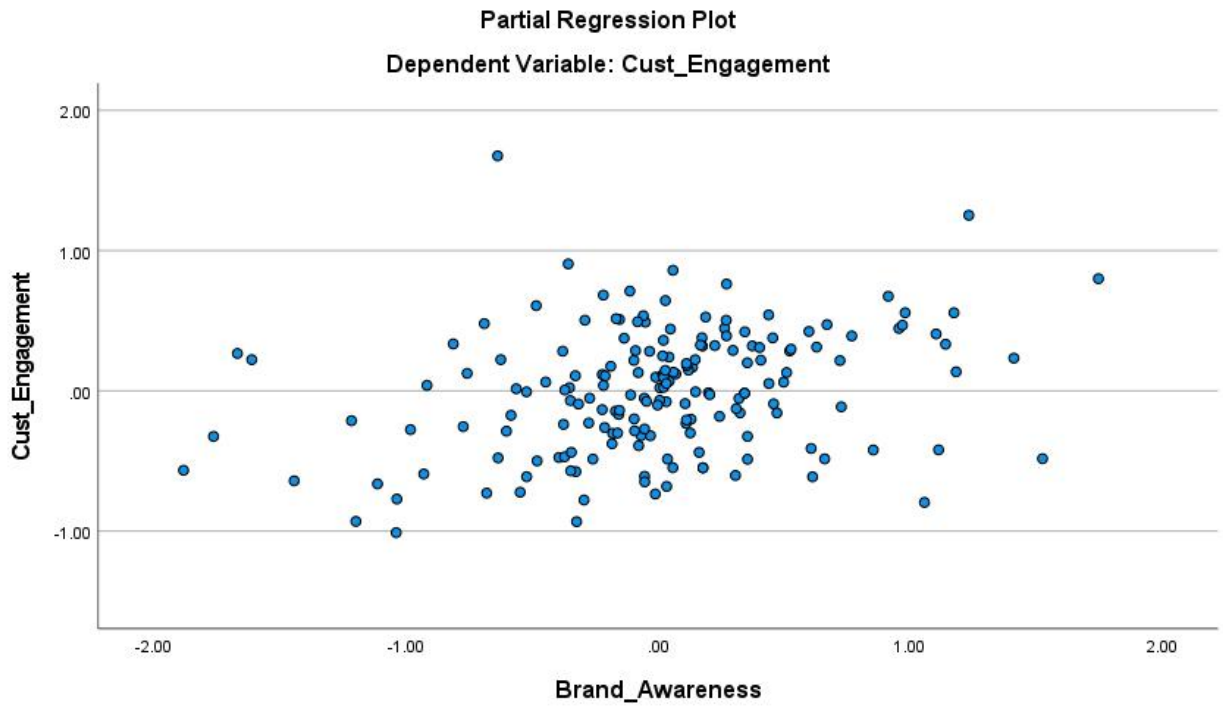
1. Linearity

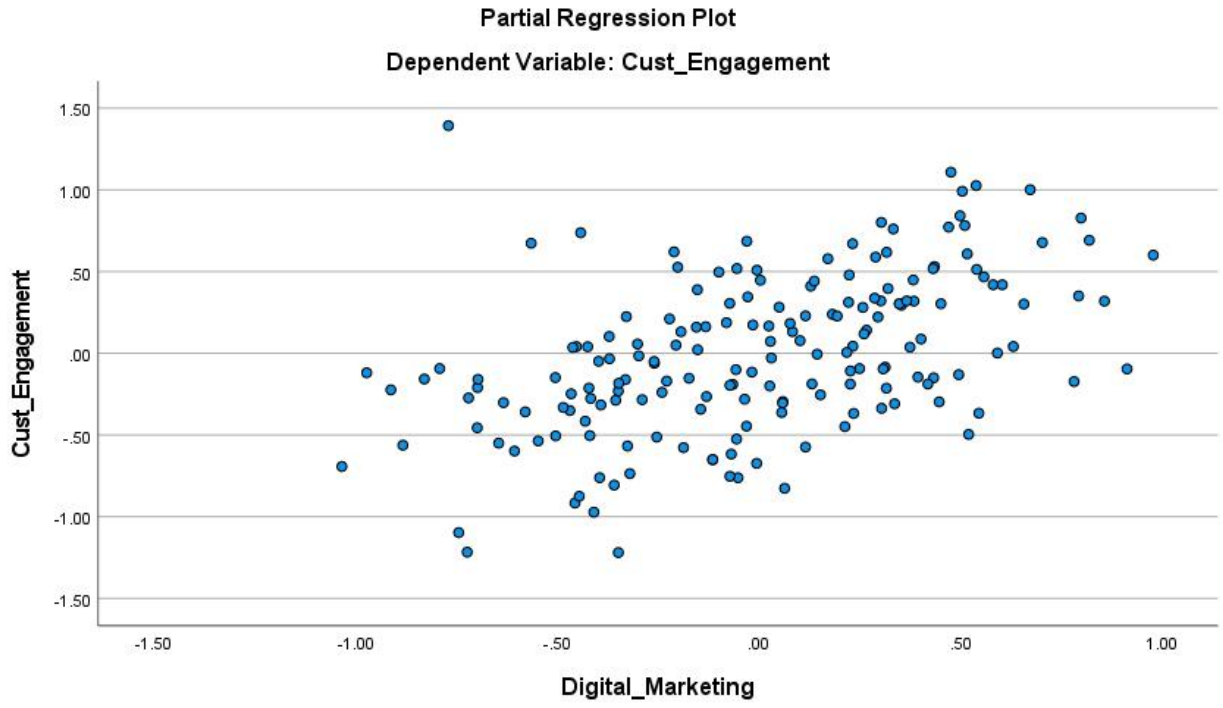
Purpose: To verify that the relationships between predictors (BA, DMS, Age, Gender, and Education) and CE are linear.

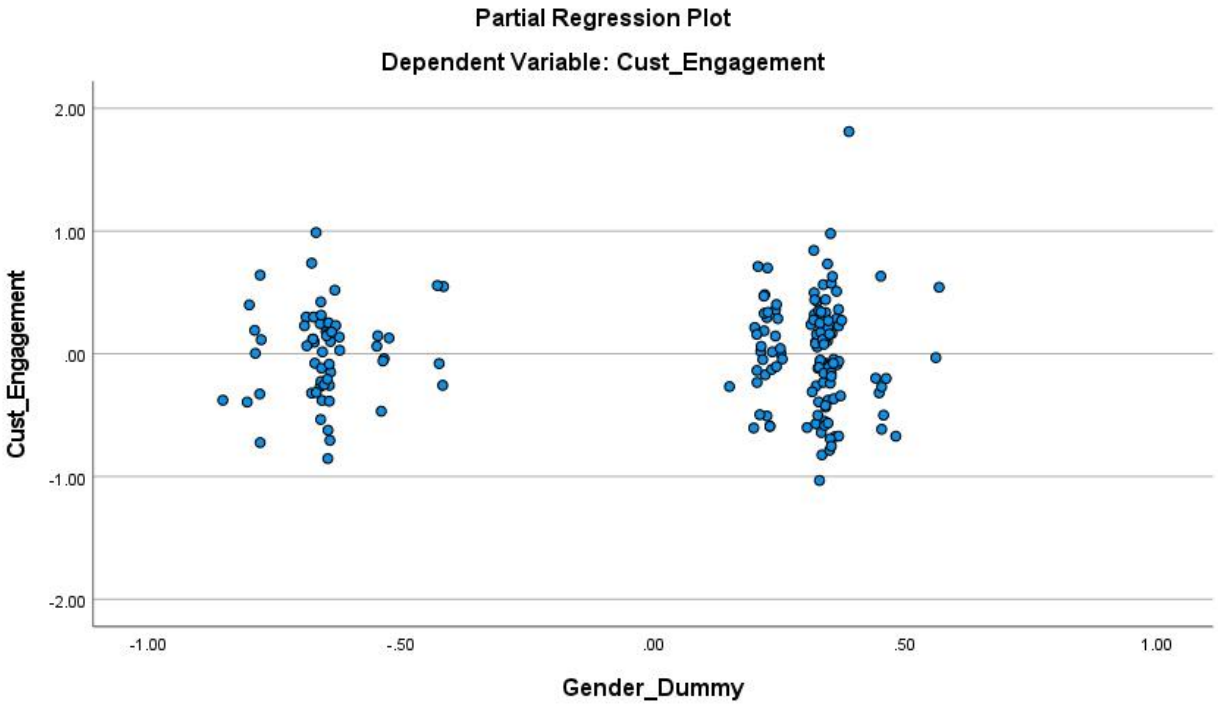
Method: Pearson correlations and regression coefficients were examined, as partial regression plots were not generated in the updated output. Significant correlations (DMS: $r = 0.695$, $p < 0.001$; BA: $r = 0.621$, $p < 0.001$; Age: $r = -0.277$, $p < 0.001$; Education: $r = 0.173$, $p = 0.010$; Gender: $r = 0.044$, $p = 0.278$) and significant regression coefficients for BA ($\beta = 0.272$, $p < 0.001$), DMS ($\beta = 0.492$, $p < 0.001$), and Age ($\beta = -0.156$, $p = 0.004$) suggest linear relationships. Partial regression plots should be generated for visual confirmation (see Action below).

