AUGMENTING BRAND TRUST: THE ROLE OF DECENTRALIZED COMMUNITIES AND VIRTUAL ENGAGEMENTS IN WEB 3.0 BRANDING STRATEGIES

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Ami Shah

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by

Ami Shah

APPROVED BY

Iva Buljubasic

Dissertation chair

RECEIVED/APPROVED BY:

Admissions Director

ABSTRACT

AUGMENTING BRAND TRUST: THE ROLE OF DECENTRALIZED COMMUNITIES AND VIRTUAL ENGAGEMENTS IN WEB 3.0 BRANDING STRATEGIES

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This study explores how Web 3.0 branding strategies can contribute to building brand trust for the FMCG industry through decentralized communities, virtual engagements, and blockchain (BC) transparency. The aim was to check how decentralized communities affect, which virtual engagements are effective, which BC transparency contributes to, and how consumers perceive Web 3.0 interactions. The approach combined quantitative and qualitative techniques. A total of 328 participants were surveyed using structured questionnaires, and their responses were evaluated with the use of SPSS. Key analytical tools were descriptive statistics, regression analysis, correlation analysis, reliability (Cronbach's alpha), and frequency distribution. The findings revealed that brand trust was highly improved in a decentralized community, virtual engagements led to a positive consumer confidence, and BC transparency played a huge role in trust building. Moreover, consumer perceived value of Web 3.0 engagement also positively influenced the brand trust. The findings show that “fast-moving consumer goods” (FMCG) firms may strengthen customer loyalty and trust by strategically utilizing Web 3.0 technologies, which will lead to their success in the digital space in the long run.

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LIST OF ABBREVIATIONS

Abbreviation	Full From
AI	Artificial Intelligence
BCT	Blockchain Technology
DAO	Decentralized Autonomous Organizations
AR	Augmented Reality
VR	Virtual Reality
BT1	Blockchain Transparency
BC	Blockchain
FMCG	Fast-Moving Consumer Goods
W3C	World Wide Web Consortium
SCM	Supply Chain Management
SDGs	Sustainable Development Goals
CPG	Consumer-Packaged Goods
SBTs	Soul-Bound Tokens
CE	Customer Engagement
VE	Virtual Experiences
UGC	User-Generated Content
SCV	Supply Chain Visibility
IoT	Internet Of Things
OBC	Online Brand Communities
CO_2	Carbon Dioxide
LDA	Latent Dirichlet Allocation
PU	Perceived Utility
TAM	Technology Acceptance Model

PEOU	Perceived Ease of Use
B2C	Business-To-Consumer”
CBE	Consumer Brand Engagement
OSNC	Online Social Network Citizen

CHAPTER I:

INTRODUCTION

1.1 Background of the Study

Web 3.0 is the next edition of the web with "Artificial Intelligence" (AI) and Web 2.0 concepts as well as semantic web technology (Pomonis, Koutsomitropoulos, Christodoulou, & Papatheodorou, 2010). Thus, it isn't called just the "semantic web" or the "decentralized web" (Morris, 2011). By incorporating a few technologies and ideas, we'll increase experience, privacy, and data ownership. The idea of a Semantic Web—a web where data sets are linked together—was proposed by World Wide Web Consortium (W3C) on the internet. Some of the technologies discussed can help people to build an online data repository and data management vocabulary (Patel & Jain, 2021; Toraldo, Mangia, Consiglio, Vardisio, & Farro, 2015). The intention of the semantic web's expansive data network is to join and connect all possible information in the digital world, irrespective of which industry, including the boundaries of cities (Gan, Ye, Wan, & Yu, 2023). Web 3.0 has some important characteristics such as openness, semantic web integration, smart contracts, data control, and decentralization (Khaleel Ibrahim, 2021; Rudman & Bruwer, 2016; Stackpole, 2022; Zhou Chen, Wang, Sun, Saddik, & Cai, 2023). The objective of merging these fundamental qualities is to generate Web 3.0, a more user-centric and privacy-preserving internet ecosystem that supports digital equality. Both promises and worries exist in the future of W3.0s (online retail, online information and communication, supply chain management (SCM), social media, and financial services) and other Web 3.0 technologies (Ray, 2023).

However, with the advent of Web 3.0, there were some questions about the long-term viability. Negative aspects, some have pointed out, are greater energy use, larger carbon footprint, and more hardware waste (Božić, 2023; Rieger, Roth, Sedlmeir, &

Fridgen, 2022; Sedlmeir, Buhl, Fridgen, & Keller, 2020). Hence, it is important to handle these issues and lessen the impact of these problems on the SDGs (Sustainable Development Goals). Sustainability issues, especially the energy demands tied to block lets, are particularly real issues for companies leading BC innovation (Anwar, 2022; Rieger, Roth, Sedlmeir, & Fridgen, 2022; Zhang & Chan, 2020).

However, Web 3.0 also presents the possibility of completely reshaping financial systems and other industries, creating new means of realizing the SDGs. Recent research shows that decentralized and transparent systems are being employed in different areas such as finance (Xu, Ren, Niyato, Kang, Qiu, Xiong, Wang, & Leung, 2024), governance (Nam, 2013), and medicine (Giustini, 2007)—and are fostering innovation in these areas (Cao, 2022). Also, the application of an eco-friendly advertising campaign with Web 3.0 will positively contribute to environmental sustainability. Likewise, decentralized SCM and emergence of new sustainable business models, are possible, as in BC (Almeida, Santos, & A. Monteiro, 2013; Doe, Li, Dusit, Gao, Li, & Han, 2023; Khan, Wang, Ehsan, Nurunnabi, & Hashmi, 2019; Kouhizadeh & Sarkis, 2018; Sahoo, Kumar, Sivarajah, Lim, Westland, & Kumar, 2024).

With the emergence of online resources and development of information, communication, and multimedia technologies, new knowledge-based business models are emerging. Garrigos-Simon, Gil-Pechuan & Narangajavana (2012), It is also where networks, alliances, and partnerships among many agents, such as companies, are the most important. The structure of decision-making processes, value chains, and businesses is transformed by new networks and advancements in Web 3.0 technology (Garrigos, 2011). Therefore, in today's social and corporate climate, their effective utilization is critical for developing and maintaining competitive advantages for contemporary enterprises (Park, Wilson, Robson, Demetis, & Kietzmann, 2023).

This research delves into how Web 3.0 will alter marketing and corporate management, how social networks will play a role in this new environment, and how businesses can take advantage of these developments. This study delves into the significance of community managers and how crowdsourcing may help adapt to change.

Evolution of Branding in the Digital Age

Logos, colour palettes, fonts, slogans, symbols, etc., make up a company's brand and help it stand out from the competition. Anything that distinguishes one brand from another in the eyes of the public can be considered a brand, whether it be a service, a product, or even just an idea. Branding is giving a product, using various elements, a distinct character (Denga, Vajjhala, & Rakshit, 2022a; Rees, 2022). In today's digital landscape, branding is more important than ever. "Digital branding" is a term that refers to the modern way of marketing a company through the Internet and other digital marketing tactics (Jerez-Jerez, 2022). Online, mobile, social, and, most importantly, digital media content marketing starts with direct marketing and continues through branded digital channels (Alalwan, 2018). The logo, colour palette, typeface, slogans, symbols, etc., are all part of it as an added benefit.

Any branding campaign's success, whether digital or traditional, hinges on the impression the brand leaves with the intended audience (Niculescu, Dumitriu, Purdescu, & Popescu, 2019). The improved brand positioning in the minds of consumers is a direct result of this successful branding. To achieve the positioning that businesses aim for, it is essential to strategically plan digital platforms' communication (Aly, 2022; Das, 2021). The rise of digital marketing and social media has facilitated online consumer-brand interactions and customer-brand misperceptions (Baum, Spann, Füller, & Thürridl, 2019; Denga & Rakshit, 2022). It is essential to follow the brand guidelines, which outline its overall look and feel and include colour, font, and tone to prevent this. This is particularly

important when working digitally. Staying consistent across all digital channels is crucial for brands looking to boost their legitimacy, popularity, and client loyalty (Casidy, Leckie, Nyadzayo, & Johnson, 2022).

Over the last several decades, digital branding has evolved in response to some factors and concerns (Li, Song, & Zhou, 2023). New channels for brand engagement have emerged as a result of technological developments (Anusha, 2016; Bala & Verma, 2018). Empowerment and increased connectivity have led to shifting consumer behaviour, and brand strategy is also changing according to the shifting expectations (Denga, Vajjhala, & Rakshit, 2022b). With the explosion of social media, the interaction between consumers and brands, as well as user-generated content, has changed. Globalization causes brands' market reach to expand, and this requires taking into account the differences in culture (Denga, 2022; Miočević, Morgan, & Kleijnen, 2020). Information security and privacy, encompassing openness and compliance, have recently arisen as critical brand elements. One strategy to attract readers and keep their interest in an era of information overload is to provide relevant and engaging material. Brand loyalty can now be built through personalization and an exceptional consumer experience (Edelman, 2010; Hardey, 2014). According to Glynn (2011), the rise of analytics and metrics has made data-driven decisions possible, but user-generated content and influencer marketing have shaken up established methods. Brands must be flexible and innovative to survive today's fast-paced digital economy. Brands need to find and fix these problems if they want to succeed in the dynamic world of digital branding and have a strong online presence (Herhausen et al., 2020).

Shift from Traditional to Digital Branding

The origins of digital branding are in the early stages of online advertising. One of the earliest companies to adopt the term "digital marketing" to describe their internet

advertising campaigns was Channel Erstwhile Soft Ad Group in 1980. Although the phrase did not become mainstream until the late 1990s, these early initiatives laid the groundwork for the proliferation of digital marketing techniques. In 1981, IBM's introduction of the personal computer marked a turning point, as computers gradually became fixtures in homes, businesses, and organizations (Saura, Palos-Sanchez, & Correia, 2018; Yasmin, Tasneem, & Fatema, 2015). During the 1990s, digital engagement expanded significantly; global internet users grew from approximately 16 million in 1995 to around 600 million by 2002 (Gupta, 2020). However, early internet usage was hampered by slow connection speeds and limited accessibility, particularly in regions where high costs kept digital adoption at bay (Guo, Wang, & Yuan, 2022; Riha Parvin & Panakaje, 2022; Salehi, Mirzaei, Aghaei, & Abyari, 2012).

The mid-2000s marked another inflection point for digital branding. In 2004, Mark Zuckerberg founded Facebook, a social networking platform that connected people on an unprecedented scale, while Gmail emerged as a leading email service (Lysonski & Durvasula, 2013). Twitter joined the digital arena in 2006, further diversifying the online landscape (Kamal, 2016). In markets like India, where the internet began to gain momentum in the mid-1990s, these developments contributed to a gradual shift from traditional marketing methods to digital engagement. This evolution prompted companies to overhaul their marketing strategies, moving from analogue to digital media channels (Jackson & Ahuja, 2016).

A lot of people's lives have changed since the Internet came out. The sheer magnitude of the Internet makes it easy to see how quickly things evolve. How can this enormous potential not impact the necessity of marketing for businesses? Small firms may now effectively market their products, and large corporations are constantly expanding their budgets for digital marketing (Bala & Verma, 2018; Kamal, 2016). Digital marketing

has allowed small business owners to reach a wider audience than they could in the past. For whatever reason, it is evident that digital marketing is rapidly advancing while traditional marketing is fading. (Webber, 2013).

Emergence of Web 3.0 and Its Impact on Branding

This word was coined by web developers and contemporary businesses. Web 3.0 has Tim Berners-Lee's full backing, and he is sometimes called the "Father of the Web" by academics. Consequently, "Web 3.0 will be able to read and understand material and context," as per Ghelani and Kian Hua (2022). Web 3.0 has been described in some ways, although there isn't much consensus. Web 3.0 has been defined in a broad sense by some. This perspective links the Semantic Web concept to the emerging Web environment (Sangeeta Namdev, 2012). In this situation, comprehending the significance of data that satisfies our requirements takes precedence over showing and presenting the page's contents. According to some, this updated metric may not be comparable to the Semantic Web (Webber, 2013). Nevertheless, its primary definition is in semantics. The web 2.0 applications, semantic web, and AI are the three key components that support its growth (Paula Miranda, Isaias, & Costa, 2014). World Wide Web 3.0, which began in 2010 and continues until 2020, is an improvement over Web 2.0 and Web 1.1 in that it makes the Web smarter and easier to use. The task at hand is to organize a large amount of data while taking into account the specific circumstances and needs of each user (Dominic, FrancisFrancis, & Pilomenraj, 2014). This website is to simplify complicated data. Because of user-generated data, "Web 3.0" refers to a brand-new web environment. Whereas Web 2.0 places emphasis on participation of every individual, Web 3.0 emphasizes collaboration among users. Web 3.0 enables data and things to be connected (Rudman & Bruwer, 2016). Because the semantic web filters out irrelevant stuff, it limits the number of possibilities available to users during information searches.

As a Semantic Web, Web 3.0—sometimes referred to as the intuitive Web—would enable web services to converse with one another (Shaltout & Salamah, 2013). Personalized and behavioural methods will be common to use in Web 3.0. The concept of long-form immersive experiences is central to Web 3.0. Today, plenty of options beyond the Internet can serve as nodes in a value chain (Memeti, Imeri, & Xhaferi, 2014). The shopping experiences of users will be more interactive and comprehensive. Rudman & Bruwer (2016) assert that most initiatives have been driven by the necessity to organize and categorize the enormous amount of data accessible online, the advancement of AI, and the aim of eliminating extraneous components while selecting or prioritizing others according to user needs.

Figure 1.1
Web 3.0 marketing conceptual framework. (Ghelani & Kian Hua, 2022)

1.2 Fast Moving Consumer Goods (FMCG) Sector of India

The Fast-Moving Consumer Goods (FMCG) sector in India is the fourth largest in the economy, characterized by high turnover consumer goods. It includes a wide range of products, such as food and beverages, personal care, household goods, and

pharmaceuticals. The sector is driven by factors like rising incomes, urbanization, and changing consumer preferences. Consumer packaged goods (CPG), also known as FMCG, are items that are frequently used and sold quickly as opposed to perishable goods like kitchen appliances that are replaced over time. The manufacturing, marketing, and distribution of CPG are first handled by the FMCG industry. Food and dairy goods, pharmaceuticals, consumer electronics, packaged food items, household products, and beverages are just a few of the categories that FMCG products fall under. Coffee, tea, detergents, tobacco and cigarettes, soaps, and other goods are a few general FMCG products. Sara Lee, Nestle, Reckitt Benckiser, Unilever, Procter & Gamble, Coca-Cola, Carlsberg, Kleenex, General Mills, Pepsi, Mars, and other well-known brands are among those in this sector.

The FMCG market reached Rs. 14,50,896 crores (US$ 167 billion) as of 2023. The total revenue of the FMCG market is expected to grow at a CAGR of 27.9% from 2021-27, reaching nearly Rs. 53,43,120 crores (US$ 615.87 billion). In 2022, the urban segment contributed 65%, whereas rural India contributed more than 35% to the overall annual FMCG sales. Good harvest, government spending expected to aid rural demand recovery in FY24. India's FMCG sector grew 6.4% by volumes in the October-December 2023 quarter, led by positive consumption across the country. The sector had grown 8.5% in revenues and 2.5% in volumes in FY23. In the January-June period of 2022, the sector witnessed value growth of about 8.4% on account of price hikes due to inflationary pressures. In the second quarter of 2022, the FMCG sector clocked a value growth of 10.9% YoY, higher than the 6% YoY value growth seen in the first quarter. India includes 780 million internet users, where an average Indian person spends around 7.3 hours per day on their smartphone, one of the highest in the world. Resilience needs to be the key factor in the manufacturing process, daily operations, retail and logistic channels, consumer insights

and communication that will help FMCG companies to withstand the test of time and create more value for consumers in the long run (IBEF, 2024).

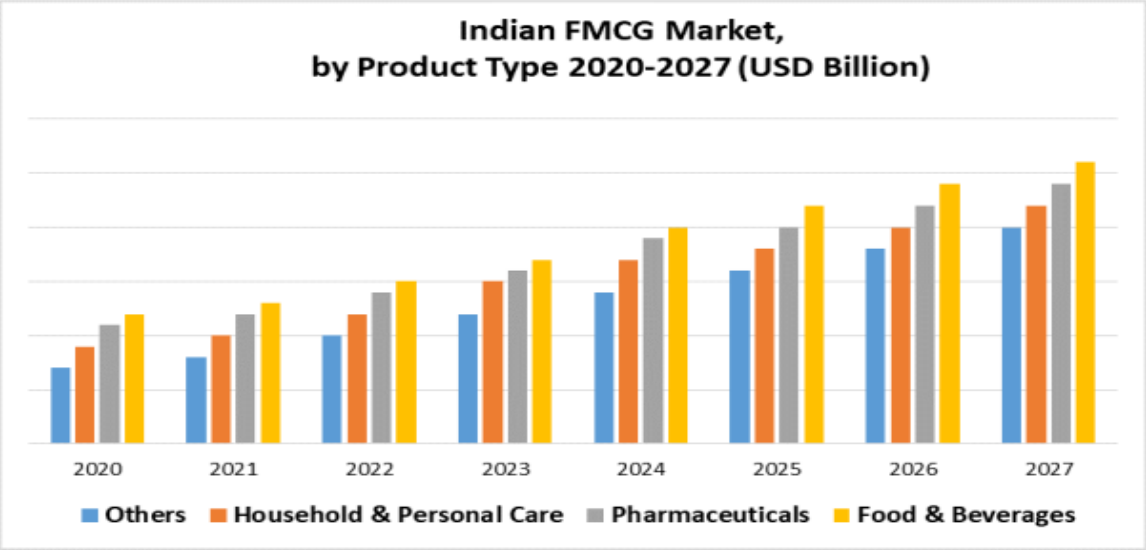

Figure 1.2
Growth of FMCG market in India (Barik et al., 2023)

Figure 1.2 above illustrates the consistent and steady growth of various FMCG categories in India over the forecast period. All segments—Food & Beverages, Pharmaceuticals, Household & Personal Care, and Others—show a positive growth trend, reflecting the overall expansion of the FMCG sector. Among these, Food & Beverages remains the dominant category throughout the period, indicating strong and sustained consumer demand in this segment. Pharmaceuticals also show significant growth, driven by increasing health consciousness and a greater focus on wellness and preventive care.

The Household & Personal Care segment maintains a strong presence, highlighting growing awareness around hygiene, personal grooming, and home care products. The "Others" category, while smaller in comparison, displays steady growth, signaling the rising contribution of emerging and niche product types in the market. Overall, the chart suggests a healthy and expanding FMCG landscape in India, shaped by evolving consumer preferences, urbanization, lifestyle changes, and greater access to products. This growth

presents ample opportunities for businesses to innovate, diversify, and scale within the sector.

1.3 Real-World FMCG Branding Examples

There are several real-world examples of successful FMCG branding strategies, each illustrating unique approaches to building consumer trust and engagement:

1. **Amul (India) – Leveraging Humor and Cultural Relevance:** Amul has become a household name in India, primarily due to its iconic "Amul Girl" advertising campaign. The brand uses topical humor and witty commentary on current events to connect with consumers, making its marketing both entertaining and culturally relevant. This strategy has fostered strong brand loyalty and positioned Amul as a socially aware and relatable brand. The Amul Girl is not just an advertising mascot but a beloved part of Indian culture. Modern businesses can learn from Amul's strategy by staying relevant and relatable through tying messaging to current events, building emotional connections, and maintaining a consistent brand story (Mittal, 2024).
2. **Coca-Cola – "Share a Coke" Personalization Campaign:** Coca-Cola's "Share a Coke" campaign personalized bottles with popular names, encouraging consumers to find bottles with their names and share them with friends. This initiative not only increased sales but also enhanced consumer engagement by making the product feel more personal and shareable (Coca-Cola, 2025).
3. **Patanjali Ayurved – Capitalizing on Nationalism and Natural Products:** Patanjali leveraged the growing demand for natural and Ayurvedic products in India, combined with a strong nationalistic appeal. By promoting products as "Made in India" and emphasizing traditional ingredients, Patanjali quickly gained a significant market share in the FMCG sector (Khalikova, 2020).

4. **Nestlé's Fresh N Natural Dahi – Branding a Commodity:** Nestlé took the unconventional step of branding a common commodity, curd (dahi), in India. By emphasizing quality, taste, and convenience, and introducing variants like fruit-flavored dahi, Nestlé differentiated its product in a market dominated by unbranded homemade curd (Nestle, 2024).
5. **Veeba – Health-Focused Branding and Clean Packaging:** Founded in 2013 by Viraj Bahl was initially launched as a B2B supplier where it provided sauces, emulsions, and dessert toppings to major global fast-food chains like Domino's, Burger King, and KFC. Within just a few years, the company expanded into the retail market, introducing a unique range of products that are not only innovative but also health-conscious, with low-fat and vegetarian options. The brand has been able to stand out in an already crowded space. Veeba entered the Indian market with a range of sauces and dressings, focusing on health-conscious consumers by highlighting low-fat content and using clean, minimalist packaging. This approach resonated with urban consumers seeking healthier food options without compromising on taste.
6. **Procter & Gamble (P&G) – House of Brands Strategy:** P&G employs a "house of brands" strategy, managing a diverse portfolio of individual brands like Tide, Ariel, and Pantene. This approach allows each brand to maintain its unique identity and target specific consumer segments, contributing to P&G's dominance in various FMCG categories (Koschmann, 2019).

1.4 Overview of FMCG Branding in the Digital Era

Whenever a company advertises utilizing a digital platform that allows them to communicate with clients at any time, day or night, this is called digital marketing. Personalized and market-transparent digital marketing is available (Domingo, Lao, &

Manalo, 2015). The digital method facilitates two-way communication and makes it easier for marketers to maintain contact with customers, which in turn increases the company's brand equity from the customer's and company's financial perspectives (Išoraitė, 2016). Customers' wants and needs can be met by marketers in a variety of ways through effective and varied interactions (Makrides, Vrontis, & Christofi, 2020). As per Karen and Zai (2022), as a marketing strategy, digital advertising increases the market value and consumer awareness of a brand, which in turn increases the customer's overall brand equity. Content is king when it comes to digital ads because they can be tailored to each individual's wants and needs. When consumers are enthusiastic about and knowledgeable about a brand, they are more likely to associate it with positive feelings and make purchases (Alamsyah, Indriana, Ratnapuri, Aryanto, & Othman, 2021).

Digital marketing is crucial in the FMCG sector to grow and succeed companies and their brands (Jibril, Kwarteng, Chovancova, & Pilik, 2019). Given that multinational FMCG enterprises increase their operations and presence in many regions, the importance of digital marketing in building brand recognition is increasingly gaining importance. (Jin, Muqaddam, & Ryu, 2019; Peter & Dalla Vecchia, 2021). In such a hyper-competitive environment, brand awareness is a core element when consumers purchase and retain products (Katsikeas, Leonidou, & Zeriti, 2019; Shankar, Grewal, Sunder, Fossen, Peters, & Agarwal, 2022). For that reason, businesses must use digital platforms to attract and keep customers. The FMCG industry is a highly competitive and consumer turnover is high; therefore, consumption cycles are quick. The products in this category include household goods, personal care products and daily necessities (food and drink) (Makrides, Vrontis, & Christofi, 2020). FMCG products are so commoditized that functional differences are negligible, and brand awareness is the key to what consumers will buy. Therefore, FMCG businesses have to develop and sustain brand awareness to attract a loyal

customer base and drive sales growth (Gielens & Steenkamp, 2019; Panda, Kumar, Jakhar, Luthra, Garza-Reyes, Kazancoglu, & Nayak, 2020). A digital revolution has made consumers have some channels and platforms to engage with brands. It has now become imperative to abandon the traditional marketing paradigms such as online advertising, content marketing, search engines, email campaigns, and social media as they offer instantaneous, targeted, quantifiable and communications based ways to connect with consumers (Mariani & Fosso Wamba, 2020; Volberda, Khanagha, Baden-Fuller, Mihalache, & Birkinshaw, 2021). With the proliferation of social media sites like Facebook, Instagram, Twitter, and TikTok, it is easier than ever to build a devoted fan base and acquire new customers. They allow brands to develop engaging communities where they can communicate with customers on a personal level. Unilever and Coca Cola have seized the opportunity of social media to tell a compelling brand story to consumers around the world through a compelling brand story (Allen, Fournier, & Miller, 2018). It has additional pillars of support to SEO and digital marketing. One of the digital marketing criteria influences brand recognition. However, Facebook, Instagram, Twitter, and TikTok are just a few of the new social media platforms that have allowed brands to develop active communities with real people. This has made brand organization and customer loyalty. Companies that have had social media success in terms of exposing brands to a greater population and engaging consumers include Unilever and Coca-Cola, two of the world's largest consumer goods companies (Srivastava & Kalro, 2019).

1.5 Web 2.0 to Web 3.0 Branding Evolution

The ever-changing nature of web technology has spurred the birth of several new ideas, apps, and businesses that aim to enhance and expand upon current offerings

(Anderson, 2007). Semantic web technology and intelligent information will become commonplace in Web 3.0, the subsequent version of the www. The ability to embed geocodes into images and save metadata on Flickr's annotation platform are two examples of how the web is evolving towards this next version. Lassila & Hendler (2007) with these advancements, other viewers could examine photographs in a geographical context, such on a map. A simple Google Maps search for Fisherman's Wharf would provide Flickr photos uploaded by other users. A further instance of the extensive ramifications of the Semantic web's benefits is web searches. Mahmood & Selvadurai (2006). The centre of attention here would be artifacts of Web 3.0, for example, semantic search and the myriad methods for extracting relevant information from the enormous data sets hosted online. In general, Web 3.0 is expected to bring forth better data mining through greater search capabilities, a larger distributed database, smarter search options for multimedia, enhanced application connectivity, and more mobility (Krishna Sankar, 2009).