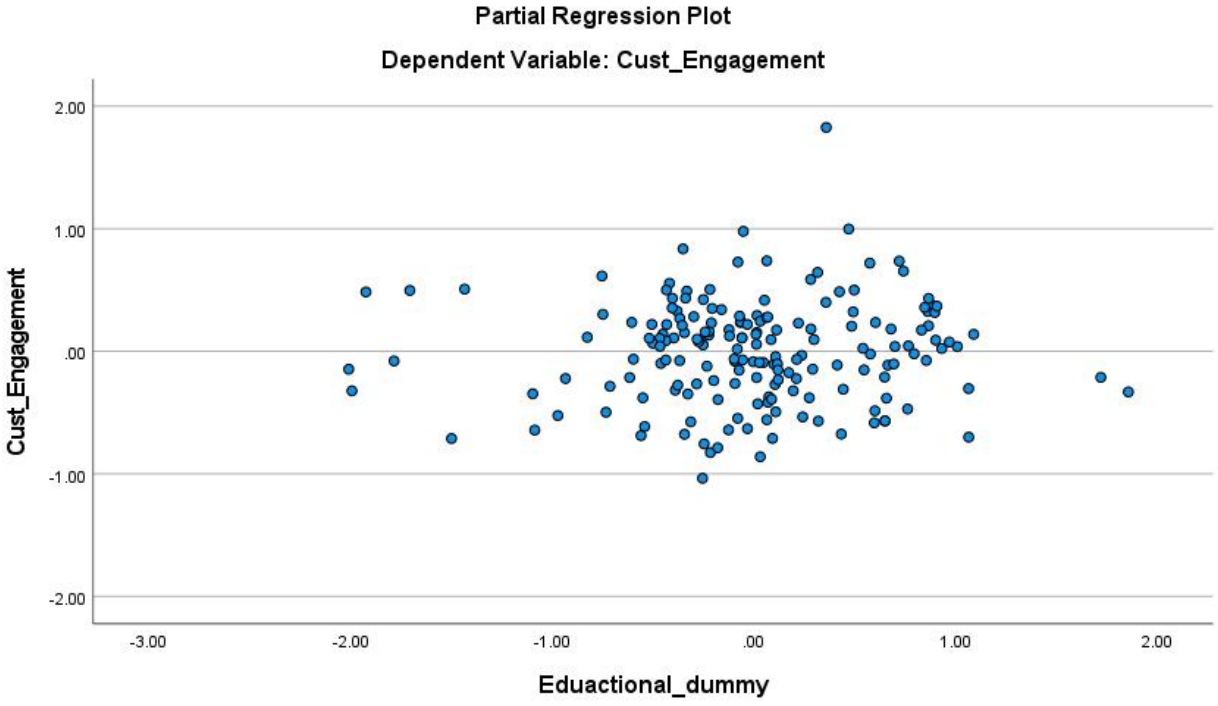
Results: The correlations and coefficients indicate linearity, pending visual confirmation.