As stated by Chen & Kidd (2010), Similar to Web 2.0, many believe that Web 3.0 would radically redesign the architecture of the WWW and establish the benchmark for future advancements on the Internet. On the flip side, these breakthroughs show that people are moving in different directions, with different ideas about where the Internet is going. Many began to doubt the Web's fundamental purpose after its performance declined during the present economic downturn, seeing it as nothing more than a marketing hoax (Patel, Thakar, Patel, Dave, M Patel, & Shukla 2022). This is since the fundamental concept of Web 3.0 is still vague, leading to imprecise and problematic definitions (Polly & Mims, 2009). The lack of real paradigm examples is another hurdle for Web 3.0. It seems like some existing discussions are rooted in conceptual notions. However, while many of these beliefs were based on research, relatively few have any bearing on real-world situations. (I. Chen & Kidd, 2010).

1.6 Importance of Brand Trust in the FMCG Industry

A massive and ever-changing industry, "Consumer-Packaged Goods" (CPG) is a popular name for the FMCG market on a global scale. The companies are mainly food and household cleaning products, beverages, personal care, and other everyday consumables (Cahyadi, 2020). Generally, these products have a low price point, short shelf life, and high sales volume so that efficient supply chain management and good marketing strategy are required to guarantee profitable sales and customer happiness (Verhoef, Broekhuizen, Bart, Bhattacharya, Qi Dong, Fabian, & Haenlein, 2021). For a few years now, the FMCG industry has been changing due to all sorts of factors – changing consumer preferences, market dynamics, and technological advancement (Fareniuk, 2022). It is fair to say that the sector has been significantly influenced over the past couple of decades by globalization, as companies have taken advantage of new markets, taken cost benefits in economies of scale, and expanded their operations beyond their national borders (Chaffey & Smith, 2022). As a result, FMCG firms are in a more competitive market, forcing them to differentiate and reinvent their products to keep customers loyal.

Businesses gain a lot when consumers are loyal to their brands since those customers spend more money when they buy from the brand often. Along with the one they've picked, they also purchase additional products from the same brand (Tabaku & Kushi, 2013). According to Kuikka & Laukkanen (2012), when customers consistently purchase from the same brand over time, they demonstrate their devotion to that brand. Marketers need to gain customers' trust if they want to hold on to them in a sea of rival brands.

Customers are willing to trust the brand's power to understand the company's stated goal, which is why brand trust is important for decision-making (Marzocchi, Morandin, & Bergami, 2013). When consumers are happy with the services provided by businesses, their

perception of those businesses' changes. They are quite brand-loyal when it comes to products (Khundyz, 2018). Consequently, it is a fiercely competitive war to attract and maintain such customers. The reason being, faithful consumers have been involved with the brand for quite some time (Garga, Maiyaki, & Sagagi, 2019). The companies will benefit from this cooperation because acquiring new customers is six times more expensive than retaining current ones. Consequently, the firms' market shares will increase (Mirzaee, 2013).

1.7 Blockchain Transparency: A Catalyst for Consumer Confidence

Blockchain technology (BCT) is taking what was once unknown to consumers into unprecedented brand trust (Fleischmann, Ivens, & Krishnamachari, 2020). Most products in the verify, Web 3.0 era cannot record and share transactional data publicly without fear of falsification, but decentralized ledgers help with this. Unlike other systems, BC empowers the power of consumers by giving the impression that consumers can validate claims about the sourcing of the products, integrity of supply chain, and questions of ethical business practices (Xia, Li, & He, 2023). For example, luxury brands can use their farmland to prove that their highly expensive goods are not counterfeit, or food and beverage companies can utilize the BC to reassure the consumer that their goods are legitimately coming from their kitchens.

This further enhances credibility with Smart Contracts, leading to automatic agreements, particularly warranties, refunds, and loyalty rewards, without human intervention or risking manual interference (Bassan & Rabitti, 2023). Furthermore, decentralized autonomous organizations (Dao) allow community-driven decision-making with the customers involved in shaping brand policies for owning and trusting the brand (Huseynzada, 2024). Today, there is no longer any option: Integrating BC into branding

strategies is necessary. Businesses can use BC to supplement their customer trust and brand loyalty and stand out from a growing number of competitive rivals in the digital world.

Researchers in FMCG sector have come up with a BC implementation strategy to improve supply chain traceability and efficiency (Daraojimba, Louis Eyo-Udo, Afeyokalo Egbokhaebho, Anthony Ofonagoro, Ayo Ogunjobi, Alaba Tula, & Alex Banso, 2023; Claudius Oyeniran, Temidayo Modupe, Ayodeji Otitoola, Oluwatimileyin Abiona, Okechukwu Adewusi, & Jacob Oladapo, 2024; Sedat Okechukwu Adewusi, Chimezie Obi, Onwusinkwue, & Atadoga, 2024). To guarantee the safety and openness of the transactions, BCT offers a decentralized and immutable ledger system. It facilitates efficient operations, builds confidence among manufacturers, suppliers, merchants, and consumers, and offers real-time access to vital product location and condition data (Odeyemi, Chinazo Okoye, Chrisanctus Ofodile, & Bukola Adeoye, 2024; Salah, Nizamuddin, Jayaraman, & Omar, 2019).

Moreover, as the FMCG sector undergoes a significant transformation driven by evolving client demands and technological advancements, there is a unique opportunity to strategically integrate BC into supply chain systems. This integration aims to streamline operations, safeguard product integrity, and continuously improve service delivery for a growing and diverse clientele. Study hope to learn whether BCT can streamline FMCG supply chains and improve product traceability by undertaking this research (H. Guo & Yu, 2022; Han, Shiwakoti, Jarvis, Mordi, & Botchie, 2023; Huynh-The, Gadekallu, Wang, Yenduri, Ranaweera, Pham, da Costa, & Liyanage, 2023).

This, however, raises challenges that BCT can overcome because of its decentralization, immutability, and transparency. In Naderi & Tian (2022), the authors noted that BC can be a significant bridge to closing the green finance gap. Green assets are tokenized in BCT to encourage a rise in liquidity as well as enhance security, auditability,

and traceability of transactions. This can, in turn, lead other investors to green projects, which in the past have struggled to secure finance because they have perceived risks and uncertainties. Greentech is not an isolated phenomenon referring to a specific geography when it comes to the application of BC in green finance. Although green finance development has been advanced in China, this country has faced various challenges. Zhuang (2023) explores how BCT is useful in empowering the innovation of green finance in China. A lack of effective regulatory systems, high costs and dangers linked with green projects, and inefficient information sharing are the main obstacles According to Zhuang (2023) BC's distributed ledger technology, smart contracts, and decentralized nature can greatly aid small and micro businesses by facilitating information exchange, decreasing risk, and expanding access to inclusive financing.

1.8 Research Problem

In today's reality, brand trust is complex but Web 3.0's massively distributed digital landscapes keep increasing. The brands are separate from social media branding, but at the same time, decentralized communities have the authority over brands. This makes losing community involvement and brand messaging coherence possible or even simple. However, such a lack raises questions about authenticity, security, and false information, which erodes customer trust. Additionally, the FMCG industry's conventional branding strategy, which mostly depends on visual product visibility, mass advertising, and retail-based engagement, is not well-suited to the new ecosystem. The transparency, personalization, and immersive experience that traditional marketing initiatives do not provide today's digital customer demands. Brand relationships can be maintained through loyalty programs, influencer partnerships, and experiential marketing; however, these strategies fail to leverage NFTs, BC transparency, and AI-driven hyper-personalization, all of which are essential components of Web3 3.0 branding. Nevertheless, there is still a

substantial literature vacuum regarding the direct effects of Web 3.0 technologies on the FMCG sector's brand trust, even if their use is expanding across other industries. The influence of BC applications and, more broadly, digital asset ownership and decentralized finance on customer sentiment and brand loyalty has not been thoroughly studied in part. The digital transformation that FMCG brands have faced over the last ten years has made research into decentralized communities, virtual interactions, and the use of BC to establish transparency as a means of fostering consumer trust, as well as a new wave of brand building in the Web 3.0 era, urgently necessary. Finally, by examining all aspects of decentralized branding, this work closes a vacuum in the discourse on techniques for establishing trust.

1.9 Purpose of Research

The primary objective of this research is to ascertain role that Web 3.0 branding strategies, like decentralized communities and virtual interactions, play in building consumer confidence in FMCG brands. Accordingly, the adoption of decentralized technology and those that provide immersive digital experiences will be explored in this research to understand their effect on consumer perception of FMCG brands. The following are the aims of the research:

1. To examine the role of decentralised communities in fostering brand trust for FMCG brands.
2. To assess the effect of virtual engagements on FMCG brand trust.
3. To explore the impact of BC transparency on consumer trust in FMCG brands.
4. To evaluate consumer-perceived value of Web 3.0 engagement with FMCG brands.
5. To provide strategic recommendations for FMCG brands to strengthen consumer trust and loyalty.

1.10 Significance of the Study

The study adds to the growing conversation around digital branding in the Web 3.0 age, which gives it significant scholarly value. While existing research extensively covers traditional and digital branding strategies, a noticeable gap exists in understanding how decentralized communities, BC transparency, and virtual engagements impact brand trust, particularly in the FMCG sector. This contribution centres on developing deeper scholarly discussions on decentralized brand-building strategies in the context of trust dynamics in digital ecosystems by defining conceptualizations between branding theories, studies in consumer behaviour, and the Web 3.0 framework. The study has practical implications beyond academia for FMCG brands facing new behavioural challenges, such as altered consumer expectations and the impairments of traditional brand approaches. The research outcomes enable FMCG organizations to develop new strategies for brand participation in decentralized networks while also allowing them to design NFT-based loyalty systems and deploy blockchain technologies for product information tracking to improve customer loyalty. Additionally, there will be a greater certainty around the importance of using virtual engagements in decentralized networks and further proof that community-driven experiences foster long-term loyalty through brands. The investigation generates practical recommendations that serve industry professionals aiming to use Web 3.0 technologies with maximum efficiency. Working with AI, BC, personalization, and more will be much clearer to the marketer about how these will transform the consumer's interaction. This research provides the framework for brands to move their marketing strategies away from centralized models and towards trust-centric decentralized ones, which is essential in today's fast-paced digital economy. Digital branding, the Web 3.0 economy, and customer trust in brands are all areas that this research helps to illuminate for the future.

1.11 Research Purpose and Questions

The researchers set out to find out how Web 3.0 branding strategies—like virtual participation and decentralized communities—affect customers' faith in FMCG companies. Never is there a ‘traditional branding’ approach at a time when consumers’ needs and expectations evolve in a digital era, which leads to trust and loyalty with the consumer. This study is to investigate the effects that sophisticated technologies like decentralized platforms, BC, and immersive digital experiences are having on how consumer brand interaction is currently happening. The study investigates how decentralized communities and virtual engagements could be utilized to understand FMCG brand implementation of Web 3.0 innovations for consumer relationship development.

The study investigates BC transparency effects on trust levels and performs an evaluation of critical consumer value in interacting with FMCG brands through Web 3.0 platforms. The research would offer such recommendations to FMCG brands as they address these aspects to increase trust and loyalty in the increasingly digital marketplace. These findings will enable brands to find their way in the changing digital playground, with constant evolution and competition, while maintaining long-time consumer confidence in the new innovative ways to engage with consumers.

Research Questions

1. What is the role of decentralised communities in fostering brand trust for FMCG brands?
2. What is the effect of virtual engagements on FMCG brand trust?
3. What is the impact of blockchain transparency on consumer trust in FMCG brands?
4. How do consumers perceive the value of Web 3.0 engagement with FMCG brands?

What are the strategic recommendations for FMCG brands to strengthen consumer trust and loyalty?

CHAPTER II:

REVIEW OF LITERATURE

2.1 Decentralized Communities and Brand Trust

The research Murray, Kim, & Combs (2023) explained that for long-standing businesses, what does Web 3.0 entail? BC, a dispersed ledger that permits data to be safely stored on a network of computers instead of being validated and managed by centralized bodies, is at the heart of many new Web applications that are being developed as part of Web 3.0. The four distinct BC-enabled applications at the heart of this Internet change are fungible tokens, metaverses, decentralised autonomous organisations, and cryptocurrencies. This research explains these apps and talks about how they can make P2P interactions more common, lessen the power of corporations over data and services, and make it easier to connect to user networks at a cheaper cost than before. These distinctions make Web 3.0 an inevitability following on from Web 2.0 as well as a bigger paradigm change with the ability to drastically alter the nature of the Web, organisational structures, and business practices. This research looks at how well-established businesses might get ready for a less centralized Internet.

In this research Goldberg & Schär (2023), delve into the significance of platform administration. This research delves into the many issues with centralized design and how they relate to potential monopolistic market structures in the context of applications in the sharing economy or metaverse. According to the author, BC-based governance and open standards can alleviate part of these problems. The next step is to gather governance data from the pioneering BC-based virtual world and analyse it empirically to learn how voters behave in DAOs. Findings from the study show that while BC-based governance and open standards are important, they are not enough to guarantee a neutral and decentralized platform. Dependencies, rent-seeking behavior, and bottlenecks can result from centralized

and concentrated voting power. Therefore, before launching a presence, producers, prosumers, and service providers should assess the platform's governance framework.

The study Ghelani & Kian Hua (2022) investigated how the ever-expanding reach of the Internet has presented previously unimaginable challenges and possibilities for online learning and education. Web 3.0, most recent iteration of the web, is supposedly a very sophisticated platform that not only lets people read, write, and execute commands but also provides computers the capacity to perform some of the cognitive tasks once performed by humans. The intuitive Web, another name for Web 3.0 online marketing, is a Semantic Web that enables web services to converse with one another. The standard will be Web 3.0, which is personalized and behavioral. In a relatively short period, Web 3.0 has produced new technologies and tools to assist online learning and education. This article starts by discussing the development, features, and principles of Web 3.0. This study looked at the various factors that boost marketing and how Web 3.0 has affected it. When people talk about the Web as a database and how it has changed over time, Web 3.0 is what they're talking about. Some of the most crucial features of these technologies include media, an interoperable web, a smart web that analyses intelligence, virtualization (virtual 3D environments), and personalization. E-Learning 3.0 came from extensive implementation of Web 3.0 technology in educational institutions. The co-creation tools that drive Web 3.0 are characterized by their emphasis on collaboration.

The author Ohlhaver,P., Weyl, & Buterin (2022) examined that Web3 has shifted its focus away from encoding social trust and towards representing financialized assets that may be transferred. However, many fundamental economic activities rely on long-term, non-transferable relationships. This includes things like personal brand creation and uncollateralized financing. By demonstrating how non-transferable "soul-bound" tokens (SBTs) can encode the actual economy's trust networks to establish provenance and

reputation, they highlight how "Souls" can encode their commitments, credentials, and affiliations. Importantly, SBTs pave the way for more ambitious applications, including decentralized methods, community wallet recovery, sybil-resistant governance, and new markets with decomposable shared rights. This more diverse and robust ecosystem is referred to as a "Decentralised Society" (DeSoc)—a sociality in which individuals and groups work together as emerging qualities of one another to co-create intelligence and goods across many scales in a bottom-up fashion. An essential part of this community is the enhanced governance systems and decomposable property rights that encourage cooperation and trust while protecting networks against exploitation, capture, and ownership. This is illustrated, for instance, by the quadratic funding discounted by correlation scores. The hyper-financialization of today can be replaced with a more transformative and pluralist future of increased returns beyond social distance in web3, made possible by this enhanced sociality.

The research Song, Zhang, Ran, & Ran (2021) chooses amongst three consumer goods decision-making models: active collaboration with suppliers, consumer goods with a focus on customisation, and consumer goods with a decentralised approach. They compare the three modalities' benefits and influence differences using formula derivation and simulation. This study delves into the effects of suppliers actively working together on fluctuations in consumer product supply and demand, while also exploring the ideal role of inventory control within the supply chain. The modern circular economy in China uses ad hoc and unscientific methods to track inventories in supply chain for consumer goods. A new method of inventory control is proposed after they investigate the supply chain's ideal value of inventory management. Enhancing the liquidity of the supply network's inventory, decreasing inventory shortfall loss due to the unpredictability of everyday consumption products, and improving supply chain efficiency are all important

to generate economic value. It serves as a benchmark for managing consumer product inventories across regions and nations. The findings demonstrate that, under specific circumstances, consumer goods can be enhanced through horizontal supplier collaboration. When suppliers work together, manufacturers can cut their total inventory costs in half, increase their profits, and lessen the hidden risks posed by supply and demand volatility.

The researcher Vergne (2020) has shown that dispersed organisation and decentralised organisation are frequently used interchangeably, even though they describe different phenomena. My suggestion is to differentiate between distribution, which is a dispersion of organisational decision-making power, and decentralisation, which means the dispersion of organisational communications. While decentralisation and distribution go hand in hand, it's important to note that organisations can have various management layers, which impacts distribution but not decentralisation. The dominance of online marketplaces like Amazon.com in the modern era, can be better understood in light of this suggested differentiation. BC has arisen as an alternate technical blueprint to machine learning, the main technology of most famous platforms that converts data and other inputs into matchmaking services and other outputs. In contrast to machine learning, which promotes centralised communications and the concentration of power, BC allows for distributed and decentralised platforms like Bitcoin, in my opinion. I argue that antitrust regulation should change its approach and aim from corporations to data at the data level due to the significant ramifications of this difference. In this essay, I lay out a framework for future predictions about government regulation, future of competition between centralised and decentralised platforms, and broader implications for digital economy managers and the business schools that train them. Finally, I'd want to provide some thoughts on the possibility of reviving cybernetic thinking as a means of averting a future where a few platform giants exert tremendous power.

The investigation Ribeiro (2018) pinpointed especially when targeting younger demographics, the old internet marketing methods just don't cut it anymore. Internet banner ads and social media posts receive a pitiful number of clicks from the general public. There are a lot of people who use ad blockers to stop videos from showing ads. Everyone knows that a celebrity did not use the thing they promoted and that they were paid to do so. The impetus for this dissertation comes from these facts. With any luck, this will pave the way for a new organic social media marketing strategy that gives companies a leg up in getting their message out to customers. The goal of this marketing communication strategy is to encourage the target group to promote the brand within their communities through the creation of original user-generated content. This tactic relies on customers voluntarily and non-intrusively sharing their experiences with others. The opinion of a friend or family member is believed by 83% of buyers. Therefore, it appears extremely promising to encourage customers to promote the companies they like to their friends and family to create a functional communication channel between the brands and their followers. The distinctive feature of this approach is the cost savings it provides to companies. By providing coupons and discounts to social media users, brands may both encourage participation in their marketing efforts and generate new sales. Consequently, this kind of advertising is perfect for small and medium-sized businesses that want to attract a lot of users to their organic campaign but don't have a lot of money to spend on Internet marketing. The data needed to determine the outcomes of the engagement rate and conversion rate could not be gathered within the length of the dissertation, even though it was possible to test the theory using two iterations of the provided method. Nevertheless, it was reasonable to assume that this approach might guarantee conversion through coupon delivery and produce a high engagement rate.

The exploration of this study Ertemel (2018) highlighted that Trust issues gradually become given the nature of modern business, which is especially important. There has been new evidence that people's faith in brands is declining around the world. Transactions involving money have traditionally relied on the involvement of reliable third parties to establish and maintain confidence. Thanks to developments in cryptography and decentralised networks, it is now possible to use the Internet to transact in value, such as Bitcoin, or monetary assets, such as stocks, or ownership, etc., with BCT built into the protocol as an additional layer of trust. BCT is the missing link in the Internet's growth of trust. This research delves into the different ways in which BCT could impact the marketing field. This article lays out the strategies that marketers need to employ to stay relevant in the dynamic business landscape. Finally, the post concludes by drawing inferences about how those technology improvements will impact the future of marketing.

The research Hsieh & Vergne (2018) unveiled A paradigm change in organizational design is being driven by the rise of cryptocurrencies like Bitcoin. A new kind of organization that I refer to as the "decentralized autonomous organization" (DAO) is made possible by their BCT. This research delves into the inner workings of DAOs, which offer open and decentralized payment systems that cut out the middlemen (like banks) altogether. This inductive study employs a three-stage research strategy that integrates quantitative and qualitative data to assess twenty DAOs in the cryptocurrency market. It does this by modelling its methodology after a Bitcoin pilot project: For DAOs to expand, how are they coordinated? The outcomes of the pilot study show that DAOs can work together thanks to distributed consensus mechanisms that operate at different levels. In addition, interview results show that "decentralized autonomous organizations" (DAOs) use "machine consensus" and "social consensus" techniques to coordinate tasks, with the latter using a more decentralized approach. It turns out that less

decentralized DAOs might partially rely on social consensus mechanisms instead of machine consensus procedures, and following this, a "fuzzy-set qualitative comparative analysis" (fsQCA) clarifies the reasons behind the achievement or failure of DAOs. Essential to the creation of DAOs, the findings illuminate the intricate interplay between decentralization procedures, societal consensus, and machine consensus. Finally, I present a theory of DAO coordination based on three assumptions and explain how this new way of organizing requires us to rethink our traditional views of task coordination and organizational development.

2.2 Virtual Engagements and Consumer Trust

The evaluation Muharam, Chaniago, Harun, Pakuan, Bandung, Tangerang, Tun, & Onn (2021) determined why e-commerce site users stick with the brands they love. They investigate what elements, such as e-service quality, trust, and satisfaction, are associated with customer loyalty. Unexplored relationships among trust, e-service quality, satisfaction as a mediator, and loyalty are explored by the proposed model. Three hundred and fifty millennials from Bogor City who purchase online make up the sample for this study. The PLS-SEM modelling procedure was used to evaluate proposed study model. Based on their findings, customer satisfaction is a mediator of the positive association between trust and e-service quality, which boosts customer loyalty. This research emphasises the significance of e-commerce businesses in influencing positive psychology in digital marketing strategies and winning customer loyalty via effective service provision.

The outcomes of this research Lim, Rasul, Kumar, & Ala (2022) found that "customer engagement" (CE) first appeared in marketing circles around the turn of the millennium. Despite CE's rising profile in the marketing community, no review has offered a thorough analysis of CE's historical development, current state, and projected trajectory. Traditional review approaches, such as descriptive research, have only shed light on CE to

a lesser extent in the past. These methodologies often used sample sizes in the tens to low hundreds and focused on conceptual or contextual components, such as construct or hospitality and tourism. To fill this void, their review collected 861 CE publications from 377 journals indexed by Scopus between 2006 and 2020 and analysed them a thematically and bibliometrically. Consequently, this review provides marketing scholars with an all-inclusive, current overview of CE. They can use this data to identify prominent patterns in article, author, nation, and journal performance, which will help them position and drive future CE research. Further, it elucidates the current and future topical tendencies in CE research.

The study by Muhammad, Dey, Kamal, & Syed Alwi (2021) identified a lack of research on how customers' often contradicting ideas impact their use of new digital devices and social media platforms. This study intends to fill that void in the literature by investigating how customers' collective sentiments affect their long-term engagement with social media. A large amount of quantitative data on consumer engagement with innovative technologies like social media was gathered through an online survey. The research shows that the factors that influence consumers' adaptation behaviours towards social media, both positively and negatively, are their cognitive and affective attitudes, which encompass views of possibility, peer pressure, command, pleasure, confidence, and dread. Consumers' cognitive and affective attitudes drive their ongoing engagement with innovative social media platforms. As a result of this interaction, users may exhibit either positive adaptation behaviour, in which they try to make the most of social media, or negative adaptation behaviour, in which they try to return to or avoid using social media. This investigation adds to what is already known about how consumers' mental and emotional dispositions impact their actions when adjusting to new kinds of digital communication, including social media. The research is useful for marketers and IS managers since it provides a

profile of customers and information about their consumption habits as they engage with modern social media.

In recent years, Bai & Yan (2020), social media has grown in importance as a venue for product promotion. but studies examining the marketing impact of these platforms, and more specifically the impact of various forms of marketing material, are in their early stages. They examined the correlation between firm-generated content (a social media marketing metric) and business success and consumer engagement using the dynamic capability theory. Next, they validated the association using the panel simultaneous equation model using data on social media marketing and customer contact from Sina Microblog, the most popular Chinese social media platform. Social media marketing greatly boosts company performance, according to the results. Informative and persuasive material created by the firm has an indirect but substantial impact on the firm's success through influencing consumer involvement. There are some ways in which their results could affect future studies and professional endeavours.

According to Piyathasanan, Mathies, Wetzels, Patterson, & de Ruyter (2015), exploring how to progress consumers' "virtual experiences" (VE), many organisations are using VE to recover the customer experience overall. Based on activity theory, this research looks at what causes VE and how it affects how people see value and how loyal they are to a brand. Aspects of VE that are second-order include flow experience, social capital, social presence, and situational involvement, according to a hierarchical model. Community and individual experience are third-order variables. The findings from a comprehensive model go even further in showing that VE affects loyalty in both the actual and virtual worlds by positively impacting perceptions of social and economic worth.

The research Moghadamzadeh, Ebrahimi, Radfard, Salamzadeh, & Khajeheian (2020) explored the rise of social media platforms as the leading examples of Web 3.0

applications has a profound effect on how businesses, consumers, and other interested parties collaborate on projects, and it has also given companies a way to tap into the imaginations and ideas of their customers and users to create and offer cutting-edge services. The purpose of this research is to find out how businesses' creative services are impacted by user co-creation on social media. To achieve this goal, the authors polled clients of creative service providers who catered to their demands through social media to discover new ways to do business. A total of 505 customers participated in the survey by filling out an online questionnaire; data was analysed utilizing the PLS-SEM method. The outcomes displayed that providing innovative services is significantly impacted by customer citizenship and engagement behaviour on social media platforms. According to the results, customer engagement behaviour negatively impacted service innovativeness, whereas customer citizenship behaviour positively impacted it due to an increase in social co-creation activities mediating the outcome. To stay competitive and sustainable in tough times, business owners and managers of creative service providers may benefit from this study's findings by learning how to use social media platforms more effectively to leverage consumers' co-creation efforts.

The analysis of this study by Hudson, Huang, Roth, & Madden (2016) revealed that Social media operations are receiving a larger portion of organisations' marketing budgets. However, there is a dearth of literature exploring the connections between social media use and customer-brand interactions. They looked at three research to see how social media usage and customer-brand connections vary by country and by individual. Customers in the US, UK, and France were polled for the first study, in which the social media engagement rates of different company fans were compared to those of non-fans. Customers with high degrees of anthropomorphism views had a larger positive connotation between social media use and strength of brand relationships, according to the research.

The findings were corroborated by two further studies that demonstrated cultural differences, specifically uncertainty avoidance, mitigated impacts. Utilizing data collected from surveys and experiments on three different product categories (automobiles, notebook computers, and athletic shoes), they were able to provide strong and consistent findings. Consumers' efforts to minimise ambiguity are associated with stronger consumer-brand ties and more positive word-of-mouth communications, according to these findings, which are supported by cross-national evidence and anthropomorphize the brand when engaged with the brand via social media.

The paper Van Kerrebroeck, Brengman, & Willems (2017) highlighted that Marketers may now approach consumers more imaginatively with mobile virtual reality. The effects of VR on transformational brand experience appeals are investigated in this study, with a focus on vividness as a critical function. A comprehensive literature analysis on vividness impacts in marketing communications is provided within a three-dimensional conceptual framework, highlighting the significant gap that the majority of existing studies merely address informative messages. To fill this void, they ran an experiment with a transformational ad to show that VR makes the viewer feel more immersed in the experience than they would with a standard two-dimensional video, and that the more vivid the experience, the more positively it influences their attitude towards the ad. Furthermore, their research shows that customers' purchase intentions are stimulated by vividness, which in turn leads to positive brand sentiments. This serves to emphasise VR's strategic potential in the realm of marketing communications.

The study Giang Barrera & Shah (2023) observed it is believed that " metaverse,' a highly linked digital cosmos, would drastically alter how businesses, brands, and consumers engage and trade in a virtual reality setting. Companies are pouring millions of dollars into developing technology related to the metaverse, and the trend of consumers

participating and transacting in virtual places is also driving this trend. But because of how quickly things are changing, nobody knows how big the metaverse is yet or what it means for marketing studies and practice. A concept and organisational structure for the emerging metaverse are proposed in this study, which integrates the results of a comprehensive literature survey across several fields with the professional opinions of prominent figures in the sector. Finally, the authors offer a study agenda to direct future academic studies and marketing efforts, and they talk about the new consequences for marketing practice caused by metaverse-induced changes.

The report Ishtyaq & Bisaria (2024) demonstrated rise of "user-generated content" (UGC) has transformed consumer-brand interactions and impacted purchasing decisions in several industries, making it an essential component of digital marketing strategy. This article takes a close look at UGC and how it affects digital marketing strategies, specifically looking at how it can change things, the obstacles it faces, and the factors that are unique to each business. Experts in the field, researchers, and marketers all need a deep understanding of UGC integration to thrive in today's digital marketing environments.

The study by Holloway (2024) examined the effects of “supply chain visibility” (SCV) on FMCG marketing strategies. Thanks to its up-to-the-minute information and insights into logistics processes, SCV provides a game-changing capability in a market where customer needs are constantly changing and supply networks are incredibly complicated. The research finds several important themes through semi-structured interviews with professionals in the field: improved demand forecasting, increased customer trust through openness, more nimble marketing, and state-of-the-art technology. Insights about stock levels, production plans, and market conditions are provided instantly. SCV greatly increases the accuracy of demand estimates, according to the findings. By

better coordinating marketing and supply chain initiatives, this improved forecasting helps to minimize stockouts and maximize the effectiveness of promotional campaigns. Additionally, SCV allows for openness about product origins and ethical practices, which is great for marketing campaigns that aim to increase brand loyalty by fostering consumer trust. Businesses can make their marketing efforts more resilient and responsive with SCV's agility, which lets them quickly change plans in reaction to changes in customer tastes and market upheavals. By combining SCV with cutting-edge innovations like analytics, BC, and “internet of things” (IoT), they can get even more out of it in terms of marketing skills and insight. The study also stresses the significance of marketing and supply chain teams working together across functional lines to make the most of SCV data. When it comes to improving marketing tactics and overall organizational performance, SCV offers considerable benefits, but it also comes with problems including the requirement for large investment and organizational change. Based on the findings, SCV is an essential tool for FMCG companies looking to improve their marketing strategy in terms of efficiency, agility, and customer engagement.

The investigation Patil (2024) Numerous companies and economic sectors might benefit from customer relationship management software. Relationships with clients will develop more quickly thanks to the Internet of Things, which will also significantly affect CRM. This is because the fact that written inputs can greatly enhance the capacity to manage client interactions, and the massive amounts of data produced by the IoT include client information. Therefore, CRM will be shaped in the future by cognitive computing, big data analysis, and the development of in-depth company knowledge. The goal of this literature review is to find out how Banking of Things may promote better relationships with customers.

Agarwal (2022), identified that the marketing industry has been expanding in some way for many years. Providing consumers with goods and services that meet their specific requirements and preferences is marketing's overarching goal. Conventional advertising relies on a few channels, such as television, newspapers, and magazines, among others. But times have changed, and with them, advancements in information technology, and as a result, there has been a transition to more contemporary forms of advertising. With the rise of digital marketing, businesses now have a much larger audience to reach and a larger platform to do it. When it comes to digital marketing, India is among the most promising emerging markets in the world. Ads on social networking platforms, email marketing, etc., are examples of modern tools. This research will center on how businesses are increasingly embracing digital advertising, how these platforms are making it simpler for them to reach a wider audience, and how this trend is shaping consumer behavior.

This study by Dessart (2015), explored the idea of customer involvement as a legitimate method for comprehending involvement in Online Brand Communities (OBCs). It contends that the dynamic, social, and complex aspect of OBC participation is lost in traditional depictions of it. Using information from 721 OBC members, the researchers created two new measures of consumer engagement that capture seven different aspects: enjoyment, interest, excitement, learning, sharing, and endorsing. The findings indicate a favourable relationship between online brand engagement (OBC) and online interaction propensity, as well as between product involvement and OBC engagement, attitude towards OBC participation, and online interaction propensity. Customers are more inclined to believe in, commit to, and remain loyal to a business when they have an online interaction with it. This study clarifies the subject of OBC participation and contributes to the existing body of knowledge regarding consumer interaction with OBC. By isolating

important personal drives and relationship consequences, it offers a better, more internet-relevant way of thinking about and measuring customer engagement.

2.3 Blockchain Transparency and Consumer Trust

Nagar & Engineers (2024) advent of BCT has been a game-changer, and it might revolutionise online safety and confidence. Learn about BC's inner workings, its many uses across sectors, and how it could shake up established paradigms in this in-depth essay. They discover BC's function in improving transparency, decreasing costs, and minimising fraud by thoroughly analysing its decentralised design, cryptographic principles, and consensus mechanisms. Additionally, they delve into real-world examples to demonstrate how BC is being utilised to address challenges in many sectors, such as healthcare, banking, SCM, and more. This article delves into the pros and cons of BCT to illuminate its game-changing possibilities and guide efforts towards its broad implementation in future research and projects.

The study by Panda & Satapathy (2024) highlighted the difficulties faced by stakeholders and consumers due to the lack of an adequate system for monitoring and verifying the legitimacy of pharmaceuticals. Issues that stakeholders and customers encounter include coordination, stock management, dependency on human resources, stock management, order management, data on medicine expiration, and more. Because they can't assess the needs, stakeholders can't optimise their storage and output. A customer also has doubts regarding the genuineness of the medicine. The invisible travel of medicine is a common source of disagreements; to minimise these disputes, a medical supply chain suggests that medicine status be updated at each stage of inspection. Medical supply chains do exist in the contemporary economy, but they are highly concentrated. In addition to being inefficient and costly to operate, a centralised medical supply chain lacks the necessary elements to conduct market analysis. Most importantly, it is only a certification

that a medicine has been authenticated. But with blockchain technology, problems in the medical supply chain can be quickly resolved. A hallmark of this medical supply chain built on the BC is the meticulous documentation of all pharmacological batch transfers. To begin, a drug can be registered by a pharmaceutical company. A batch manager updates the platform's network with the details of a registered drug after its manufacture is complete. Going forward, the sender and receiver will need to give their consent for any more exchanges involving this batch. An exchange takes place only once this procedure is completed. There is an associated transaction record on the network that will never be deleted. A third-party fraud cannot occur because of the systematic order that the system is shaped to follow by this sequence. The medical supply chain was finally monitored using a decentralised application (DApp). The four pillars of an immutable, transparent, automated, and trustworthy medical supply chain are all provided by blockchain technology. This study intends to shed light on BCT while also suggesting a fresh perspective on the BC as a database for information about the healthcare supply chain. Furthermore, the interdependencies between the BC platforms and how they work are laid out in a way that is easy to grasp. The medical supply chain is built and designed using JavaScript, the Web3.js library, and smart contracts. In addition, the system is evaluated on Kovan test network in addition to the local network and Truffle suite. One potential application of the IoT is the incorporation of embedded chips into future batches that may periodically update the location, temperature, and other physical factors.

In the research by Yaser Mofatteh, Basavaraju, Palani, Sai Pidikiti, Kandahalli Raju, & Fatahi Valilai (2023), there will be rapid adoption of BC and other decentralised technologies across all industries. The FMCG industry has garnered considerable interest from a variety of quarters, particularly in light of its potential to promote environmental sustainability by cutting down on carbon dioxide (CO2) emissions. The study's overarching

aim is to use essential benefits of blockchain technology, particularly its traceability, to suggest a nearly ideal supply chain network for FMCG. Better security, traceability, and openness in data transfers to this network are all made possible by blockchain technology. Another benefit of smart contracts is that they will enable supply chain participants to execute contracts autonomously. No longer will supply chain interactions have to worry about payment delays, mistake risks, or complexity of a conventional contract thanks to the smart contract.

The research held by Singh & Sharma (2023). Currently, the food sector is entering a new era when customers, rather than industry heavyweights, will dictate strategy and direction. According to the research, the food industry's future trends will be dictated by promises about sustainability, health, well-being, and transparency. Some recent incidents involving deceptive and fraudulent statements have damaged consumers' faith in businesses. Consequently, to keep consumers' faith, the food supply chain must be transparent to authenticate claims, and BCT can achieve this goal with minimal transaction costs. Data entered into a BC network is practically hard to alter due to the lack of a central authority. Exciting new uses for supply chain contracts and operations are appearing all the time, even though most BC deployments have been in the financial industry. With the right amount of effort and time, BCT could transform other sectors, including the public sector. This research delves into the possible applications of BCT in the food industry down the road, with a focus on how it might protect customers from food fraud and let them check the validity of product claims. This is accomplished by outlining the several uses in the agri-food chain and the related difficulties, as well as by contemplating future changes in the food sector and naming existing instances of food fraud.

The principal aim of the research performed by Ferreira da Silva & Moro (2021) was that, beyond the financial sector, BCT is seeing rapid adoption in many other areas.

Their presentation is based on a literature review that used text mining to sift through Scopus papers on the topic of BCT and customer confidence. They used semi-automated text mining and subject modelling, incorporating top-down and bottom-up methodologies, to align the article keyword lists with the current literature on BC taxonomies. After that, they utilized "latent Dirichlet allocation" (LDA) technique, which automatically inserted the keywords, to locate pertinent subjects and conduct the analysis of the existing body of information. As far as customer trust is concerned, their data demonstrates how multidisciplinary BC research is. Researchers have paid scant attention to important facets of customer trust, including privacy and traceability. The study also shows that academics in the fields of marketing, sociology, and economics should focus on studying the effects of BC on consumer trust. They outline areas of future study that, in their opinion, must be addressed for BC trust to be sustained.

The examination executed by Wang, Zhang, Ying, & Zhao (2021) identified that The revolutionary technology known as BC is revolutionizing the way SCM is done. The effects of BC technology on buying habits are the focus of this research. A Chinese online retailer that has developed a tracking platform using BCT collaborated with them on this study. They combine case study and natural experimentation techniques in a multimethod approach. Businesses that adopted the BC tracing system had a growth in sales and a decrease in refunds, according to data collected from four distinct industries: nutrition, seafood, alcohol, and milk powder. Secondly, a multiple case study was carried out using four instances from each of the four industries. The results show that a BC tracing system increases consumer service and confidence by increasing supply chain transparency and process management. Firms' marketing performance can be enhanced by implementing blockchain technology, according to this study's empirical research, which adds to the

existing literature. The outcomes also show that customer behavior is impacted by the introduction of blockchain technology.

The study Jain, Singh, Chaturvedi, & Rakesh (2020) explores the topic of "BC in the logistics industry" from a contemporary viewpoint, which is all the rage, but few people understand. To determine if customers will embrace BCT for supply chain and logistics purposes, "Technology Acceptance Model" takes into account their attitude, “perceived utility” (PU), “perceived ease of use” (PEOU), behavioural intention, and actual usage. Data was collected using online and offline methods, with 240 replies received using convenience sampling. The data analysis was carried out utilizing SEM with confirmatory factor analysis. The "Technology Acceptance Model" gauges people's openness to using BC for supply chain and logistical purposes. The results show that the model is well-fitting, with attitude, PEOU, and PU as its main constructs, allowing for significant improvements in logistics flow efficiency. Researchers have examined using convenience sampling to get data from people who use different tracking and shipment detail tools online, but they may think about using a more specified strategy in future studies. It has been argued that the study's limited applicability to other countries and businesses stems from its focus on the Indian environment. Market practitioners might use this study's findings to their advantage by fostering client-industry transparency in their efforts to remove logistical frictions. Choosing a trustworthy logistics solution provider will be easier with BCT that tracks the productivity and promises of logistics experts. It will be easier to avoid baseless arguments if authorised members of the supply chain have access to vital data. The BC will be accessible to all users on the network. Facilitators in the logistics industry, including carriers, shippers, and brokers, will benefit from this increased visibility into their operations since it will allow them to spot fraudulent activity and theft earlier. Because of this, consumers will have more faith in financial transactions that include the transfer of

property titles. Decentralising infrastructure, increasing transparency, and establishing trust in the supply chain are all areas where BC technology is seen as having the potential to make a radical impact. This research adds to existing body of knowledge by demonstrating how BCT permits the immutable archiving of validated data that was formerly confined to secure databases.

The researcher Rejeb, Keogh, & Treiblmaier (2020) examined Due to the broad availability of mobile applications and sophisticated e-commerce platforms, businesses have witnessed an increase in "business-to-consumer" (B2C) commerce, organizational changes, and rethought value generation processes. Increasing brand trust and customer loyalty has always been a goal of brand marketing, but new technologies have changed the game by making it possible to reach more people and tailor the message to each individual. These days, marketers may use the Internet to reach more people in their current target audiences, build new online marketplaces, and even create demand from scratch. To better target consumers, this dynamic market interaction makes use of emerging technology. The investigators of this conceptual study explore how BCT may affect the advertising campaigns of various companies. To be more precise, they show how the consumer-centric paradigm is empowered by blockchain technology's gradual innovation. Additionally, BCT promotes decentralisation, helps fight click fraud, increases transparency and trust, allows for better privacy protection, strengthens security, and opens the door to innovative reward programs. To direct future marketing research about BC, they provide six propositions.

The research elaborated that Khatoon (2020)illustrated that Branding has evolved from being associated with manufacturing to becoming an essential tool for all types of businesses, including retail, in the face of intense competition in the modern business environment. Retail organizations must prioritize branding if they want to fulfill the brand's promises and build brand equity. The evolution of the brand's communication strategies

has been influenced by the expansion of the internet and other technological developments. Retail brands now face both new possibilities and new threats brought forth by these technology improvements. Furthermore, as a result of the negative influences of both human and corporate actions on society and the environment, consumers have grown increasingly worried about these issues in the past several years. Products that have been sourced, manufactured, transported, and exchanged fairly are now what the majority of consumers desire and anticipate. Retailers are feeling the heat from customers who are concerned about sustainability and who want them to do the right thing for society and the environment. However, brands are still facing challenges in meeting customer expectations and delivering sustainable products. Customers are wary of relying on brand promises and are hesitant to buy because there is a lack of credible information about the products and services offered by retailers. As a result, brand loyalty is low, and equity is declining. Through improving the customer experience and fostering stronger relationships, this thesis seeks to understand customers' viewpoints on the potential of BC technology to address these trust challenges in retail brands. It also explores ways to boost brand loyalty and equity. The conceptual framework is developed based on a theoretical assessment of existing brand and BC literature. The objectives of this thesis were achieved through the use of a qualitative research approach. To back up its claims, the thesis relied on an abductive reasoning strategy. The conceptual framework was investigated and validated through a semi-structured interview, leading to an empirically validated framework. People in this demographic range in age from 26 to 40 and come from a variety of cultural backgrounds. Through efficient inventory management, effective advertising, and loyalty programs, the distinctive features of BCT can enhance merchants' branding efforts, according to the empirically proven research findings framework. BC technology has the potential to enhance customer service and strengthen the connection between retail

companies and their customers, which in turn can increase brand equity and loyalty, according to the report.

According to Khatoon, Verma, Southernwood, Massey, & Corcoran (2019), Energy is only one of several sectors that could be impacted by the widespread adoption of BC technology. Cryptocurrency has a lot of potential uses in energy industry, and companies all over the globe are investigating them. Some potential uses include P2P energy trading, asset management, supply chain tracking, project finance, and large-scale energy trading platforms. While ICTs have already begun to transform the energy landscape, BC technology is opening up new possibilities for enhancing the energy system's intelligence, efficiency, transparency, and long-term security. To that end, this study will take a closer look at BCT and its potential uses in the energy efficiency sector to ascertain how it can, in the long run, produce more transparent and secure energy efficiency markets. In this paper, they take a close look at two potential BC applications in the energy efficiency sector—the Energy Company Obligation scheme in the United Kingdom and the Italian White Certificate Scheme—to demonstrate the pros and cons of using BCT. The primary challenges in energy efficiency savings trading are accurate savings prediction, data transparency among participants, and ineffective administrative procedures. They have demonstrated how to tackle these issues using a smart contract system based on BC. The study concludes with a presentation of an Ethereum BC smart contract implementation for trading energy-saving certificates.

2.4 Consumer Perceived Value in Web 3.0 Engagements

The evidence from this study Mahmoud (2023) Consumerism has reached a new frontier in the metaverse. It is a marketplace where consumers may buy and enjoy products whenever they want. In this country of freedom and opportunity, they can discover a new career path and way of life. From here, the metaverse will continue to develop wherever

technology and data combine to create a new and engaging experience. In this age of constant information, companies must know how customers are interacting with their products and services. The following questions were answered by synthesizing the current research and practice in this chapter: The metaverse is influencing their communication and consumption habits in what ways? What role is Web 3.0 playing in metaverse empowerment and transformation? Also, how exactly is Web 3.0 going to impact people's ability to keep their online privacy intact?

This research Zeqiri, Ramadani, & Aloulou (2023) investigated the relationship between online shoppers' intentions to repurchase and their insights into the product's worth and ease of use. Beyond measuring perceived value and repurchase intention, they also evaluated trust and e-WOM. Participants from North Macedonia who purchased online were surveyed between March and July 2022, and 298 replies were obtained. Before evaluating their hypotheses, utilizing PLS "structural equation modelling," they examined the research model SEM. The results displayed that every independent component, including perceived value, perceived convenience, trust, and e-WOM, had an impact on repurchase intention. Additionally, the findings demonstrated that the association between perceived value and repurchase intention is moderated by e-WOM and trust. Repurchase intention was strongly influenced by perceived value while purchasing online, and e-WOM was more affected by perceived value than by convenience. The results have both theoretical and practical significance for understanding elements that influence online shoppers' intentions to repurchase in North Macedonia.

The researcher Razmus (2021) discovered that majority of "consumer brand engagement" (CBE) metrics use actions connected to online brand communities or social media as CBE indicators. CBE also happens in the real world, not only online. Beyond the context of online conduct, this study details steps taken to create and validate a CBE scale.

Nominological validity, dependability, internal consistency, and content validity were all bolstered by the findings of three studies. The findings show that brand engagement, as assessed by the CBE scale, affects significant consumer variables linked to brands. Consumer perceptions of brand value, product satisfaction, and brand loyalty all increased with increasing levels of brand engagement. The author elaborates on how this scale might be applied to the fields of marketing and psychology.

This investigation of this research Karjaluoto, Shaikh, Saarijärvi, & Saraniemi, (2018) demonstrated that mobile information services have altered company operations and service provision by enabling consumers to access information and place orders using mobile applications. In developed economies, banking and payment apps for mobile devices have mostly replaced text-based mobile services. The current literature does not adequately examine these MFSAs from a consumer behaviour perspective. Therefore, this study set out to investigate factors that influence customers' perceptions of the value of MFSAs and evaluated some hypotheses about those factors. Furthermore, it sought to determine if and to what degree MFSA usage affects the growth of consumers' relationships with banks in general. To test the assumptions, two samples were used in Finland, a leader in digital banking, with MFSA end-users from various categories (N=992; N=524). Perceived MFSA value was driven by product novelty and self-congruence, according to the data, which corroborated most of the expectations. In addition, the study found that consumers' perceptions of MFSA value greatly impact their overall satisfaction and loyalty to their bank. The most important takeaway for managers from this study is that MFSAs help banks strengthen ties with customers and bring in more revenue.

The findings of this study Choi, Law, & Heo (2018), since risk is likely to affect perceived value and choice of future shopping places, managing it is essential to guarantee economic development in shopping destinations. Reducing or eliminating perceived

(shopping) risk is possible via increasing trust, according to prior research. Boosted confidence should make shoppers feel more at ease and, in the long run, give them a more positive image of a store's reliability. Research on commerce and tourism has paid little to no attention to trust, despite its importance. Extensive research based on psychological theory is necessary to understand tourists' purchasing behaviours, as they differ from typical shopping behaviour in one's home country. The purpose of this research was to look at how tourists' level of trust in a shopping destination affects how much they think that location is worth. Trust in a retail place has a positive outcome on perceptions of the value of the destination across all value categories, according to the data.

The investigation by Martínez-Cañas, Ruiz-Palomino, Linuesa-Langreo, & Blázquez-Resino (2016) explored the idea that in today's globally linked society, consumers play a far more active role in driving product and process innovation alongside companies. Engagement from consumers has grown in importance during product and service development as firms rely more and more on customer feedback for new ideas and brand equity. To have a deeper grasp of this intricate mechanism, it is necessary to incorporate ideas from multiple dimensions. even if previous research has focused on defining the many components of consumers' co-creation. Through a comprehensive analysis of research from three influential schools of thought—the Service-Dominant school of thought, the ICT platform school of thought, and the Marketing 3.0 school of thought—this article presents a theoretical framework that places a premium on consumers' transcendent motivations and ethical principles as drivers of their participation in co-creation initiatives. Given this context, and the fact that consumers are starting to see the importance of having a social and ethical impact, this view of the co-creation process aims to highlight the moral and social dimensions of it. Researchers found that the Marketing 3.0 paradigm and Web 3.0 tools played a important supporting role in kickstarting the co-

creation process and that both businesses and consumers reaped significant benefits from it after customers got involved. Crucially, when these co-creation efforts involve ethical products, these advantages are pushed to grow. Research and managerial practice are both significantly impacted by all of these conclusions.

The research Polat & Akgün (2015) explored the marketing department is inundated with data, which makes it difficult for organizations to understand and utilize. If they want to remain at the top of their game and outlive their competition, organizations need to either make some changes to their static ways or invest in more flexible skills. This study has investigated adaptive marketing skills and laid the groundwork for future research on the topic. This study shows that businesses shouldn't only rely on traditional ways of consumer need exploration and response; they should also reevaluate and prioritise marketing skills within the framework of flexibility if they want to maintain a competitive edge over the long term.

The outcomes of this study Zolkepli, Mukhiar, & Syed (2015), revealed that, along with a proliferation of Web 3.0 technology, the rise and popularity of online social network platforms have substantially altered how organizations operate regarding collaborations, communications, and crowdsourcing. In the context of business, "crowdsourcing" refers to the practice of utilizing online social networks to carry out tasks that would otherwise need employee participation. Some fundamental features of business-to-business crowdsourcing projects have been defined in earlier research. These features include a defined population, a well-defined objective, the advantages accrued to the crowd, and a method for assigning tasks online. But from a consumer point of view, what drives this kind of participatory activity is largely understudied. The key to successful crowdsourcing is figuring out what kinds of incentives work best to build this behaviour. According to the research, there are two main types of motivation: extrinsic (also called "technology-push forces") and intrinsic

(sometimes called "need-pull forces"). There is a lack of proven, unified knowledge about consumer participation in crowdsourcing, hence research into the psychosocial reasons of crowdsourcing is necessary to understand this. Crowdsourcing as it pertains to the Instagram platform, is the focus of this study. An "online social network citizen" (OSNC) can use Instagram, a mobile photo-sharing and video-sharing app, to capture images and videos to share on Instagram and other social media sites. The minimalist design of Instagram makes it easy to see full-screen photos and videos without any distractions. Posting photos and videos of a brand on Instagram creates a visually appealing experience that entices viewers to share, comment, and start discussions. By utilizing crowdsourcing, Instagram can draw on the collective wisdom of its users, who, in turn, gain social and personal recognition. This study will investigate the reasons behind OSNC's conduct on crowdsourcing. In the long term, this study will benefit the company because it sheds light on establishing customer relationships with crowdsourcing.