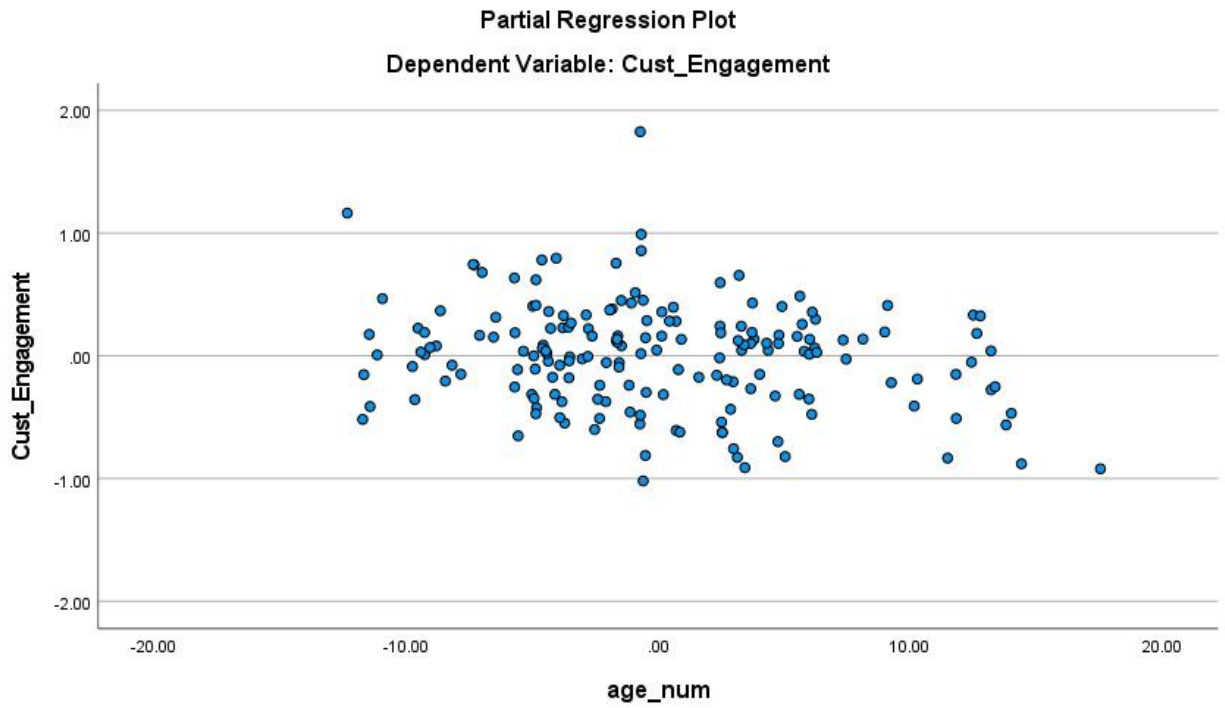
The following figures (**Figure B1**) are Partial Regression Plots for BA, DMS, Age, Gender, Education vs. CE


Partial Regression Plot
Dependent Variable: Cust_Engagement
Cust_Engagement
2.00
1.00
.00
-1.00
-2.00
-1.00
.00
1.00
2.00
Brand_Awareness


Partial Regression Plot
Dependent Variable: Cust_Engagement
Cust_Engagement
1.50
1.00
.50
.00
-.50
-1.00
-1.50
-1.50
-1.00
-.50
.00
.50
1.00
Digital_Marketing


Partial Regression Plot
Dependent Variable: Cust_Engagement
Cust_Engagement
2.00
1.00
.00
-1.00
-2.00
-1.00
-.50
.00
.50
1.00
Gender_Dummy


Partial Regression Plot
Dependent Variable: Cust_Engagement
Cust_Engagement
2.00
1.00
.00
-1.00
-2.00
-3.00
-2.00
-1.00
.00
1.00
2.00
Eduactional_dummy



2. Independence of Errors

Purpose: To ensure residuals are independent (no autocorrelation).

Method: The Durbin-Watson test was conducted, with values close to 2 indicating independence.

Results: Durbin-Watson = 1.945 (Table B1), within the acceptable range (1.5–2.5), confirming no significant autocorrelation.