2.5 Strategic Recommendations for FMCG Brands

This research Hera, Rian, Faruque, Sizan, Khan, Rahaman, & Ali (2024), looks at the FMCG business in the UK to see how exploiting influences organizational performance, decision-making, and strategic management. Because of the fast-paced nature and intense competition in the sector, the capacity to make sound judgements quickly is crucial, and IS makes this possible. Therefore, IS may help with strategic management, enhance consumer and supply chain experiences, and more. It proves that IS is a useful tool for fast-moving consumer goods companies to anticipate changes in the market, respond to new rules meant to raise ethical and environmental standards, and foster innovation and distinctiveness. Within the context of the UK FMCG sector, this study aims to examine the impact of IS on decision-making and organisational performance. The research adheres to a quantitative research technique grounded on a

positivist research philosophy, and statistical analysis guarantees the validity and reliability of the data gathered. Results from structured surveys and linear regression models show that IS significantly helps organizations enhance their decision-making and other performance metrics. Based on reasonable assumptions, IS boosts efficiency and effectiveness in decision-making. An effective data-driven approach to IS enhanced by proper IS integration, which in turn raises organizational goals. despite numerous concerns like rising costs and security dangers. The study lays forth a strong case for why more sectors should use IS to recover their competitiveness and overall performance. To better capture the topic's depth and diversity and to encompass a wider range of geographical regions, future research should also use qualitative research designs. To further improve the creation of industry-specific strategic management frameworks, research into the moderating effects of emerging technologies, like as AI and ML, on IS efficacy is essential.

The analysis of this research by Adewale, Eyo-udo, Toromade, & Ngochindo (2024), displays that optimizing the supply chains of food and FMCG is essential for improving responsiveness and efficacy in the modern market. The authors of this article propose a two-pronged strategy for improving strategic decision-making by combining insights from behavioral finance with big data analytics. The field of behavioral finance sheds light on the ways in which biases and psychological considerations influence decision-making throughout the supply chain. Companies can prevent inefficiencies and disruptions to the supply chain caused by irrational decision-making by identifying patterns like herd behavior or overreaction to market movements. To the contrary, big data analytics allows companies to examine and assess large amounts of data from many sources, including inventory levels, sales figures, and customer behaviour. When it comes to optimizing logistics, managing inventory, and predicting future demand, advanced analytics tools like ML and predictive modeling provide practical insights. An all-

encompassing strategy for managing risks and opportunities in the supply chain can be achieved by combining these insights with the concepts of behavioral finance. By taking into account the data-driven and human-centered aspects of SCM this dual approach helps with strategic decision-making. Better forecasting models and inventory rules can be designed with a knowledge of cognitive biases, and real-time insights can be provided by big data analytics to align supply with real demand trends and rectify route deviations. All things considered, the supply chain benefits from these methods applied together, which in turn lowers expenses and boosts service quality. The research delves into real-world examples of this combined strategy in action, including instances of businesses that have optimised their supply chains by applying behavioural finance concepts with big data analytics. Additionally, it suggests best practices and areas for future research while highlighting the difficulties and factors to think about when executing this dual strategy.

The research Sundström & Hjelm-Lidholm (2020) Especially in the FMCG industry, customer loyalty activities are typically executed with a lack of long-term vision, leading to insufficient customer loyalty. In addition to this, there is a lack of diversity of opinion on customer loyalty and its impact on business relationships; so, fresh ideas and approaches to customer loyalty in FMCG marketplaces are needed. With an eye toward organizational human resources, the writers offer a model and conceptual framework based on HR literature to widen the scope of customer loyalty. An issue of customer loyalty arises when the client is organized as an external human resource, which is a challenge for many organizations due to high staff turnover and the costs associated with recruitment and training. The idea that they may study and apply lessons from motivating and recruiting top talent to their work with loyal customers is a new addition to the conceptual model that builds on previous studies.

The researcher Tien (2020) the Korean company LOTTE has made inroads into the FMCG sector of the Vietnamese market. Hanoi and Ho Chi Minh City are the two main locations in Vietnam where LOTTE has established its business operations. No other domestic organization can compete with LOTTE's business plan, which is based on large-area commercial premises, large-scale investment capital, and favourable management capacity. There are advantages and disadvantages to penetrating the Vietnamese market in this manner, and this study will help big international firms weigh the pros and downsides of doing so.

The analysis of the research done by Lu, Pr, Lu, & Pr (2019) demonstrated that although studies have looked at how brand equity and new product development affect marketing effectiveness in isolation, very little has examined how these two factors interrelate with one another. To investigate how marketing investment, brand equity, and product differentiation affect pricing disparities among SMEs, MNCs, and private label retailers, this study uses an aggregated data set for 735 FMCG brands from Nielsen (10,282 households). Using cluster analysis, they find that premium price goes hand-in-hand with innovation and business type. Future research directions and managerial implications of the findings are addressed.

This study by Truong, Klink, Simmons, Grinstein, & Palmer (2017) decided that choosing the right brand name was the most important component in deciding the success of the new product. Few studies have examined the pros and cons of using an existing brand name versus coming up with a new one specifically for the new product. Research has shown that consumers' innovativeness, or their tendency to accept new items earlier rather than later, determines how they respond to alternative branding methods. In particular, when it comes to FMCG, early adopters tended to support new brands, in contrast to later adopters. They argue that HT goods may not be able to benefit from these

results. The presence of uncertainty is a distinguishing feature of HT items compared to those in other categories, such as FMCG. They argue, based on the notion of the perceived risk handling framework, that, to deal with the increased risk of using an innovative HT product, both early and late adopters will turn to well-known brands. There are two reports of studies. In contrast to previous studies, Study 1's experimental results show that customers' innovativeness does not have a larger impact on the evaluation of new products when it comes to more innovative HT items with new brand names compared to those with existing ones. They also discovered that customers with a high level of innovation were more likely to give novel HT items a positive review if they were already associated with a well-known brand, rather than a new one. Study 2, which took place in a field environment, confirmed similar results through ethnography. The ability to assist practitioners in selecting an appropriate branding approach for HT innovations is one managerial benefit of their research. This study advances branding and diffusion theory by incorporating important parts of Dowling and Staelin's framework, which include product-specific risk, category-specific risk, and consumers' tolerable degree of risk. Most significantly, branding and HT goods are an essential yet understudied topic, and this work helps to rectify that.

This investigation OZKUL & BILGILI (2015), looked at how Consumers now have more options, and brand positioning battles are more intense due to product-range rivalry tactics implemented in the ever-changing structure of today's market. It is far more difficult to stick in the minds of modern consumers, particularly in generic markets offering food and other similar things. Customers nowadays are very discerning and have high expectations for themselves, making it extremely challenging for brands to stand out. The overarching goal of any company's marketing efforts should be to build a reputation for the brand that resonates with target audiences and encourages them to become loyal customers.

This study aimed to examine customer attitudes and behaviours towards the TORKU brand, which aims to position itself in their country's food markets by promoting healthy, natural, and additive-free food products. There was an effort to ascertain the influence of brand personality on customer happiness and loyalty, as well as an investigation into the connection between brand exposure and personality. To achieve this goal, a survey was administered to 400 İstanbul residents, with 200 of them being TORKU clients. Lisrel 8.7, a statistical tool, ran a structural equation modelling test to make sure the data was suitable for the study. They found out how positioning strategies affected customer loyalty, how elements like brand personality and consumer satisfaction relate to brand loyalty, and how brand awareness and consumer satisfaction relate to brand personality. Utilizing the collected data, a discriminant analysis was conducted to ascertain if TORKU users' attitudes differ from those of other consumers. Research findings informed the development of brand positioning strategy recommendations.

2.6 Theoretical Framework

Theoretical perspectives that are used in this study to explain consumer behaviour, trust formation and adoption of technology concerning Web 3.0 branding strategies for FMCG brands. Firstly, Social Capital Theory (Putnam, 2000) offers an essential base for how decentralised communities help to develop trust and trustworthiness among consumers. Social capital can be defined as the norms, networks, and trust that characterise a community and facilitate cooperation, as well as collective action. In a decentralised Web 3.0 environment, where the brand is enabled to be more associated with the consumers directly via peer networks and consumers foster deeper relationships with peers, brand credibility and long-term loyalty are built upon. It theorises that the consumer trust in brands in these networks that participate and facilitate them has a direct relationship to how rich the social capital within the decentralised communities is.

Secondly, it is based on the mechanism of the Trust Transfer Theory Chen, Huang, Davison, & Hua (2015); Stewart (2003), through which consumers transfer trust on one entity (e.g., a trusted platform or community) to another entity (e.g., a brand). In the realm of Web 3.0, it is probable that when users believe in a BC platform or a decentralized app, they will transfer that trust to the FMCG brands residing in these spaces. When brands are trying to build legitimacy, trust transfer is critical in virtual environments where there are no direct physical interactions. Also, to round out the framework, we have the Technology Acceptance Model (TAM) (Davis, 1989), which helps explain how consumers' perceptions of the usefulness and ease of use of Web 3.0 technologies determine their adoption.

When consumers perceive BC, virtual engagements and ownership of digital goods positively, they will be more accepting of these technologies and they will grow to have more brand trust. Taken together, these theories present a holistic framework for assessing what branding strategies should be implemented for Web 3.0 in creating stronger consumer-producer relationships within the digital economy.

2.7 Social Capital Theory

Social networks shared norms, trust, and reciprocity are all emphasized as being important to collective action and benefit to others by Social Capital Theory, popularized by social scientist (Putnam, 2000), (Coleman, 2009), and (Bourdieu, 1986). In other words, social capital is the intangible resources that are stored within the ties among individuals and groups. Such relationships are essential for the development of trust, encouragement of cooperation, as well as the exchange of information and assets between the parties. In the setting of FMCG brands in the Web 3.0, social capital is an effective way for decentralized communities to mold the perception and behavior of consumers. According to the theory, consumers who perceive high levels of belonging and trustiness within a brand community are more likely to develop brand loyalty, advocating for brand, and

participating more actively in online platforms dealing with platform transparency, collaboration and shared ownership.

From the perspective of Social Capital Theory, Web 3.0 branding strategies can integrate decentralized platforms, blockchain technologies and virtual communities to make meaningful relationships with their customers (Mukul & Itam, 2023). By participating actively in decentralized networks, the consumer ports social capital towards the brand as well as other community members through experience sharing, reputation building, and mutual building of trust. Sethi, Dash, Mishra, & Cyr, (2024) suggest that the trust and sense of community built up from using this type of community, especially in the absence of the company's corporate communication employing traditional mechanisms, has direct implications on brand trust as well as consumer loyalty. As a result, in FMCG markets driven by Web 3.0, social capital is not just an end state but they are a strategic approach taken by brands to enhance lasting engagement, credibility and long-term success in a more and more decentralized (digital) economy.

2.8 Trust Transfer Theory

Trust Transfer Theory describes how trust established in one entity or context may influence and transfer to another entity or context aligned with it (Chen, Huang, Davison, & Hua, 2015; Stewart, 2003). In marketing and consumer behavior, this theory is often used to explain how the trust that people have in a source, for example, a brand or platform, can be transferred to new offerings, technologies, and new environments that are associated with such a source. In the current environment of Web 3.0 with technology such as decentralized applications, BC, and virtual interactions, Trust Transfer Theory is especially relevant (Lai, Yang, Liu, Li, & Li, 2023). New decentralized platforms and/or virtual brand experiences can initially cause consumers to be reluctant to trust. But if they already trust the brand sponsoring these initiatives, then that existing trust can be passed onto the new

Web 3.0 engagements, and quicker adoption and deeper consumer engagement can be achieved. This transfer process is indicative of the fundamental importance of having an established brand reputation as an enabler of digital transformation strategies.

In the context of FMCG brands in the Web 3.0 era, the theory of Trust Transfer points out the importance of establishing and maintaining a credibility and transparency foundation (Steenkamp, 2020). When brands bring BC-based systems for supply chain verification, a decentralized loyalty program, or virtual brand communities, consumer trust in traditional brands serves as a bridge that lowers perceived risk and uncertainty on these innovations (Duan & Zhu, 2024). If trust transfer is successful, consumers are ready to engage with the new decentralized offerings because they will hold the same standard of quality, security, and accountability for the offerings as someone they already trust. Given this, Trust Transfer Theory serves as a significant lens through which the adoption of Web 3.0 technology in the FMCG sector can be understood, as trust at every stage of digital evolution is fundamental for the generation of brand equity and customer loyalty.

2.9 Technology Acceptance Model (TAM)

According to Davis, (1989). TAM is a highly significant idea when it comes to how people embrace new technology. Both the perceived utility and the perceived ease of use of a new technology are important considerations for people when deciding whether or not to embrace it. As we move towards Web 3.0 and include cutting-edge systems like BC, BC communities, and virtual engagements into user experiences, TAM is crucial (Ghosh, Lavanya, Hassija, Chamola, & El Saddik, 2024). If these technologies help consumers understand the value they will receive from their purchases, improve their interaction with brands, and therefore make purchases more engaging and rewarding, they are more likely to tolerate them. Furthermore, consumers' resistance to adoption of new Web 3.0-based platforms is significantly reduced if the new Web 3.0 platforms are perceived to be easy to

understand and to interact with (Li, Tsang, Ho, Ozden, Lee, & Hu, 2025). For that reason, FMCG brands that are keen on getting into Web 3.0 initiatives have to focus on user-centric designs and ensure that value propositions of the new initiatives are communicated well to receive widespread reception.

The Technology Acceptance Model is applied for explaining the dynamic processes in consumer interaction with Web 3.0 features like digital loyalty programs, NFT ownership, BC transparency and virtual brand communities (Treiblmaier, 2023) in the FMCG field. Such perception of usefulness like giving trust by verified BC transactions, personalized virtual experiences can greatly promote brand trust and loyalty. Similarly, by making these Web 3.0 platforms intuitive and accessible, it makes consumers more immersed and strengthens the relationship between the brand and the consumer (Xi & Hamari, 2020). TAM also mentions that barriers to adoption need to be addressed, as in being complex or uncaring of new technologies. Therefore, by understanding and leveraging the principles of TAM, FMCG brands can create strategies that not only facilitate but also deliver the outcomes needed for consumers to embrace and be comfortable with a Web 3.0-based brand ecosystem.

The following table 1 provides a structured overview of how different theories, such as Social Capital Theory, Technology Acceptance Model, and Trust Transfer Theory, underpin the research objectives. It highlights how these models help explain the evolving dynamics of consumer trust and engagement in the decentralized digital branding landscape.

Table 2.1

Mapping Theoretical Foundations to Research Objectives

S. No.	Research Objective	Theory/Model	Application to Study Context	Expected Theoretical Contribution
1	Examine the role of decentralized communities in fostering brand trust	Social Capital Theory	Community-led value co-creation increases consumer trust in FMCG brands through repeated, transparent interactions.	Extends SCT to decentralized, Web 3.0 consumer–brand interaction models.
2	Assess the effect of virtual engagements on brand trust	Technology Acceptance Model (TAM)	Immersive experiences (AR/VR) and gamified interactions increase perceived brand value and trust in FMCG space.	Applies TAM to virtual experiences within consumer-brand engagement frameworks.
3	Explore the impact of blockchain transparency on consumer trust	Trust Transfer Theory (TTT)	Trust in blockchain platforms (e.g., product sourcing, supply chain integrity) transfers to the brand itself.	Integrates blockchain-specific dynamics into classical trust transfer paradigms.
4	Evaluate perceived value of Web 3.0 engagement on brand trust	Technology Acceptance Model (TAM)	When Web 3.0 elements are seen as valuable and usable, consumer loyalty increases, especially in millennial and Gen Z segments.	Enhances TAM by including decentralized ownership and user participation in value creation.
5	Identify psychological enablers of brand trust through decentralisation	Affective Trust & Cognitive Trust (McAllister)	Brand trust emerges not only from information (cognitive) but also from community support and empathy (affective), enhanced via Web 3.0 communities.	Adds psychological lens to Web 3.0 trust-building mechanisms.
6	Recommend strategies for FMCG brands to enhance brand trust via Web 3.0	Integrated Framework (SCT + TTT + TAM + McAllister)	Combines social, technological, and emotional trust models to guide brand strategy in Web 3.0.	Proposes a new strategic framework integrating classical and emerging trust theories for FMCG marketing in decentralized era.

2.10 Summary

The literature review looked at the changing role played by Web 3.0 technologies in defining consumers' behaviour and brand trust, especially in the FMCG sector. It showed how BC transparency, decentralized communities, and virtual engagement are taking away from traditional consumer brand relationships by being more transparent and participatory, and cooperative. An increasing number of studies have pointed to the fact that consumers are increasingly willing to value authenticity, accountability, and interaction with the Web 3.0 innovations, which are the cause of deeper emotional and social connections with brands. In addition, the digital engagement perceived value also influences the brand credibility and customer loyalty.

Section one established the theoretical framework for the research by outlining its theoretical foundations in Social Capital Theory, Trust Transfer Theory, and TAM. The trust and cooperation within the digital communities helped create social capital that led to brand loyalty under Social Capital Theory. The notion of trust transfer theory was supported by the creation of trust in digital platforms, to trust transfer to associated brands; and TAM elucidated how perceived ease of use and perceived usefulness promoted consumer adoption of Web 3.0 technologies. When combined with the theories, it served to form a strong basis of knowledge in the digital economy on how technological advances and community-organized engagements play a role in creating sustainable brand trust.

CHAPTER III:

METHODOLOGY

3.1 Overview of the Research Problem

Web 3.0's lightning-fast development has revolutionized the way consumers engage with brands, particularly in the FMCG industry. In Web 3.0, branded settings no longer rely on traditional marketing strategies that dominated the branding landscape in the past, such as centralized platforms virtual interaction with consumers, and lack of trust. With digital technologies building ways to take their business anywhere, FMCG companies have had to change their marketing to face them and keep consumer trust. This has revolutionized the emergence of decentralized communities, BC transparency, and virtual immersive consumer experience. Both opportunities and challenges stem from these changes, particularly for the FMCG brands that want to leverage new technologies to improve trust and loyalty.

Consumers engage directly with brands in a more autonomous and participatory way, which gives increasing relevance to decentralized communities (Sharma & Gupta, 2022). These communities allow the consumers to take an active chance in the evolution of the brand and make a decision in the process, thereby further increasing brand loyalty. BCT is one of its key factors. One such function BC offers is traceability and transparency and with it, verifiable and immutable origin, manufacture, and distribution records of FMCG products, thereby building trust through transparency (Nwariaku, Fadojutimi, Lawson, Agbelusi, Adigun, Udom, & Olajide, 2024). This brand tech can help brands assure the modern buyer that the product they are buying is authentic, sustainable, and ethical product.

3.2 Operationalization of Theoretical Constructs

Hence, for the present study, the theoretical constructs are operationalized based on the ideas of Web 3.0 branding strategies, specifically in the form of decentralized communities, virtual engagements, and BC transparency. Thus, these constructs are very fundamental in understanding the implications of Web 3.0 technologies on enhancing brand trust in the FMCG sector.

This construct encompasses decentralized communities in that they entail consumer participation in BC-based, decentralized platforms where the brand communities are formed and managed out of traditional, centralized platforms. It was operationalized by measuring the frequency and intensity of participation in decentralized communities and what our consumers value about themselves taking part in the brand decision-making. Items in the Likert scale can be used to measure this, e.g. “I feel that my input is valued in the decentralized community” and “I participate actively in decision-making processes in the community.”

Virtual engagements are referred to as interactions between consumers and brands through immersive digital experiences such as “augmented reality” (AR), “virtual reality” (VR), etc., done through online platforms on Web 3.0. To this end, the quality and frequency of these interactions are assessed. This construct is captured using Likert scale items like "I do often deal with brands in virtual spaces" and "I think virtual brand experiences are interactive and meaningful, respectively".

BC traceability is about how the brand communicates and guarantees the traceability and authenticity of the joined items or services through BC innovation. Its construct is measured by assessing the consumers’ perception of a brand’s authenticity, security, and transparency of operation through the BC. For instance, items like BCT help

me to trust the origin and quality of the product, and the use of BC makes the brand more transparent, which are items that help to operationalize this construct.

Based on these constructs, the following research model (Figure 3.1) has been created:

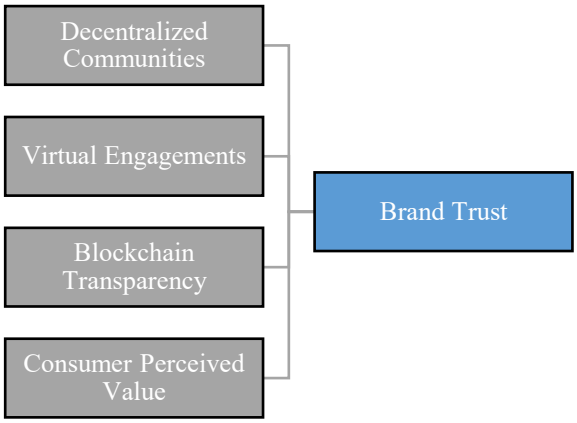

Figure 3.1
Research Conceptual Model

3.3 Research Purpose and Questions

The primary objective of this study is to uncover the role of Web 3.0 branding strategies in trusting brands within the FMCG industry through decentralized communities and virtual engagements. In line with this, the adoption of decentralized technology and those that provide immersive digital experiences were explored within this research to understand their effect on consumer perception of FMCG brands. The study delves into the factors of BC transparency, decentralized communities, and virtual engagements to see how they add to the building of trust and loyal brands here in the increasingly digital and decentralized. The findings of this study were to help FMCG brands understand how Web 3.0 technologies can be leveraged to host deeper, more visible, and more engaging FMCG brand-customer relationships that would increase their trust and long-term loyalty.

This study aims to address these gaps with the following Research Questions:

1. What is the role of decentralized communities in fostering brand trust for FMCG brands?
2. What is the effect of virtual engagements on FMCG brand trust?
3. What is the impact of blockchain transparency on consumer trust in FMCG brands?
4. How do consumers perceive the value of Web 3.0 engagement with FMCG brands?
5. What are the strategic recommendations for FMCG brands to strengthen consumer trust and loyalty?

3.4 Research Design

A mixed-methods research design was used in this study to fully explore the relationship between decentralized FMCG communities, virtual engagements, and BC transparency to brand trust in the FMCG sector in the context of Web 3.0 branding strategies (van Dijk, 2021). Consumer interactions with FMCG brands that use Web 3.0 technology were the focus of the quantitative approach, with primary data gathered through structured surveys. Important variables, including trust, loyalty, and perceived value of BC transparency and virtual participation, were measured by closed-ended questions using Likert scales in these surveys. For SPSS, data analysis was utilized, applying correlation tests to examine the relationships between 'decentralized community participation,' 'virtual engagements,' and 'brand trust.' Furthermore, regression analysis was conducted to predict the extent to which these Web 3.0 elements influence brand trust (Rosenthal, 2017).

For the qualitative aspect, a content analysis approach was adopted, focusing on a systematic review and evaluation of previously available literature, existing research studies, and academic papers related to decentralized communities, BC transparency,

virtual engagement, and brand trust. This method enabled the identification of key patterns, themes, and theoretical perspectives that complemented the quantitative findings. By combining survey data with insights drawn from extensive literature analysis, the study offered a comprehensive and integrated understanding of how Web 3.0 strategies can effectively contribute to building and maintaining consumer trust in the FMCG sector (Lewis, 2015).

3.5 Population and Sample

The research examines the functions of self-governing communities alongside virtual communication methods that support brand trust through Web 3.0 branding approaches. A total of 328 participants forms the study sample which includes people from various web 3.0-related groups such as consumers, brand community members, digital marketers, and BC enthusiasts along with professionals operating in decentralized brand environments. Such a varied sample base enables the research to obtain various opinions concerning trust construction methods within Web 3.0 branding systems. The research demands participation from individuals with experience with BC and decentralized platforms, BC marketing techniques, token-based loyalty systems, and virtual brand engagement capabilities. The study provides wide recognition of brand trust in digital environments since trust proves fundamental to consumer behavior and lasting brand loyalty (Kim, Ferrin, & Rao, 2008; Kim, Xu, & Koh, 2004)

The researcher uses convenience sampling to select participants who have simple access to Web 3.0 brand communities and are active members of these platforms. Through this research approach, the researcher can obtain crucial insights from persons directly interacting with decentralized branding strategies, making their contributions vital for the study. The convenience sampling technique demonstrates significant advantages in Web 3.0 technology because probability sampling often fails to work with its dynamic nature

(Suwandi, 2022). Convenience sampling allows researchers to collect efficient data from participants actively involved in decentralized brand trust systems even though it might reduce the wider applicability of research outcomes.

3.6 Participant Selection

Inclusion Criteria

The study depends on these requirements to achieve reliable relevant results from participants.

1. The research includes participants who maintain continuous involvement within Web 3.0 decentralized communities, BC-based platforms, and virtual brand engagement programs.
2. People participating in this study need to have previous experience working with token-based consumer rewards programs combined with smart contracts, NFT marketing, and DAOs used to manage brands.
3. The study requires participants to reach the age of 18 or above because they need to offer informed consent.
4. All participants need minimum knowledge about digital technology alongside BC systems and the operation of virtual interaction platforms.
5. Both customers who deal with decentralized brands and experts who establish Web 3.0 branding strategies make up the research sample.

Exclusion Criteria

The study excludes participants who demonstrate any one of the specified criteria.

1. Persons lacking an understanding of Web 3.0 branding, BC-based communities, and virtual engagement tools were not included.
2. Individuals possessing little digital competency and weak BC comprehension skills did not qualify because of their restricted understanding.

3. Individuals younger than 18 did not participate due to both legal concerns about consent and the ethical code of practice.
4. The analysis excludes traditional brand professionals who work without exposure to Web 3.0 technologies because their insights do not match the study's central theme.
5. Study participants who failed to grasp the research objectives or showed incapability of consenting to the study were excluded from participation.

3.7 Instrumentation

A structured questionnaire is constructed for the study to collect data on people's perceptions of brand trust against the Web 3.0 brand strategy. Participation in the questionnaire is based on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) to measure the experience and attitude of participants towards decentralized communities, virtual engagements, and brand marketing based on the BC. Three control variables, turnover rate before the relevant shift, turnover rate after relevant shifts and sales, and six other key constructs are also assessed: brand trust, transparency, security, engagement quality, and perceived authenticity of decentralized brands. A standardized way of measurement is offered through the Likert scale, which in turn enables a quantitative measurement of trust-building factors of Web 3.0 brands.

3.8 Data Collection Procedures

The study's adherence to a standardized data-gathering process guarantees the quality and reliability of participants' perceptions regarding Web 3.0 branding, virtual interaction, and decentralized communities. Social media users, BC forum participants, and users of professional networking sites are all considered participants, as are specialists in Web 3.0 and customers. The survey is self-administered. The questionnaire uses closed-ended questions with a five-point Likert scale to provide a sizeable and common portrayal

of brand foundation, lucidity, security, the nature of involvement quality, and widely perceived certainty (Simbolon, 2024). In particular, the survey is designed to be easy to understand and complete, and participants are encouraged to be honest by collecting their comments anonymously.

Reminder emails and follow-up messages are sent periodically to both enhance response rates as well as ensure that the survey attracts a more diverse participation group. Finally, this study follows ethical guidelines where participants are aware that they have the right to withdraw at any time and that their data is kept confidential. Once data is collected, the responses are screened for completeness, and responses that are incomplete or inconsistent are removed from analysis. Finally, the data is processed and analyzed to figure out how the key variables affect brand trust in distributed branding communities.

3.9 Data Analysis

Quantitative techniques were utilized to analyze the collected data to derive the association between decentralized communities, virtual engagements, and brand trust in Web 3.0 branding strategies. To begin, the demographics of the sample and the participants' answers to the Likert scale items were summarized using descriptive statistics such as averages, standard deviations, and frequencies (Alkharusi, 2022). The preliminary analysis of these data allowed for an overview of the data distribution and any significant trends or patterns in the responses.

The next step was to use inferential statistics, such as regression and correlation analysis, to find the direction and strength of each important variable. These factors included brand trust, security, engagement quality, and transparency. The application of regression analysis helped in determining whether the independent variables (such as virtual engagement and decentralization) were able to predict the dependent variable (brand

trust) (Puntanen, Seber, & Styan, 2013). Association analysis was conducted to determine the strong associations between different constructs of Web 3.0 branding.

The researcher used SPSS, a program that manages large datasets and enables the accurate execution of sophisticated statistical operations, to carry out the investigation. After doing reliability analyses, such as Cronbach's alpha, on the Likert scale, we were able to confirm that it reliably measured the constructs of interest, which allowed us to assess the items' internal consistency (Tavakol & Dennick, 2011). To explore if there were underlying dimensions within the data, factor analysis was conducted to determine if engagement and transparency could be used to explain the relations between variables, e.g., how engagement and transparency together appeared to form a broad concept of brand trust.

3.10 Research Design Limitations

1. **Convenience Sampling Bias:** Thus, based on convenience sampling, participants are selected as on accessibility and not random, leading to a biased sample. Hence, the findings are not generalizable to a larger population of Web 3.0 users (Etikan, 2016).
2. **Self-Reported Data:** One issue is that self-administered online questionnaires collect data from which there is a possibility of there being response bias (in other words, participants may provide socially desirable answers or skew responses in line with their own opinions) (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). That could introduce inaccuracy in the data and thus compromise the reliability of the findings.
3. **Cross-Sectional Design:** When doing research using a cross-sectional approach, data is taken at a single instant in time. Based on this study, there is no way to confirm causal links between decentralized branding elements and brand trust.

4. **Limited Scope of Web 3.0 Branding Variables:** The study is limited to a set of variables like transparency, security, and engagement quality surrounding brand trust. In fact, Web 3.0 branding contains many other factors (e.g., token omics, decentralized governance), not discussed in this research. The non-inclusion of these variables can be the reason for an incomplete understanding of Web 3.0 branding (Donohue, 2018).
5. **Technological Literacy of Participants:** The study also expects technological literacy because the reader understands decentralized platforms, BC, and virtual engagements. However, inconsistencies in data collection may occur since these technologies are not very familiar to all participants (Ferreira da Silva & Moro, 2021).
6. **Potential Non-Response Bias:** Although follow-up reminders increased response rates, there is still a risk of nonresponse bias. If people respond and do not have different views or experiences from those who take part, the study's results may not be valid (Wetzel, 2010).

3.11 Conclusion

This study goal to identify how decentralized communities, as well as virtual engagements and BBC transparency, translate to improve brand trust in Web 3.0-based branding strategies within the FMCG domain. This research shows that these Web 3.0 technologies offer FMCG brands an uncommon chance to create belief and loyalty by empowering makers to make deciphered connections with consumers. Through employee power in decentralized communities, consumers are empowered to actively play a part in brand evolution in a more loyal and Trusted way. Immersive digital experiences are a new and engaging way for brands to interact with consumers and thereby further the experience that all consumers are having with the brand. BC transparency provides traceability and

authenticity of products, and this is important as FMCG products are skewed to product integrity, so consumer confidence needs to be built.

While the study offers important insights into how Web 3.0 technologies influence brand trust, the framework of the study may be limited by the way of research design, including the use of convenience sampling and a cross-sectional design. Longitudinal data and a more diverse sample would enable future research to explore the long-term effects of these technologies on brand loyalty. In summary, this research helps fill the knowledge gap on how platforms that are decentralized, virtual engagement, and BC transparency can mold trust in brands in the digital realm, especially with FMCG brands who are keen to develop deeper connections built with customers in the Web 3.0 era.

CHAPTER IV:

RESULTS

4.1 Reliability Analysis

Table 4.1
Reliability Statistics

Cronbach's Alpha	N of Items
.814	34

Table 4.1 shows that the 34 items were quite reliable and consistent with one another; their Cronbach's Alpha score was 0.814. Due to the high degree of item correlation and consistent measurement of the same underlying concept, this instrument is suitable for further investigation.

4.2 Frequency Table

Table 4.2
Demographic Detail

		Frequency	Percent
What is your age group?	18 – 24 years	73	22.3
	25 – 34 years	113	34.5
	35 – 44 years	86	26.2
	45 – 54 years	40	12.2
	55 years and above	16	4.9
What is your gender?	Male	147	44.8
	Female	154	47
	Non-binary / Third Gender	14	4.3
	Prefer not to say	13	4
What is your highest level of education?	High School or below	31	9.5
	Diploma / Associate Degree	63	19.2
	Bachelor’s Degree	91	27.7
	Master’s Degree	89	27.1
	Doctorate (PhD) or equivalent	32	9.8
	Other	22	6.7
	North America (USA, Canada, Mexico)	34	10.4

Which region do you currently reside in?	South America (Brazil, Argentina, Colombia, etc.)	56	17.1
	Europe (UK, Germany, France, Italy, etc.)	48	14.6
	Middle East & North Africa (UAE, Saudi Arabia, Egypt, etc.)	32	9.8
	Sub-Saharan Africa (Nigeria, South Africa, Kenya, etc.)	26	7.9
	South Asia (India, Pakistan, Bangladesh, Sri Lanka, etc.)	96	29.3
	East Asia (China, Japan, South Korea, etc.)	9	2.7
	Southeast Asia (Indonesia, Thailand, Vietnam, Philippines, etc.)	15	4.6
	Australia & Oceania (Australia, New Zealand, etc.)	9	2.7
	Other	3	0.9
What is your current employment status?	Student	54	16.5
	Employed – Private Sector	110	33.5
	Employed – Public Sector	67	20.4
	Self-Employed / Entrepreneur	63	19.2
	Unemployed	16	4.9
	Other	18	5.5
How frequently do you purchase FMCG products online?	(Very Rarely): Less than once every few months	48	14.6
	(Rarely): Once every few months	94	28.7
	(Occasionally): Once a month	75	22.9
	(Frequently): A few times a month	72	22
	(Very Frequently): Weekly or more	39	11.9
How familiar are you with Web 3.0 concepts such as blockchain, decentralized communities, and virtual engagements?	Not familiar at all	58	17.7
	Somewhat familiar	108	32.9
	Moderately familiar	85	25.9
	Very familiar	52	15.9
	Expert level knowledge	25	7.6

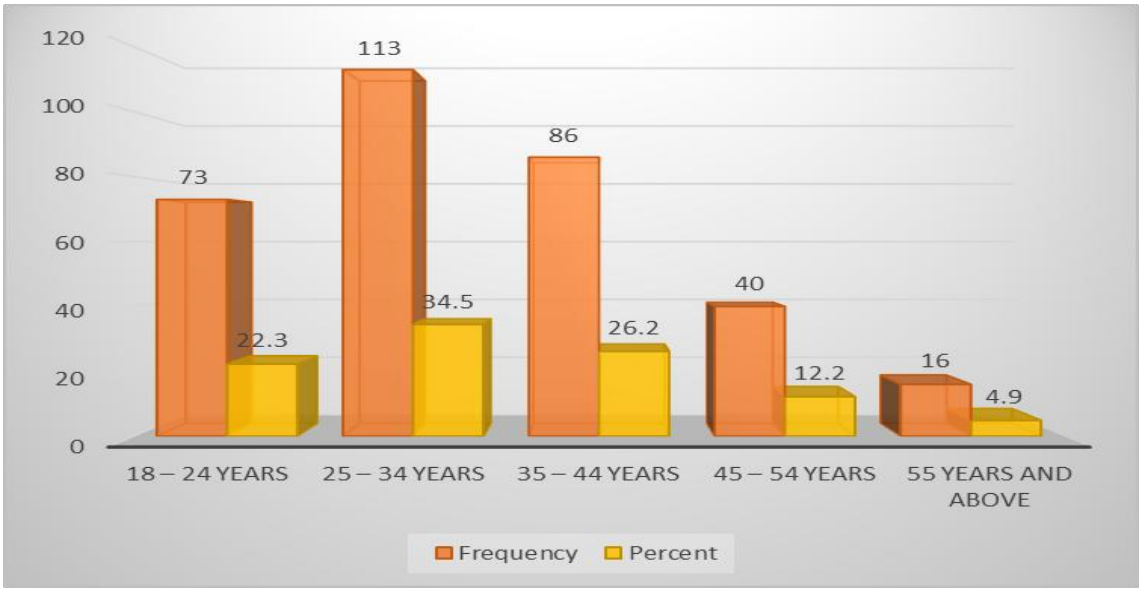

Figure 4.1
Age Group

Figure 4.1 displays that the age range of 25–34 years accounts for 34.5% of the total respondents, with 26.2% falling into the 35–44 age bracket. Participants aged 18-24 years make up 22.3%, while those aged 45-54 year and 55 years and above constitute 12.2% and 4.9%, respectively, out of the total 328 respondents.

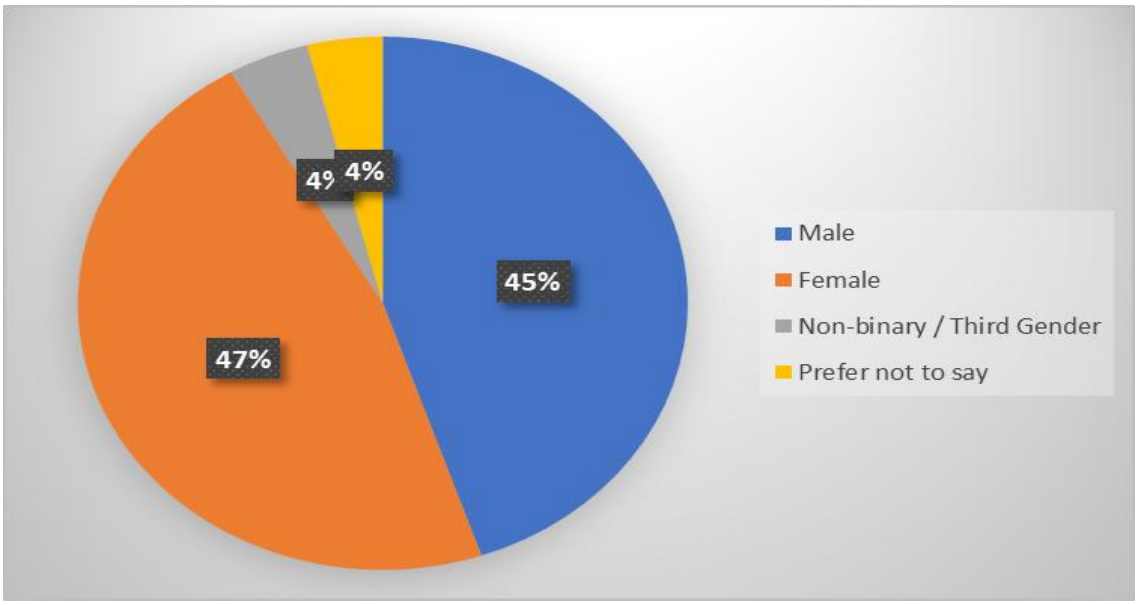

Figure 4.2
Gender

According to figure 4.2 the respondents, 47.0% identified as female and 44.8% as male. Additionally, 4.3% identified as non-binary or third gender, while 4.0% preferred not to disclose their gender, reflecting a diverse and inclusive sample population.

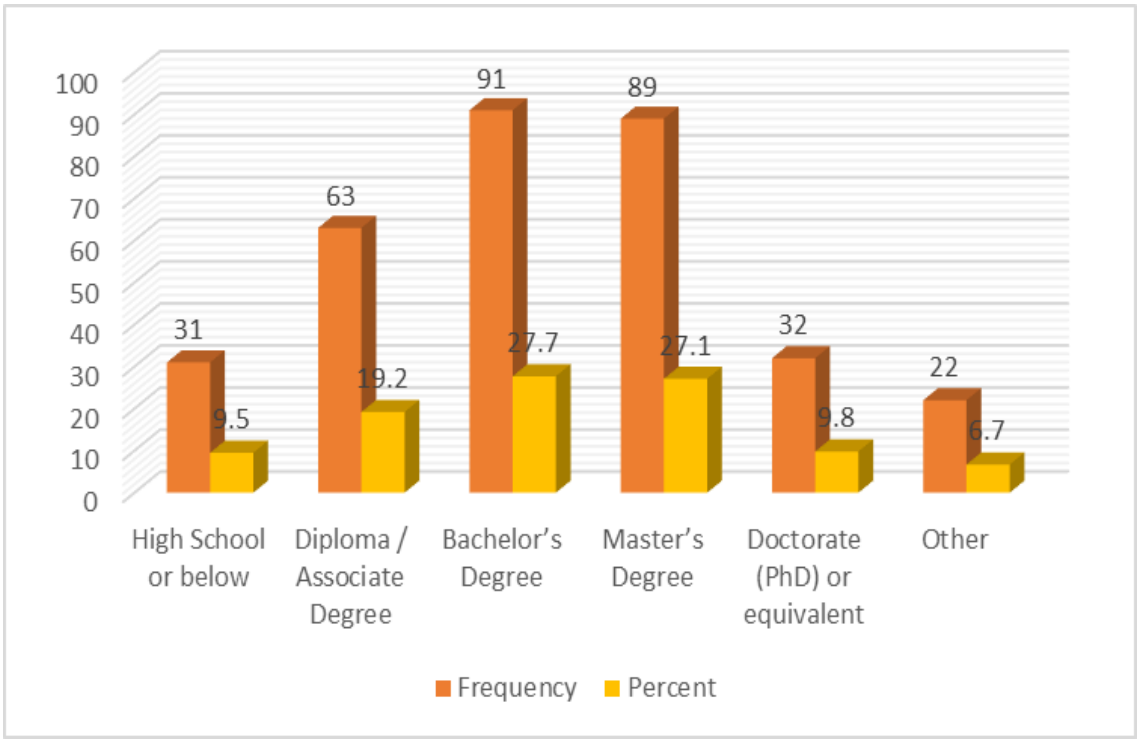

Figure 4.3
Highest Education

Figure 4.3 displays the educational attainment of the 328 respondents, showing that 27.7% have a Bachelor's degree and 27.1% have a Master's degree. A total of 19.2% of respondents hold some sort of associate or diploma degree; 9.8% hold a doctorate; 9.5% have only completed high school; and 6.7% have reported no formal education at all.

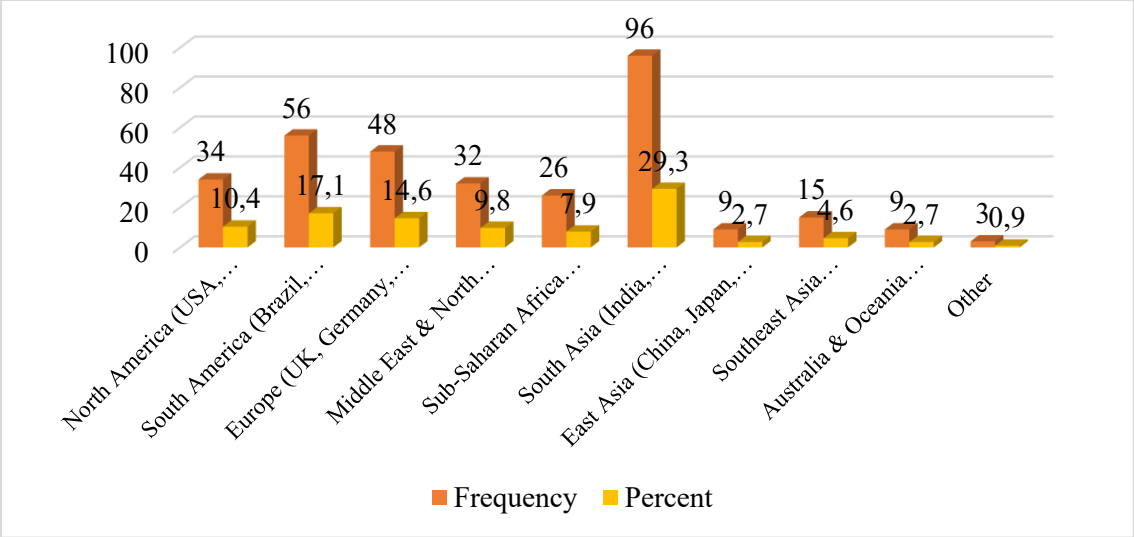

Figure 4.4
Which region do you currently reside in

Figure 4.4 shows that 328 respondents, the majority (29.3%), reside in South Asia, followed by 17.1% from South America and 14.6% from Europe. North America accounts for 10.4%, the Middle East & North Africa 9.8%, and Sub-Saharan Africa 7.9%. Smaller representations come from Southeast Asia (4.6%), East Asia (2.7%), Australia & Oceania (2.7%), and other regions (0.9%).

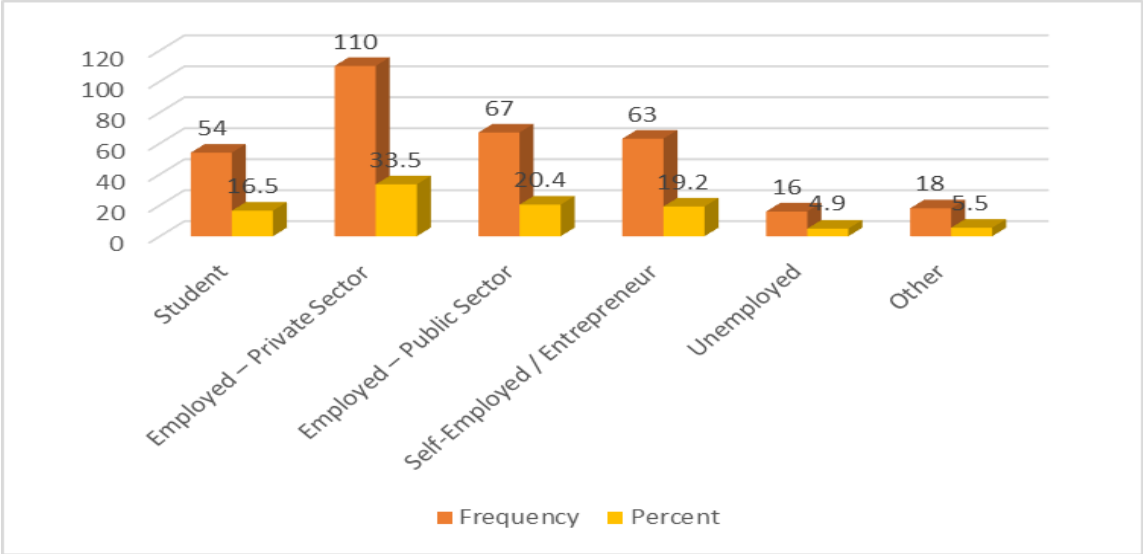

Figure 4.5
What is your current employment status?

According to figure 4.5 among the 328 respondents, 33.5% are employed in the private sector, followed by 20.4% in the public sector and 19.2% who are self-employed or entrepreneurs. Students make up 16.5% of the sample, while 5.5% selected "Other" and 4.9% reported being unemployed.

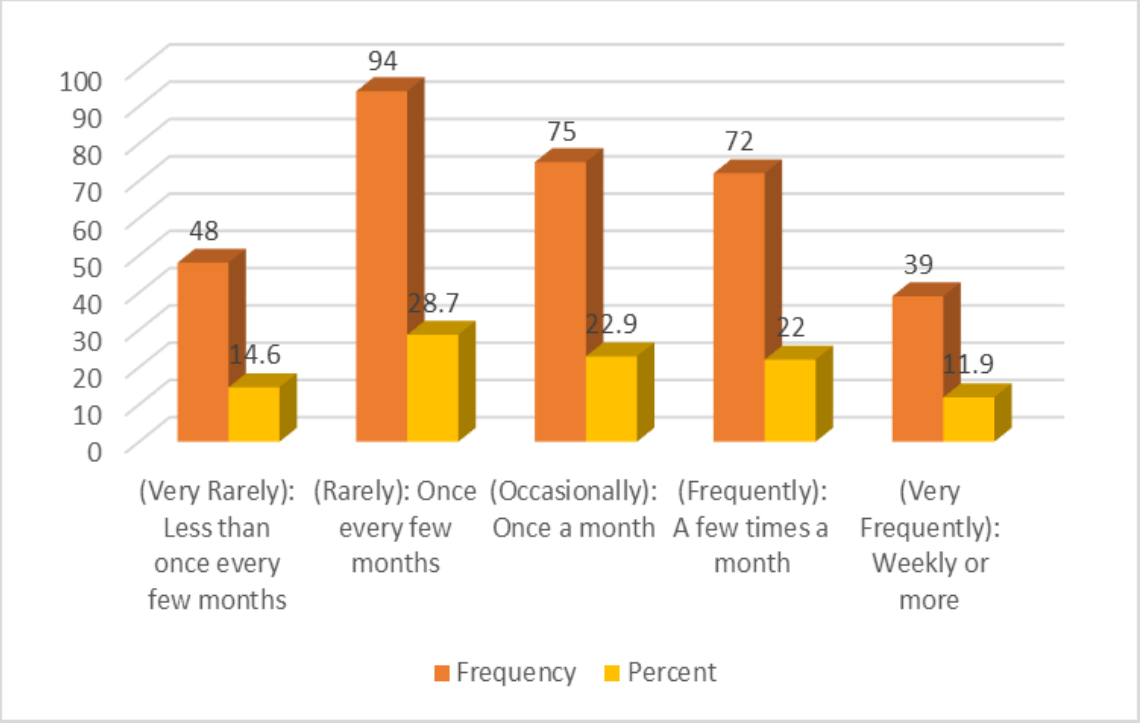

Figure 4.6
How frequently do you purchase FMCG products online

Figure 4.6 indicates that 328 respondents, the largest group (28.7%), reported rarely purchasing FMCG products online, followed by 22.9% who do so occasionally every month. Another 22.0% shop online a few times a month, while 14.6% purchase very rarely, and 11.9% buy FMCG products online on a weekly or more frequent basis.