Table B1: Durbin-Watson Statistic

Statistic	Value
Durbin-Watson	1.945

3. Homoscedasticity

Purpose: To verify that residuals have constant variance across predicted values.

Method: A scatterplot of standardized residuals vs. standardized predicted values was generated.

Results: The scatterplot (Figure B2) shows a random scatter with no funnel-shaped pattern, indicating homoscedasticity.

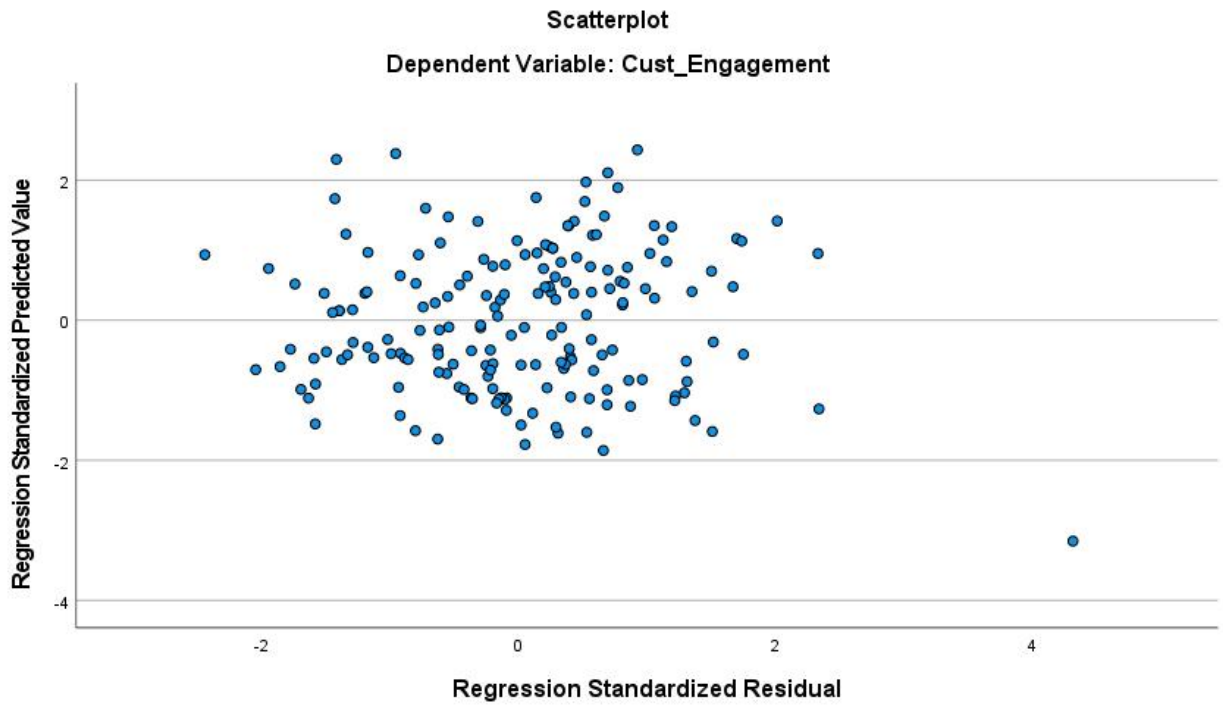


Figure B2: Scatterplot of Standardized Residuals vs. Predicted Values

4. Normality of Residuals

Purpose: To ensure residuals are normally distributed.

Method: A histogram and Q-Q plot of standardized residuals were examined. A Shapiro-Wilk test is recommended for formal confirmation.