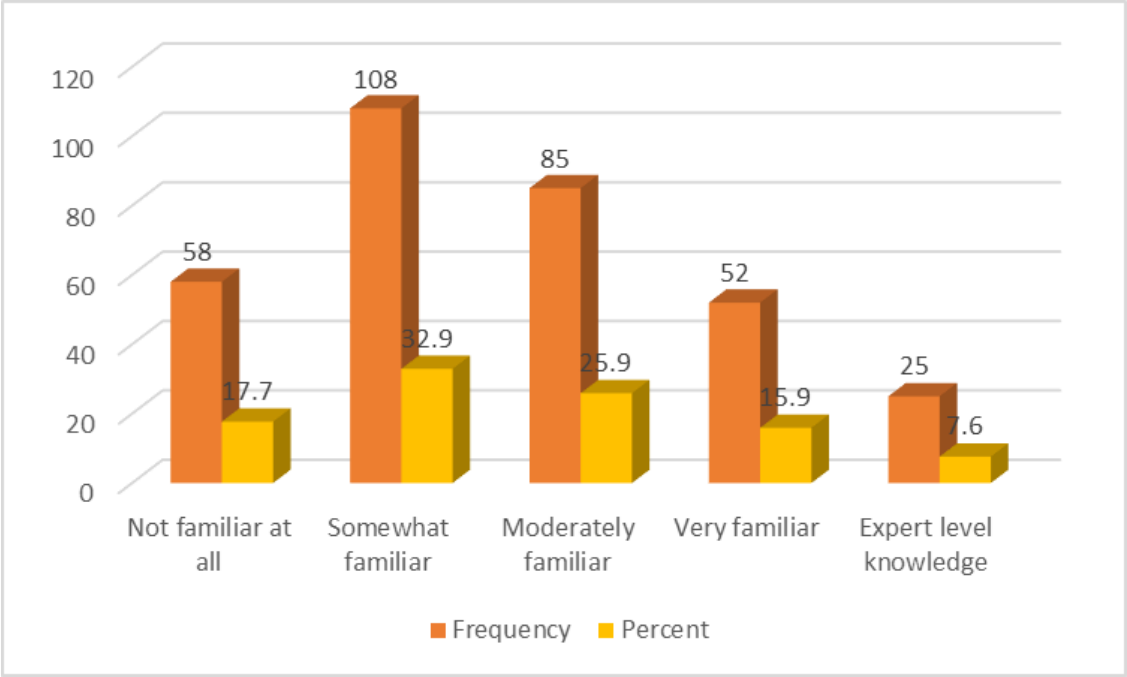

Figure 4.7
How familiar are you with Web 3.0 concepts such as blockchain, decentralized communities, and virtual engagements

Above Figure 4.7, a majority of respondents (32.9%) are somewhat familiar with Web 3.0 concepts like BC, decentralized communities, and virtual engagements, followed by 25.9% who are moderately familiar. 17.7% are not familiar at all, while 15.9% are very familiar, and 7.6% have expert-level knowledge of these concepts.

Table 4.3
Participation Level

		Strongly Disagree (SD)	Disagree (D)	Neutral (N)	Agree (A)	Strongly Agree (SA)
I actively engage in FMCG brand communities that use decentralized platforms.	Frequency	110	119	58	30	11
	Percent	33.5	36.3	17.7	9.1	3.4
I feel more connected to a brand when I can participate in community discussions.	Frequency	28	133	111	48	8
	Percent	8.5	40.5	33.8	14.6	2.4

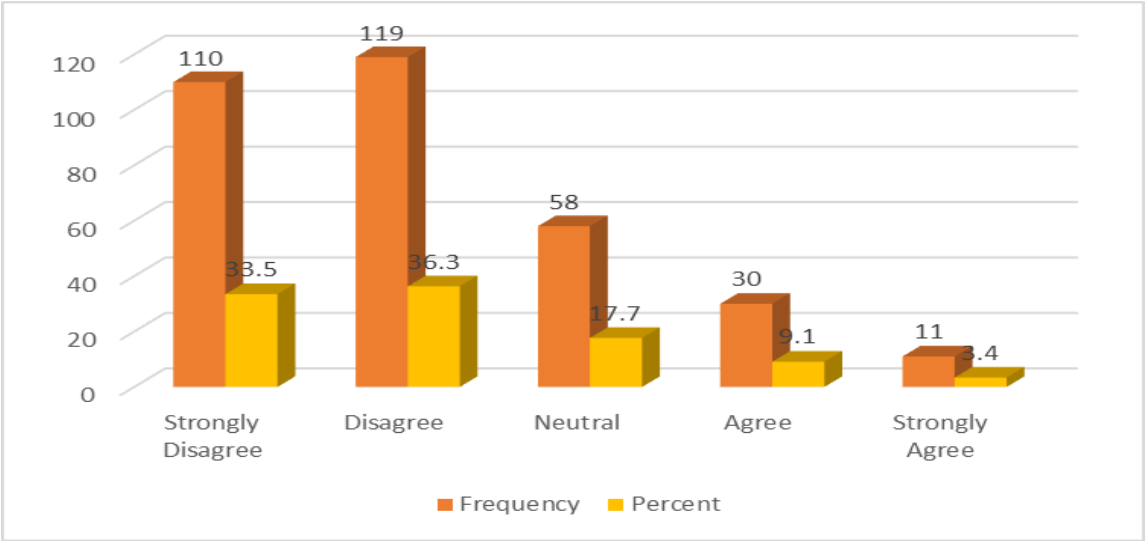

Figure 4.8
I actively engage in FMCG brand communities that use decentralized platforms.

The figure 4.8 results indicate that a majority of participants (69.8%) either D or SD with actively engaging in FMCG brand communities on decentralized platforms. A smaller portion of respondents (17.7%) are N, while only 12.5% express some level of agreement (9.1% A and 3.4% SA). This suggests that active engagement in such communities is relatively low, with most individuals either uninterested or unaware of decentralized platforms in the context of FMCG branding.

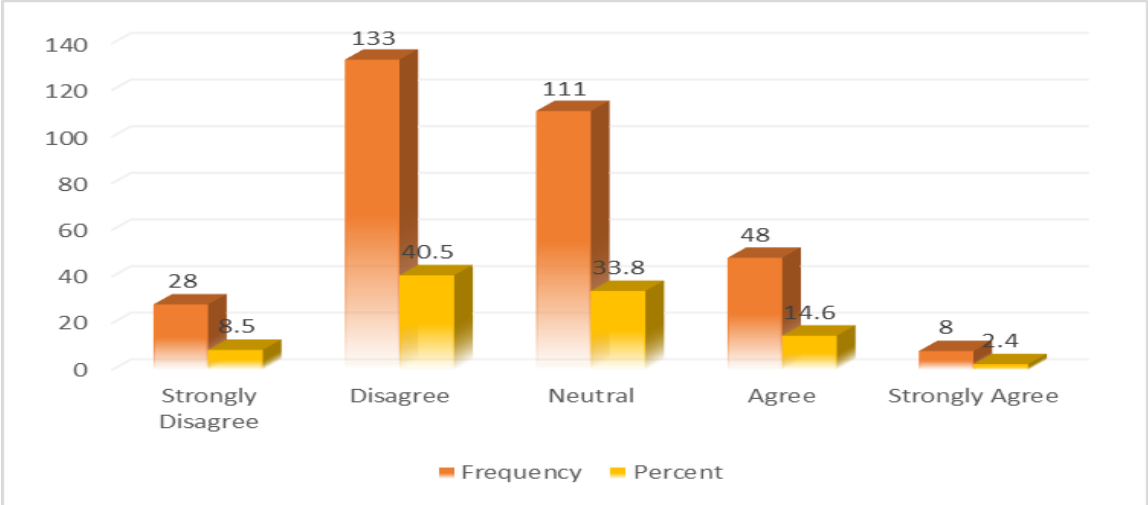

Figure 4.9
I feel more connected to a brand when I can participate in community discussions.

According to Figure 4.9 show that a significant portion (49%) D or SD with the idea that participating in community discussions makes them feel more connected to a brand. Additionally, 33.8% of participants remain N on the matter. Only a small percentage (17%) agree to some extent, with 14.6% A and 2.4% SA. This suggests that community discussions may not be a major factor in fostering brand connection for most individuals.

Table 4.4
Decision-Making Influence

		SD	D	N	A	SA
I trust brands that allow consumers to have a say in decision-making through decentralized governance (e.g., voting).	Frequency	26	82	137	72	11
	Percent	7.9	25	41.8	22	3.4
When a brand includes customer opinions in its strategies, I feel more loyal to that brand.	Frequency	19	89	95	107	18
	Percent	5.8	27.1	29	32.6	5.5

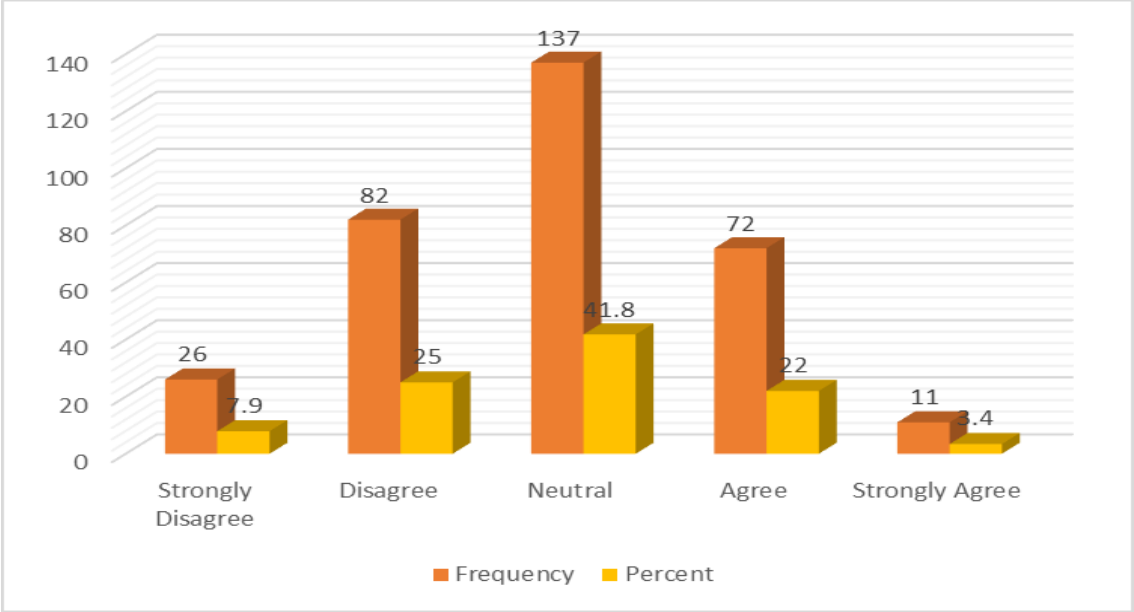

Figure 4.10
I trust brands that allow consumers to have a say in decision-making through decentralized governance (e.g., voting).

Figure 4.10 reveals that a majority (66.8%) are either N or D, with the idea of trusting brands that allow consumer involvement in decision-making through decentralized governance. In particular, 32.9% are D or SD, while 41.8% are N. Meanwhile, 25.4% of people say they trust someone, with 22% saying they trust A and 3.4% saying they trust SA. This points to a mixed view of decentralized decision-making in the brand space.

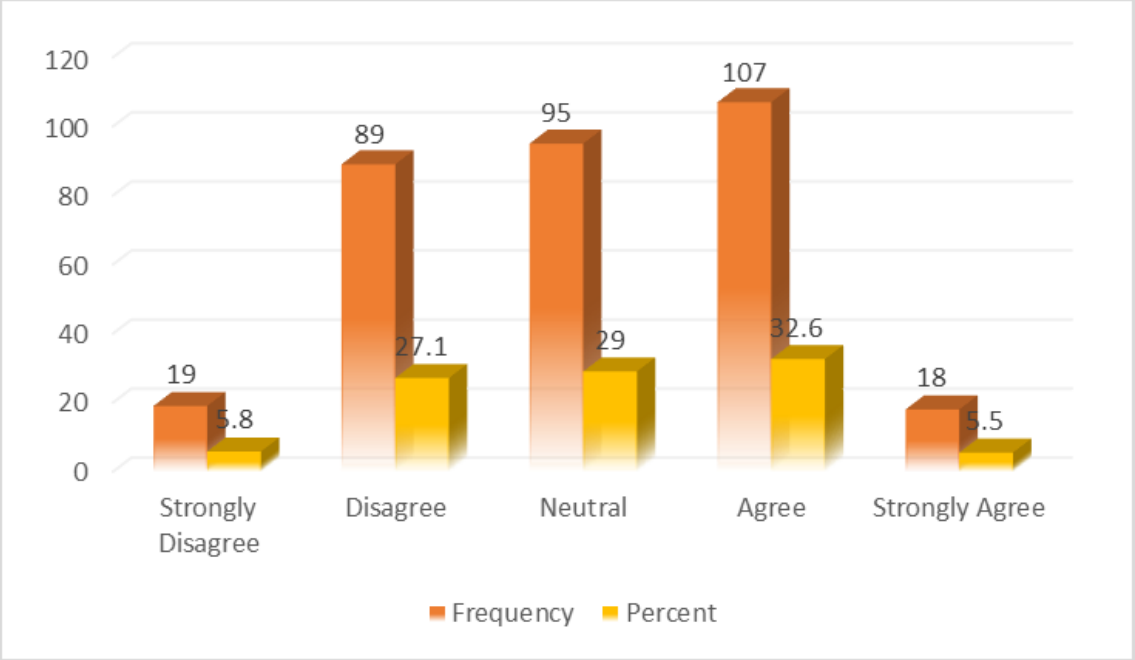

Figure 4.11
When a brand includes customer opinions in its strategies, I feel more loyal to that brand.

According to Figure 4.11 show that a substantial portion of respondents (56.1%) either D or feel N about feeling more loyal to a brand when customer opinions are included in its strategies. Specifically, 27.1% D and 29% remain N. On the other hand, a sizeable portion of the participants (38.1%) think that consumer participation does, in fact, build loyalty (32.6% A to 5.5% SA).

Table 4.5
Community Trust

		SD	D	N	A	SA
I trust other members within a decentralized brand community.	Frequency	27	84	99	68	50
	Percent	8.2	25.6	30.2	20.7	15.2
Decentralized communities provide a fair and open environment for consumer interactions.	Frequency	30	92	112	77	17
	Percent	9.1	28	34.1	23.5	5.2

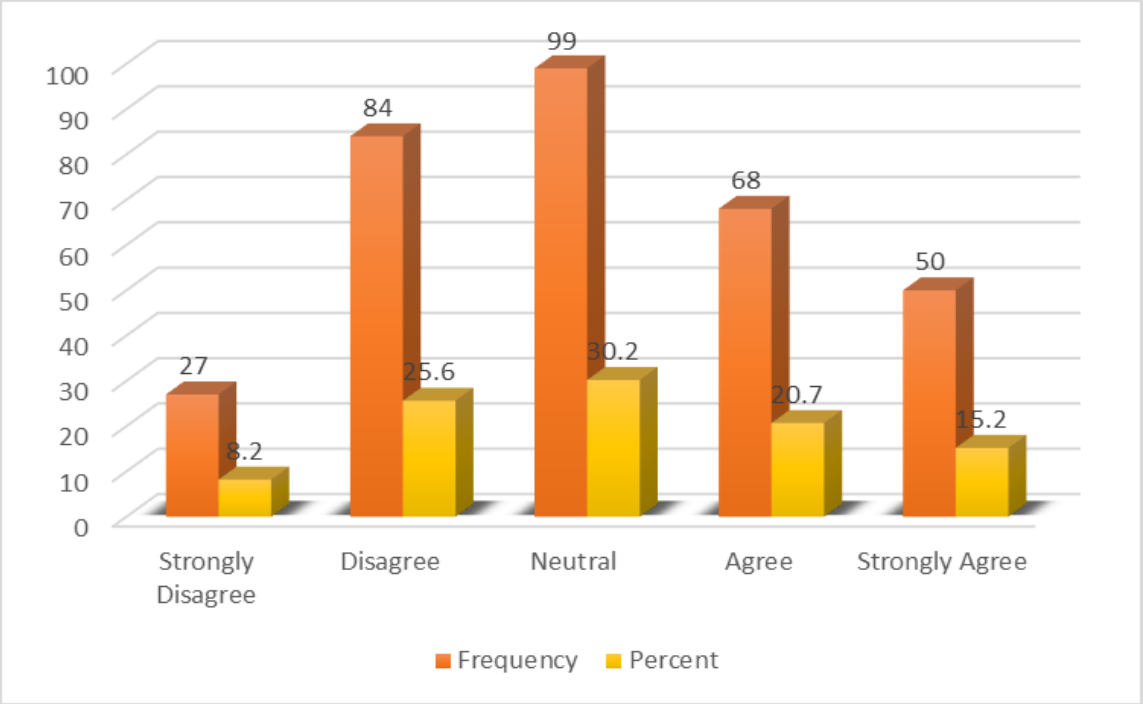

Figure 4.12
I trust other members within a decentralized brand community.

Figure 4.12 shows that trust among members within a decentralized brand community is mixed. While 33.8% of participants D or SD, 30.2% remain N. On the other hand, 35.9% express some level of trust, with 20.7% A and 15.2% SA. This indicates that while a notable portion trusts community numbers, a significant number remain uncertain or skeptical about the reliability of others in decentralized communities.

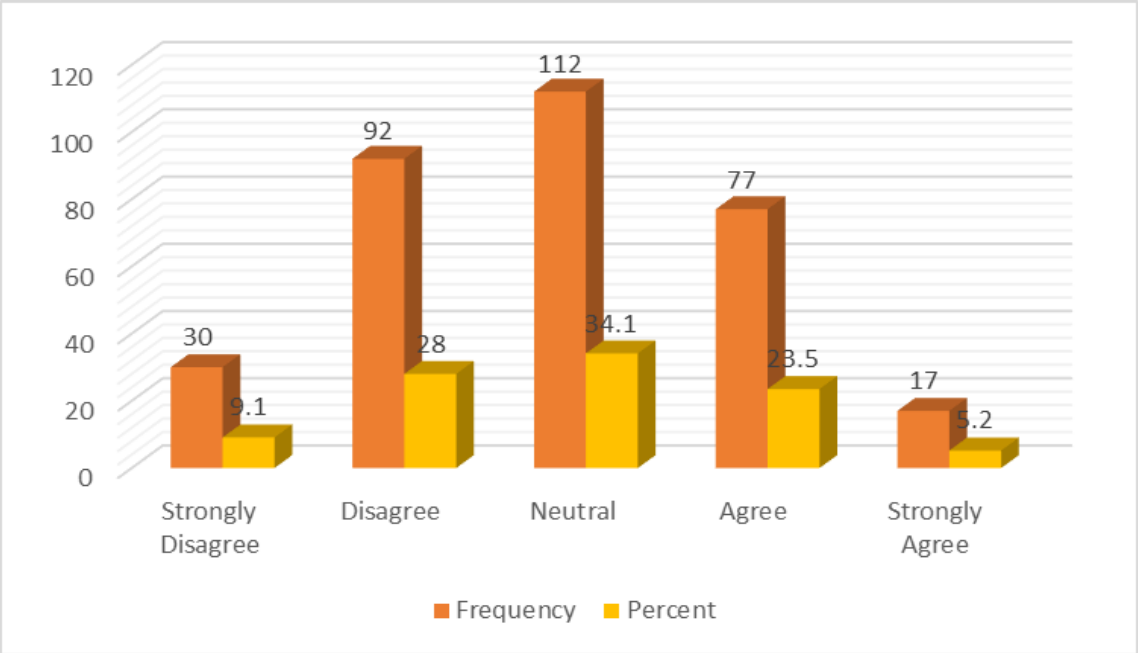

Figure 4.13
Decentralized communities provide a fair and open environment for consumer interactions.

According to Figure 4.13, the majority (34.1%) were N about the statement that decentralized communities provide a fair and open environment for consumer interactions. However, 28.0% SD, while 9.1% SD. A smaller portion, 23.5% A and only 5.2% SA. This suggests a mixed perception, with many respondents uncertain or skeptical about the fairness and openness of decentralized communities in facilitating consumer interactions.

Table 4.6
Frequency of Interaction

		SD	D	N	A	SA
I regularly interact with FMCG brands in virtual spaces (e.g., metaverse, brand-sponsored VR/AR experiences).	Frequency	93	131	58	40	6
	Percent	28.4	39.9	17.7	12.2	1.8
Virtual engagement with a brand increases my interest in its products.	Frequency	28	116	135	44	5
	Percent	8.5	35.4	41.2	13.4	1.5

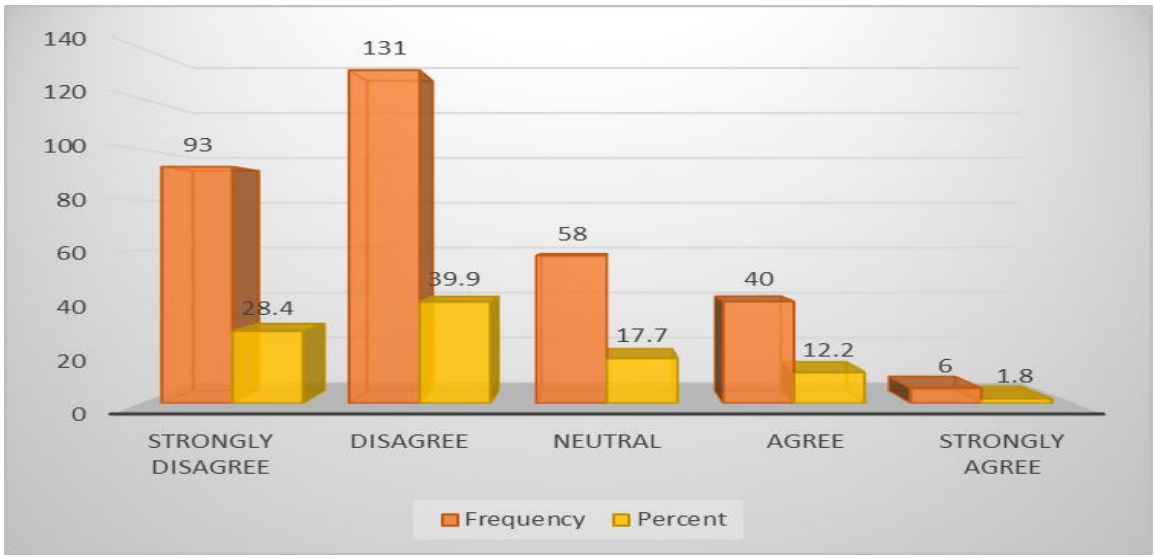

Figure 4.14
I regularly interact with FMCG brands in virtual spaces (e.g., metaverse, brand-sponsored VR/AR experiences).

According to Figure 4.14 show that the majority (39.9%) D with the statement that they regularly interact with FMCG brands in virtual spaces, followed by 28.4% who SD. A smaller portion, 17.7%, were N, while 12.2% A, and only 1.8% SA. This indicates limited engagement with FMCG brands in virtual spaces, such as the metaverse or VR/AR experiences.

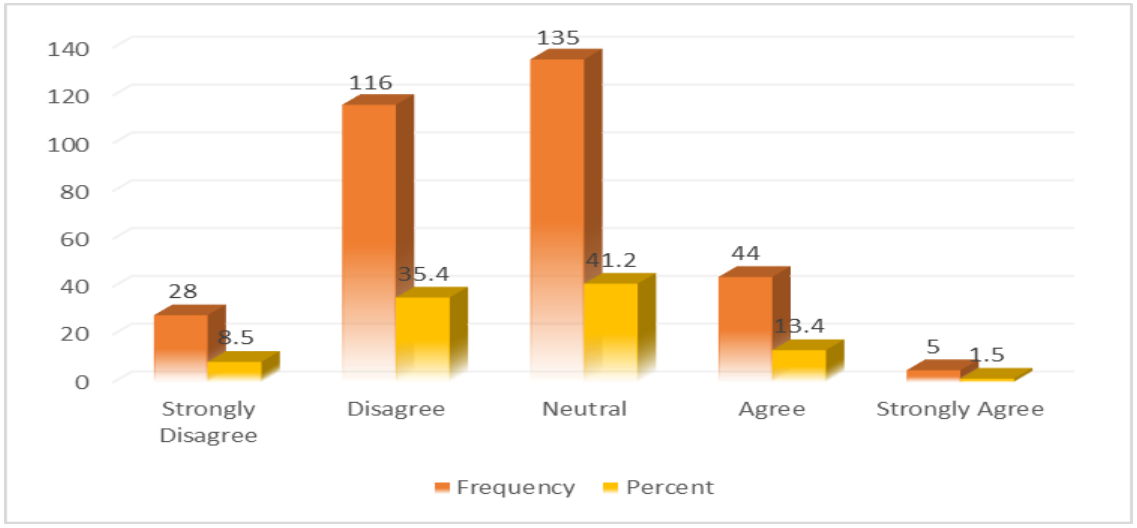

Figure 4.15
Virtual engagement with a brand increases my interest in its products.

Above the figure 4.15 a significant portion of respondents (41.2%) remained N on whether virtual engagement with a brand increases their interest in its products. At the same time, 35.4% of D and 8.5% of SD show general scepticism. Virtual involvement appears to have little impact on customer interest in items at the moment, with only 13.4% A and 1.5% SA.

Table 4.7
Quality of Experience

		SD	D	N	A	SA
The personalization of virtual brand experiences makes me more likely to trust the brand.	Frequency	19	68	129	98	14
	Percent	5.8	20.7	39.3	29.9	4.3
Interactive and immersive virtual brand experiences create a stronger emotional connection with the brand.	Frequency	21	79	103	107	18
	Percent	6.4	24.1	31.4	32.6	5.5

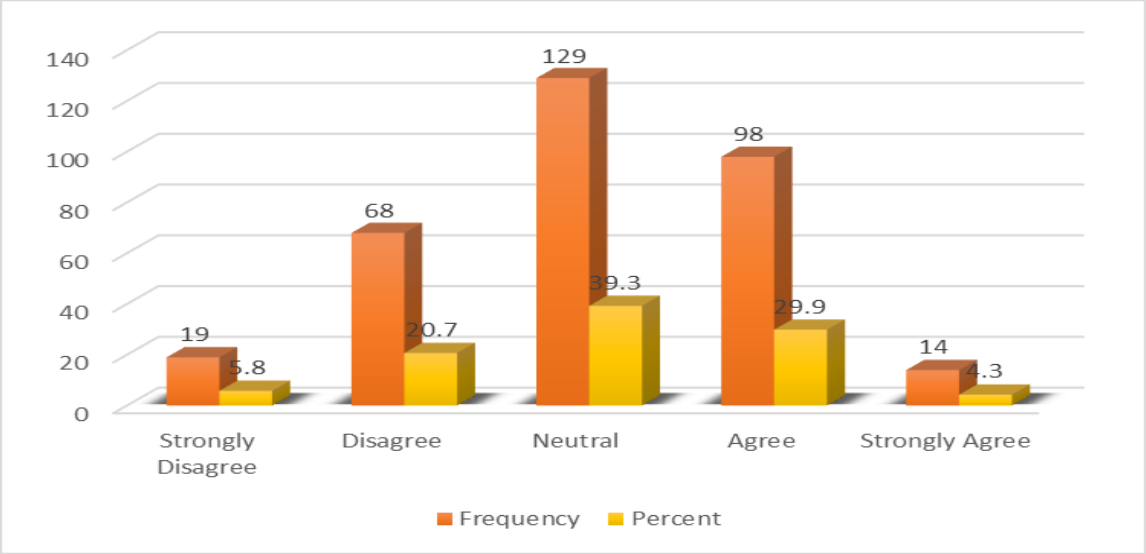

Figure 4.16
The personalization of virtual brand experiences makes me more likely to trust the brand.

The figure 4.16 indicates that among the 328 respondents, 39.3% were N on whether personalization of virtual brand experiences increases their trust in the brand. While 29.9% A and 4.3% SA, indicating some positive sentiment, 20.7% D and 5.8% SD. Overall, responses show mixed opinions, with a tendency toward neutrality and moderate agreement.

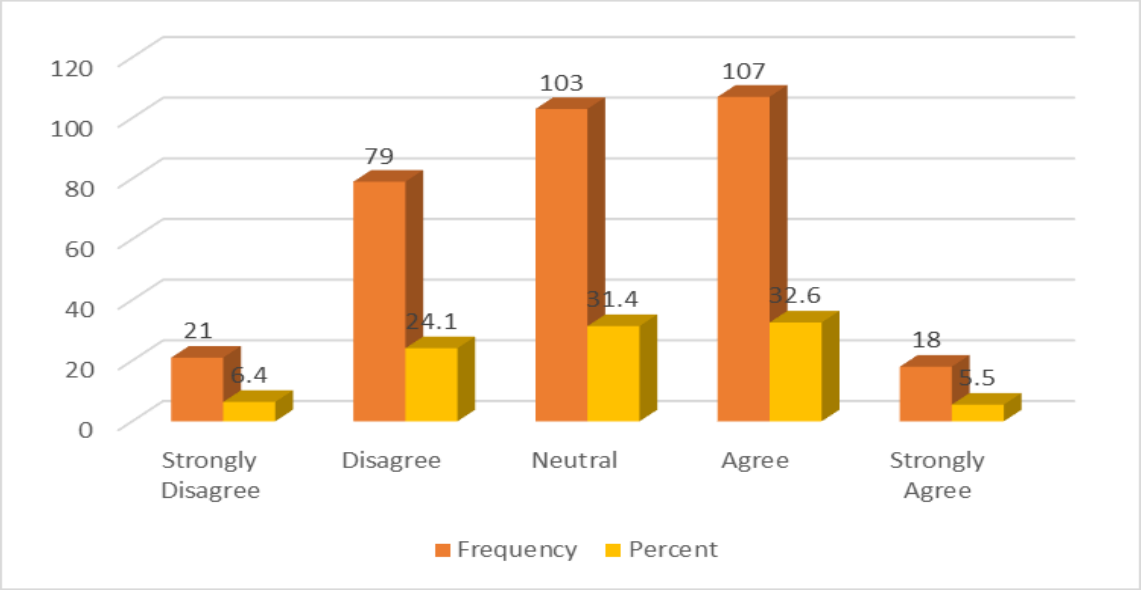

Figure 4.17
Interactive and immersive virtual brand experiences create a stronger emotional connection with the brand.

Figure 4.17 suggest that interactive and immersive virtual brand experience have a varied impact on emotional connection with the brand. While 38.1% of respondents A or SA that such experiences enhance their emotional bond with brand, 31.4% remain N. Meanwhile, 30.5% express disagreement. This indicates that although virtual experiences positively influence many consumers, a considerable segment remains indifferent or unconvinced about their emotional impact.

Table 4.8
Ownership of Virtual Goods

		SD	D	N	A	SA
I am more loyal to brands that provide digital assets (e.g., NFTs, loyalty tokens).	Frequency	31	88	97	71	41
	Percent	9.5	26.8	29.6	21.6	12.5
Owning virtual brand assets enhances my sense of belonging to the brand community.	Frequency	24	83	118	81	22
	Percent	7.3	25.3	36	24.7	6.7

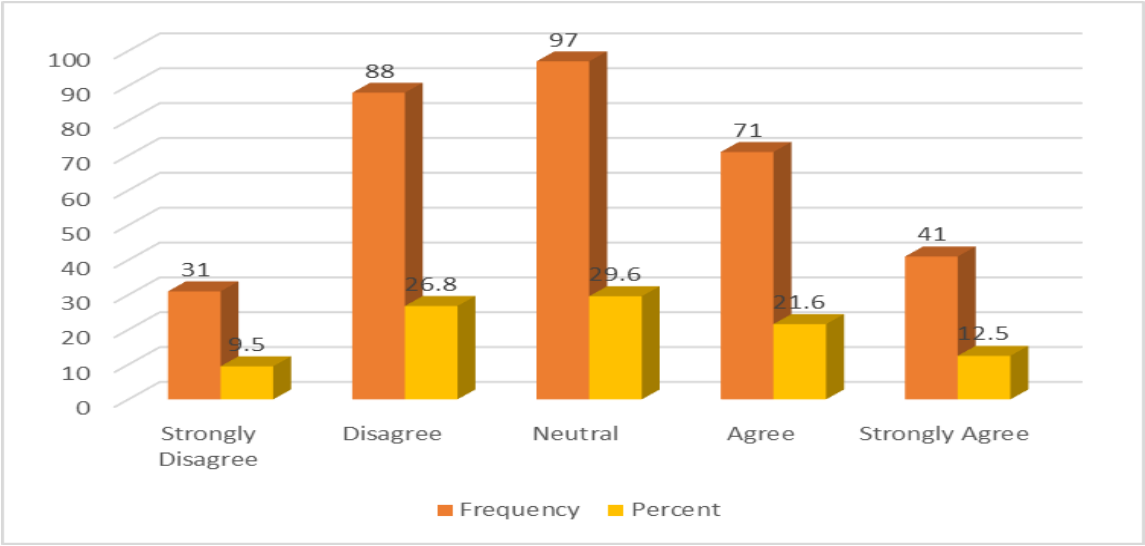

Figure 4.18
I am more loyal to brands that provide digital assets (e.g., NFTs, loyalty tokens).

Figure 4.18 indicates a mixed response toward brand loyalty driven by the provision of digital assets such as NFTs or loyalty tokens. While 36.3% of respondents D or SD, a slightly higher percentage (34.1%) either A or strongly that such offerings enhance their loyalty. Meanwhile, 29.6% remain N. This reflects a divided consumer perspective, with digital assets appealing to some while others remain unconvinced or indifferent.

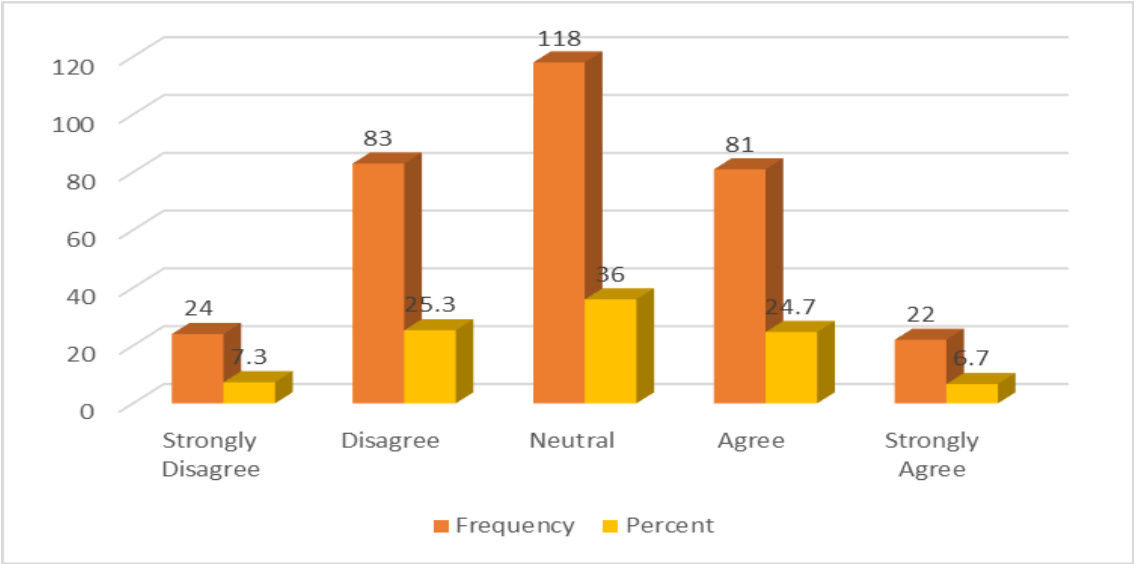

Figure 4.19
Owning virtual brand assets enhances my sense of belonging to the brand community.

The figure 4.19 suggests that owning virtual brand assets has a varied influence on consumers' sense of belonging to a brand community. While 31.4% of respondents A or SA that such ownership enhances their sense of belonging, a slightly higher 32.6% D or SD. Notably, 36% remain N, indicating that while virtual assets resonate with some consumers, many are either uncertain or unaffected by their impact on community connection.

Table 4.9
Social Connectivity

		SD	D	N	A	SA
I enjoy connecting with other consumers in virtual brand communities.	Frequency	31	92	118	62	25
	Percent	9.5	28	36	18.9	7.6
A brand's virtual presence helps build a stronger consumer network.	Frequency	25	98	106	76	23
	Percent	7.6	29.9	32.3	23.2	7

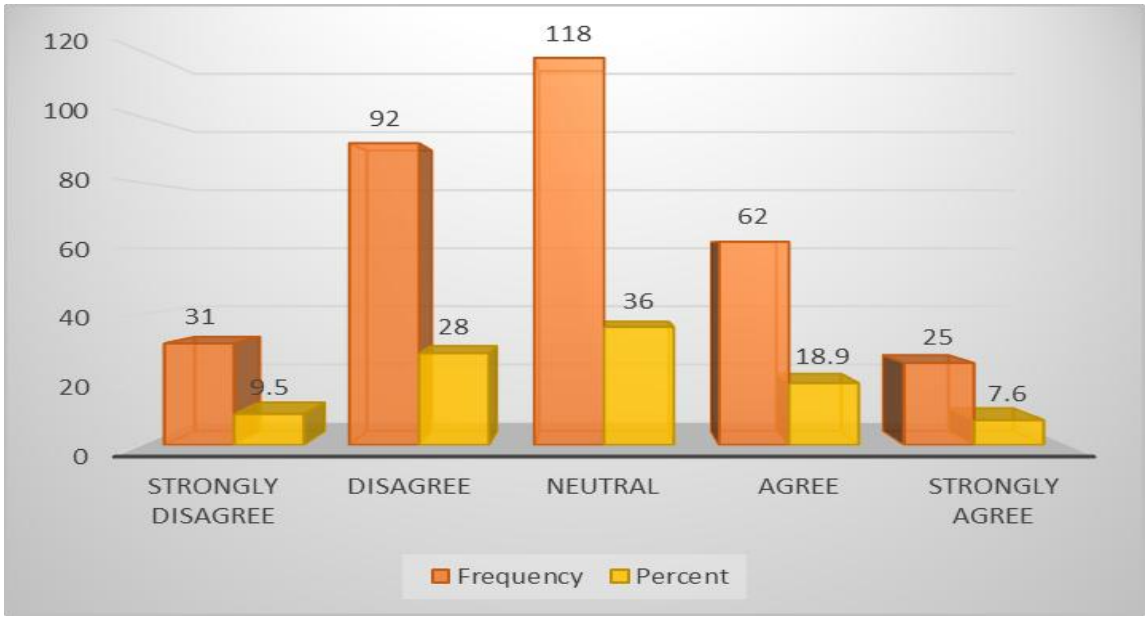

Figure 4.20
I enjoy connecting with other consumers in virtual brand communities.

According to figure 4.20 reveals that consumer sentiment toward engaging with others in virtual brand communities is relatively divided. While 26.5% of respondents express

enjoyment (18.9% A and 7.6% SA), a larger portion (37.5%) D or SD. Meanwhile, 36% remain N. This suggests that although a segment of consumers values virtual social interaction around brands, a significant number are either indifferent or do not find it particularly appealing.

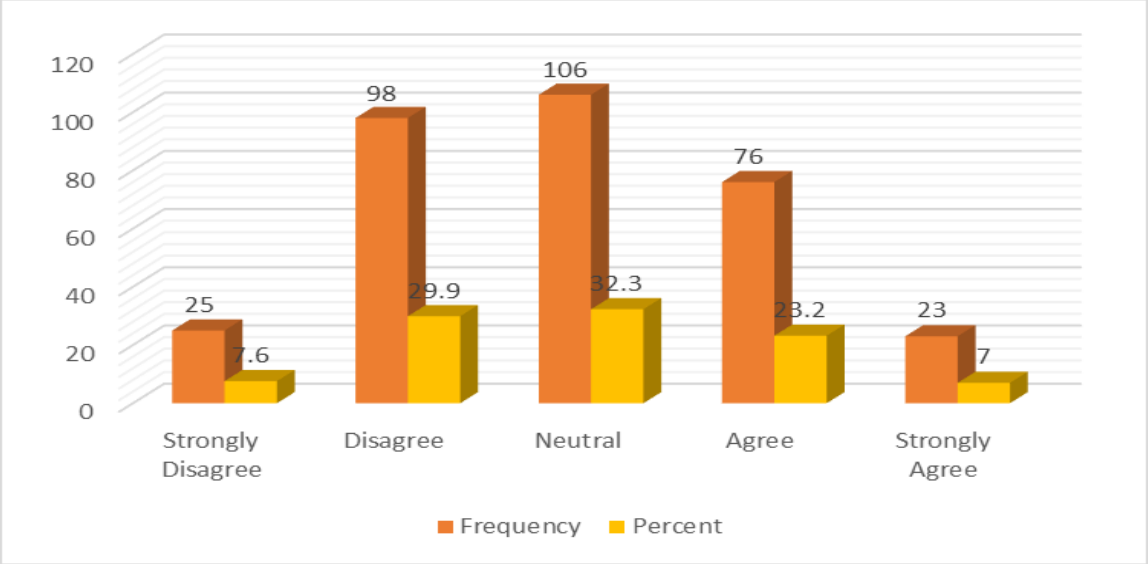

Figure 4.21
A brand's virtual presence helps build a stronger consumer network.

The figure 4.21 indicates that opinions are mixed on whether a brand's virtual presence strengthens the consumer network. While 30.2% of respondents A or SA with this idea, a larger share (37.5%) D or SD. Meanwhile, 32.3% remain N. Additionally, this suggests that while some consumers recognize the networking potential of a brand's virtual presence, many are either skeptical or unconvinced of its impact.

Table 4.10
Awareness of Blockchain Use

		SD	D	N	A	SA
I am aware that some FMCG brands use blockchain for transparency.	Frequency	89	132	55	41	11
	Percent	27.1	40.2	16.8	12.5	3.4
Brands that openly share their blockchain usage are more trustworthy.	Frequency	21	114	128	54	11
	Percent	6.4	34.8	39	16.5	3.4

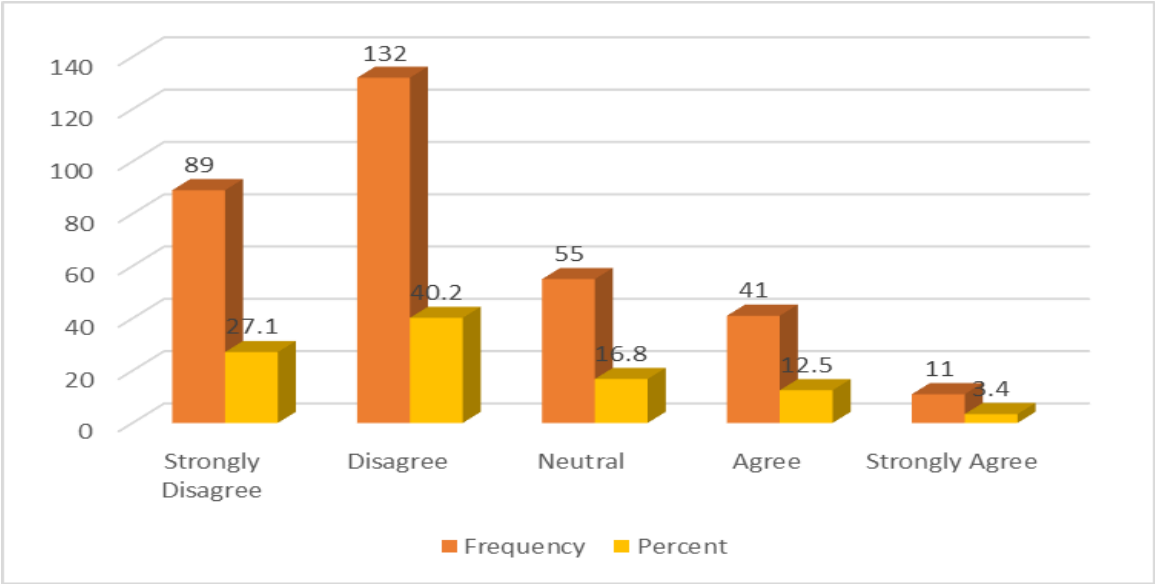

Figure 4.22
I am aware that some FMCG brands use blockchain for transparency.

According to Figure 4.22, the majority showed low awareness of blockchain use by FMCG brands for transparency, with 40.2% D and 27.1% SD. While 16.8% remained N, only 12.5% A and 3.4% SA. These results indicate limited public knowledge or exposure to BC applications in the FMCG sector.

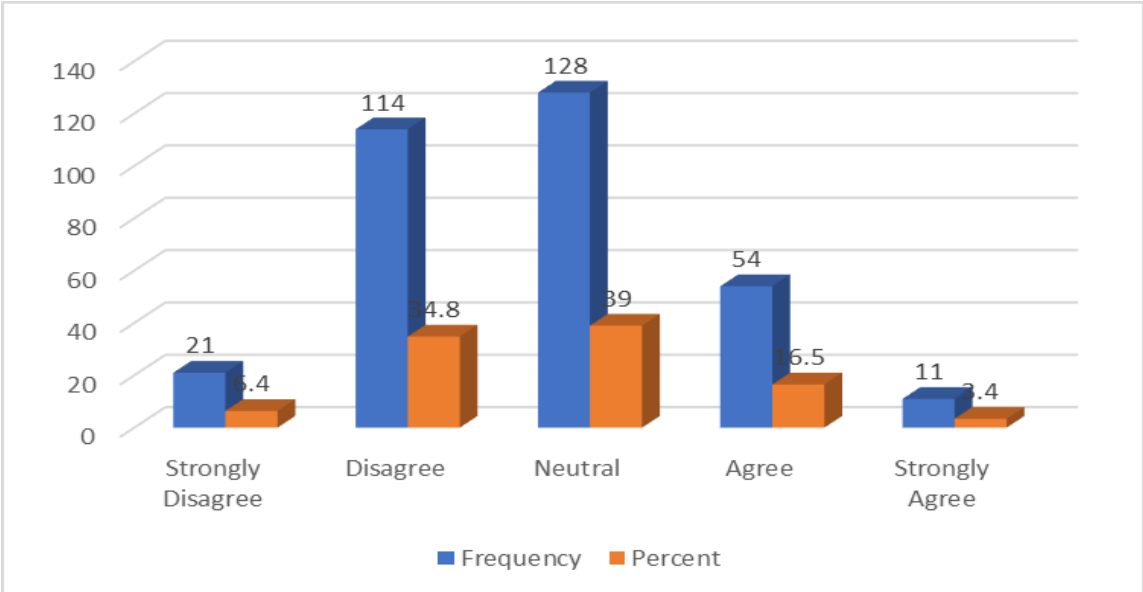

Figure 4.23
Brands that openly share their blockchain usage are more trustworthy.

Figure 4.23 shows that out of 328 respondents, 39.0% remained N on whether brands that openly share their blockchain usage are more trustworthy. A significant portion (34.8%) D, while 6.4% SD. On the other hand, 16.5% A and 3.4% SA, suggesting that while some see transparency through BC as trust-enhancing, overall trust impact remains uncertain for many.

Table 4.11
Perceived Verifiability

		SD	D	N	A	SA
I trust brands more when I can verify product authenticity using blockchain technology.	Frequency	24	73	129	87	15
	Percent	7.3	22.3	39.3	26.5	4.6
Blockchain makes it easier for me to validate a brand's claims.	Frequency	16	90	103	103	16
	Percent	4.9	27.4	31.4	31.4	4.9

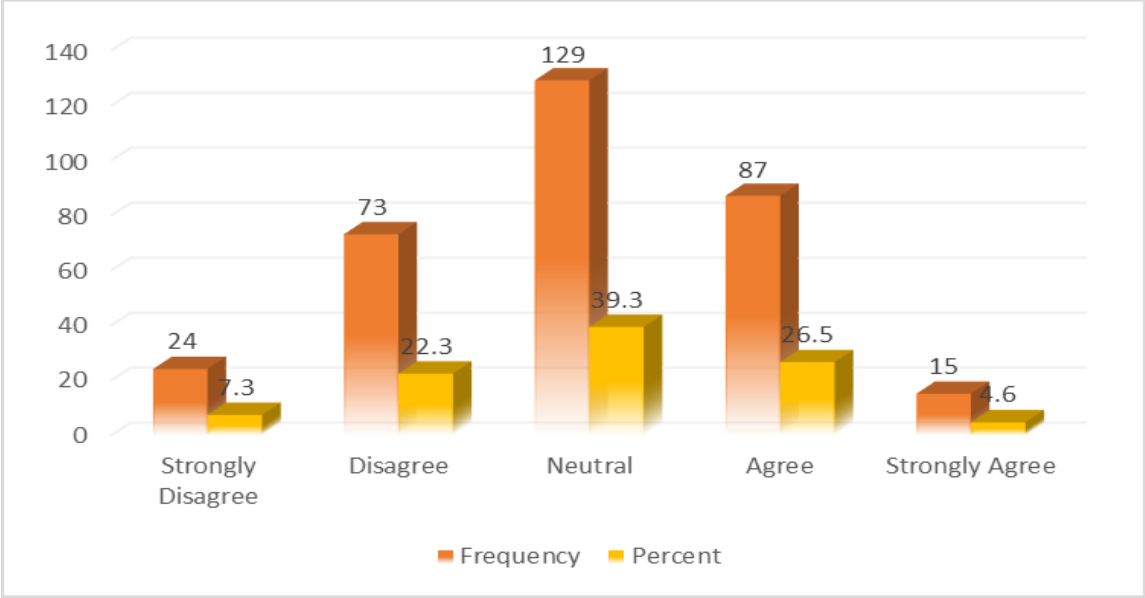

Figure 4.24
I trust brands more when I can verify product authenticity using blockchain technology.

Figure 4.24 shows that consumer trust in brands through blockchain-based product authenticity verification is somewhat varied. While 31.1% of respondents A or SA that such verification increases their trust, a larger portion (39.3%) remain N. Meanwhile, 29.6% D or SD. This indicates that although BC has the potential to enhance trust, many

consumers are either indifferent or not yet fully influenced by its application in product verification.

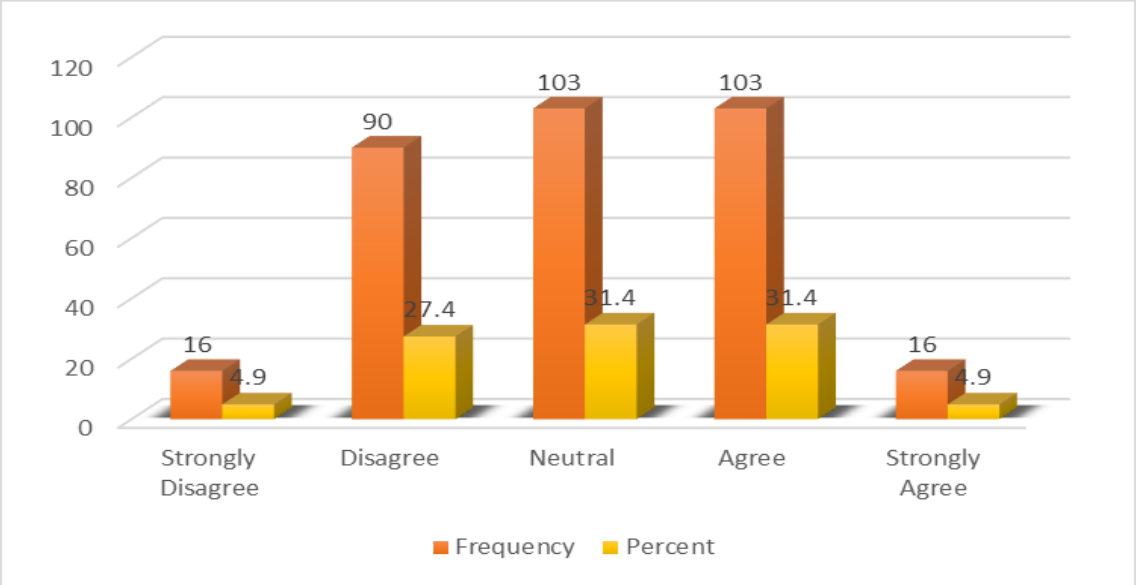

Figure 4.25
Blockchain makes it easier for me to validate a brand's claims.