Results: The histogram (Figure B3) and Q-Q plot (Figure B4) suggest approximate normality, as points follow the diagonal line closely. Residuals statistics (mean = 0, Std. Deviation = 0.986)

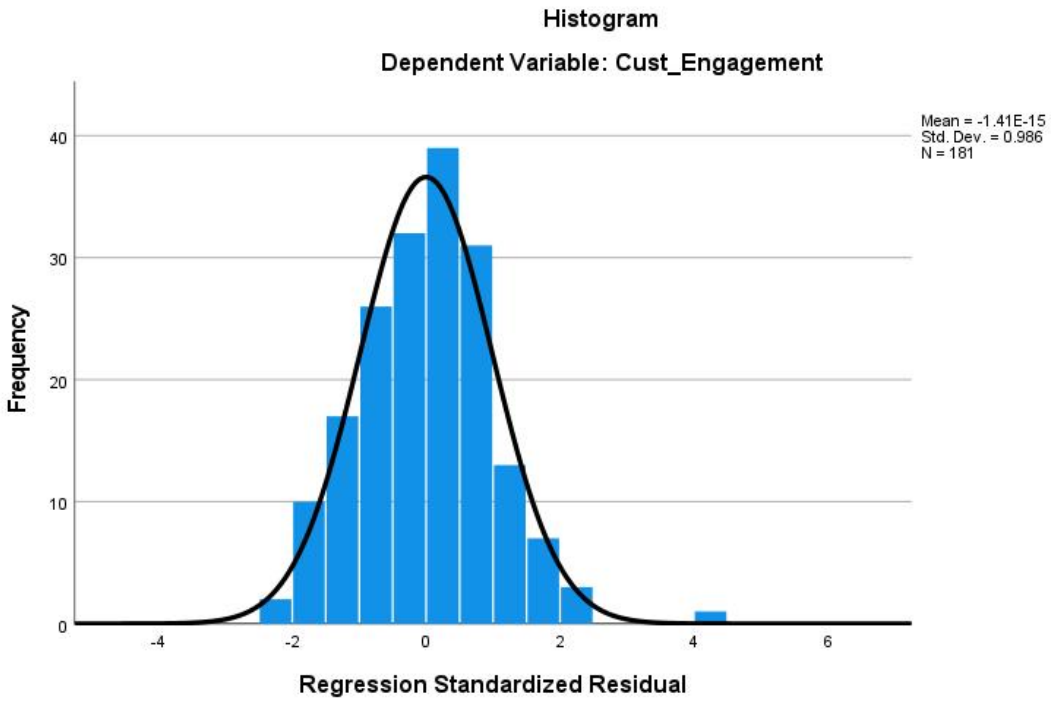


Figure B3: Histogram of Standardized Residuals

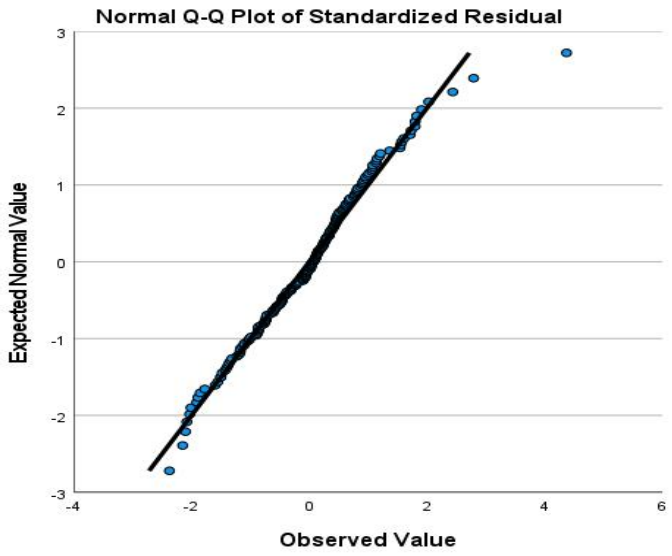


Figure B4: Q-Q Plot of Standardized Residuals

5. Multicollinearity

Purpose: To ensure predictors are not highly correlated.

Method: Variance Inflation Factors (VIF) and Tolerance values were calculated.

Results: VIFs range from 1.030 to 1.729, and Tolerance ranges from 0.578 to 0.971 (Table B3), well within acceptable limits (VIF < 8, Tolerance > 0.2). Collinearity diagnostics (Condition Index ≤ 25.091) confirm no issues.

Table B3: Collinearity Diagnostics

Predictor	VIF	Tolerance
Brand_Awareness	1.723	0.581
Digital_Marketing	1.729	0.578
Gender_Dummy	1.03	0.971
Educational_dummy	1.203	0.831
age_num	1.145	0.873