According to Figure 4.25, indicates that a divided opinion on whether blockchain makes it easier to validate a brand's claims. While 31.4% A and another 31.4% remained N, 27.4% D and 4.9% SD. A small portion (4.9%) SA, suggesting that while BC offers potential for verification, its impact is not universally recognized.

Table 4.12
Accountability

		SD	D	N	A	SA
Blockchain technology ensures that brands are more accountable for their actions.	Frequency	18	75	106	70	59
	Percent	5.5	22.9	32.3	21.3	18
I feel more secure purchasing from a brand that integrates blockchain for fraud prevention.	Frequency	25	75	131	75	22
	Percent	7.6	22.9	39.9	22.9	6.7

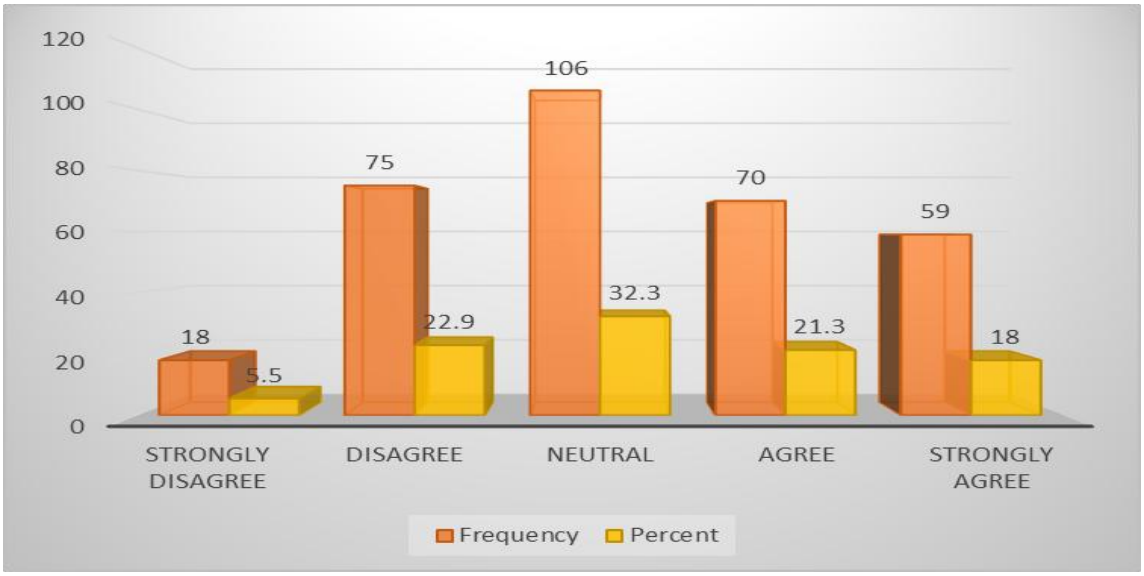

Figure 4.26
Blockchain technology ensures that brands are more accountable for their actions.

The above Figure 4.26 displays that a majority (32.3%) were N about whether blockchain technology ensures brands are more accountable for their actions. However, 22.9% D and 5.5% SD, indicating some skepticism. On the positive side, 21.3% A and 18.0% SA, suggesting that BC is seen as a potential tool for increasing brand accountability.

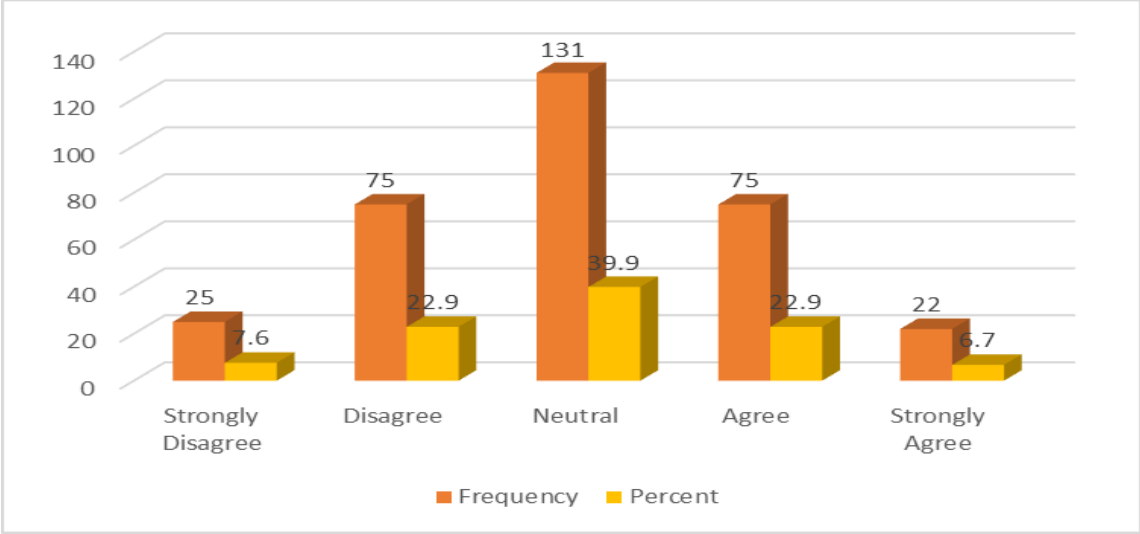

Figure 4.27
I feel more secure purchasing from a brand that integrates blockchain for fraud prevention.

Figure 4.27 suggests that consumer sentiment towards purchasing from brands that use blockchain for fraud prevention is divided. While 29.6% of respondents A or SA that BC integration increases their sense of security, a similar 30.5% D or SD. Additionally, 39.9% remain N, indicating that while BC has potential to enhance perceived security for some consumers, many are either unconvinced or indifferent to its role in fraud prevention.

Table 4.13
Security

		SD	D	N	A	SA
I believe blockchain enhances the security of my personal data in brand transactions.	Frequency	18	107	114	70	19
	Percent	5.5	32.6	34.8	21.3	5.8
I feel safer engaging with brands that use blockchain for secure transactions.	Frequency	26	75	113	93	21
	Percent	7.9	22.9	34.5	28.4	6.4

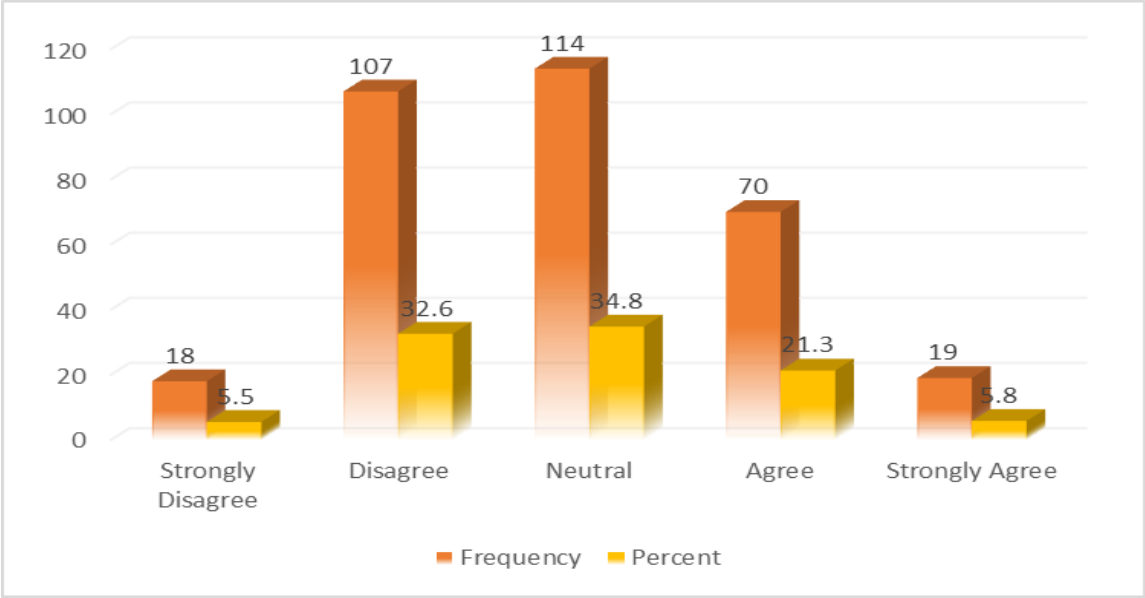

Figure 4.28
I believe blockchain enhances the security of my personal data in brand transactions.

In Figure 4.28, a majority of respondents (34.8%) were N about whether blockchain enhances the security of their personal data in brand transactions. While 32.6% D and 5.5% SD, 21.3% A and 5.8% SA, suggesting that while BC is viewed positively by some in terms

of security, many remain uncertain or skeptical about its impact on personal data protection.

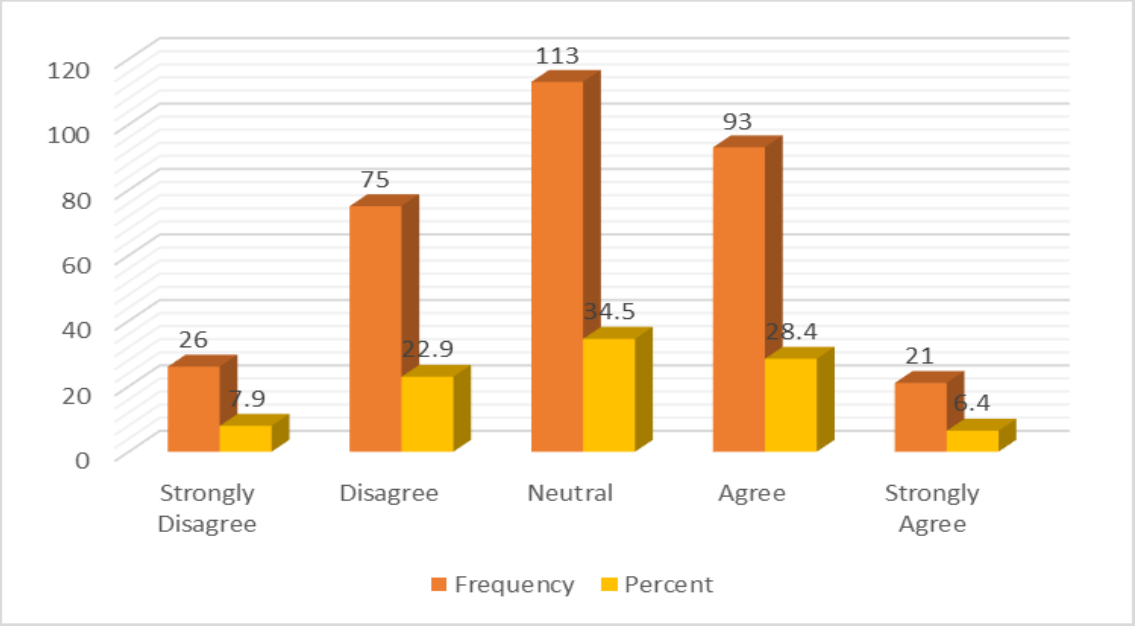

Figure 4.29
I feel safer engaging with brands that use blockchain for secure transactions.

Above Figure 4.29, a significant portion of respondents (34.5%) were N about feeling safer engaging with brands that use blockchain for secure transactions. Meanwhile, 22.9% D and 7.9% SD. On the positive side, 28.4% A and 6.4% SA, indicating that while many respondents see BC as enhancing security, others remain uncertain or unconvinced.

Table 4.14
Tangible Benefits

		SD	D	N	A	SA
Brands that offer Web 3.0-based rewards (e.g., tokens, NFTs, discounts) provide better value.	Frequency	81	124	69	40	14
	Percent	24.7	37.8	21	12.2	4.3
Ownership of digital assets increases my engagement with the brand.	Frequency	30	105	121	59	13
	Percent	9.1	32	36.9	18	4

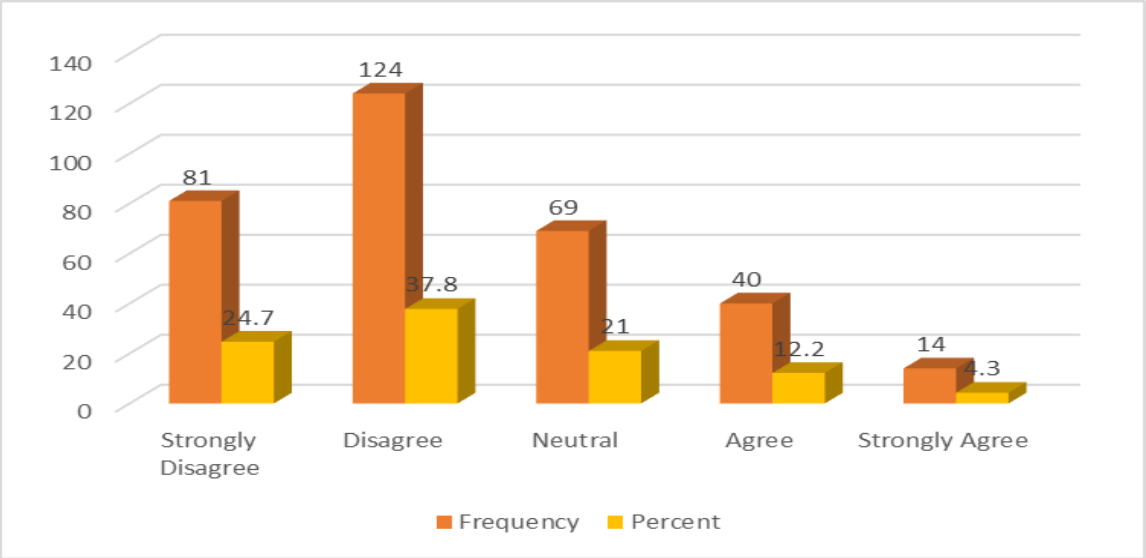

Figure 4.30
Brands that offer Web 3.0-based rewards (e.g., tokens, NFTs, discounts) provide better value.

According to Figure 4.30, a majority, 37.8% D, and 24.7% SD, with the idea that brands offering Web 3.0-based rewards provide better value. Meanwhile, 21.0% were N, and only 12.2% A, with 4.3% SA. This suggests that Web 3.0-based rewards, such as tokens or NETs, are not widely perceived as offering additional value by most respondents.

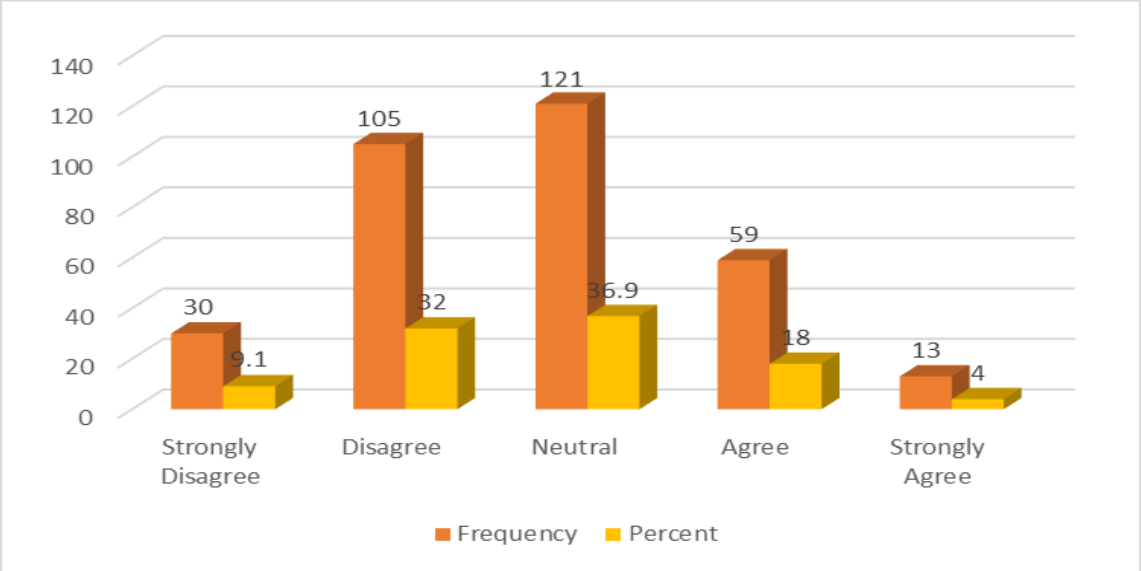

Figure 4.31
Ownership of digital assets increases my engagement with the brand.

Figure 4.31 indicates that ownership of digital assets has a mixed effect on brand engagement. While 22% of respondents A or SA that owning digital assets increases their engagement, a larger portion (41.1%) D or SD. Additionally, 36.9% remain N. This suggests that while some consumers find digital asset ownership motivating, many are either indifferent or do not feel it enhances their connection with the brand.

Table 4.15
Intangible Benefits

		SD	D	N	A	SA
Virtual brand interactions create a stronger emotional connection with the brand.	Frequency	21	70	124	102	11
	Percent	6.4	21.3	37.8	31.1	3.4
Web 3.0 engagements help me feel more aligned with a brand's vision and values.	Frequency	20	78	107	99	24
	Percent	6.1	23.8	32.6	30.2	7.3

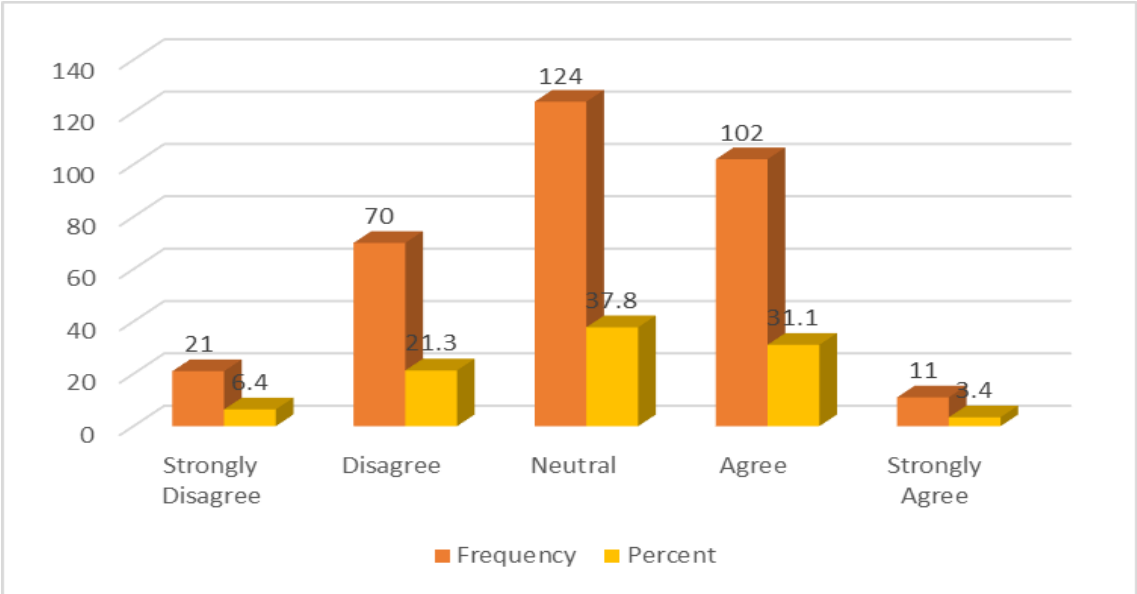

Figure 4.32
Virtual brand interactions create a stronger emotional connection with the brand.

Figure 4.32 shows that virtual brand interactions have a moderate impact on emotional connection with the brand. While 34.5% of respondents A or SA that virtual interactions strengthen this connection, a larger group (37.8%) remains N. Additionally, 27.7% D or

SD, suggesting that while virtual interactions resonate with some consumers, many are either indifferent or do not perceive them as enhancing their emotional bond with the brand.

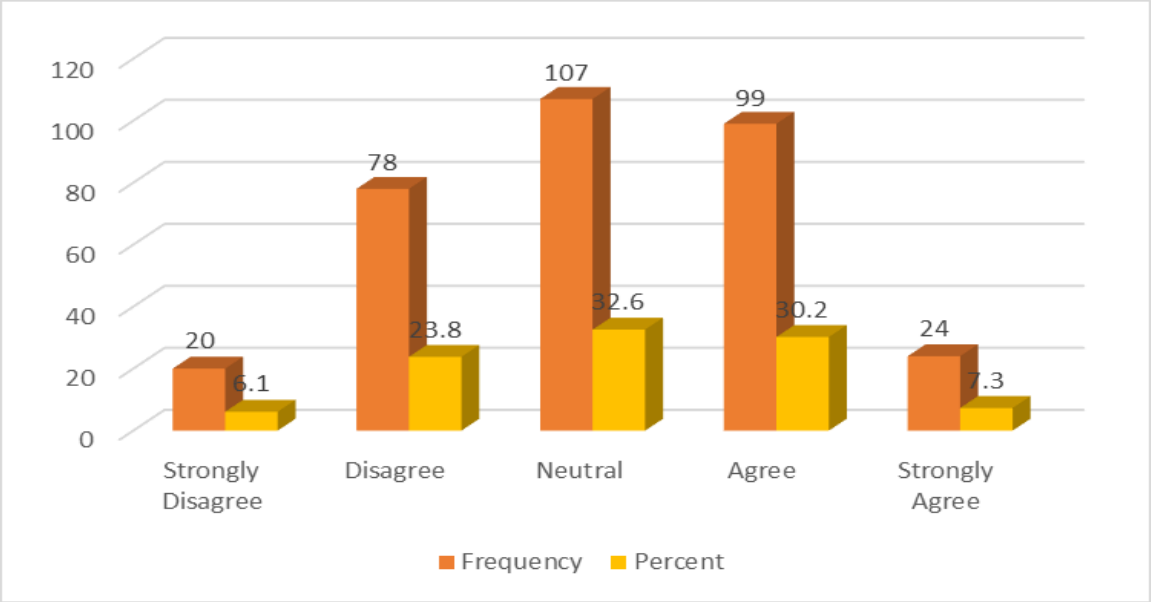

Figure 4.33
Web 3.0 engagements help me feel more aligned with a brand's vision and values.

According to Figure 4.33 a mixed perception of Web 3.0 engagements in aligning consumers with a brand's vision and values. While 32.6% were N, 23.8% D and 6.1% SD. On the positive side, 30.2% A and 7.3% SA, suggesting that Web 3.0 engagements have some influence but are not universally seen as aligning customers with brand values.

Table 4.16
Cost-Benefit Ratio

		SD	D	N	A	SA
The benefits of engaging with a brand's Web 3.0 initiatives outweigh the effort required.	Frequency	25	81	106	68	48
	Percent	7.6	24.7	32.3	20.7	14.6
I am willing to invest time and money into a brand's decentralized engagement initiatives if I see value in them.	Frequency	25	86	117	85	15
	Percent	7.6	26.2	35.7	25.9	4.6

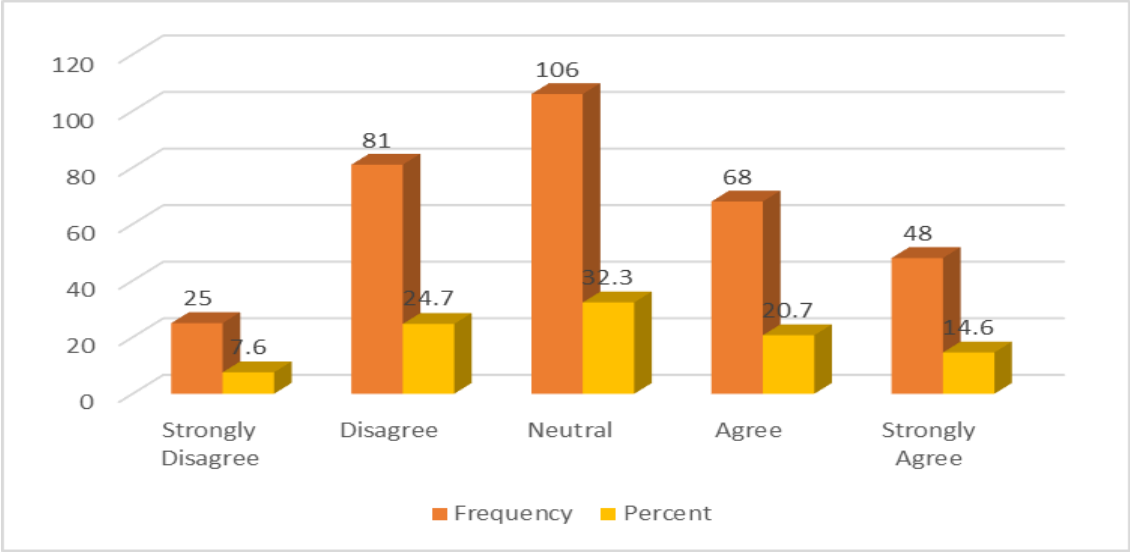

Figure 4.34
The benefits of engaging with a brand's Web 3.0 initiatives outweigh the effort required.

Figure 4.34 indicates that a divided opinion on whether the benefits of engaging with a brand's Web 3.0 initiatives outweigh the effort required. While 32.3% were N, 24.7% D and 7.6% SD. On the positive side, 20.7% A and 14.6% SA, suggesting that while some see value in Web 3.0 initiatives, others feel the effort may not justify the benefits.

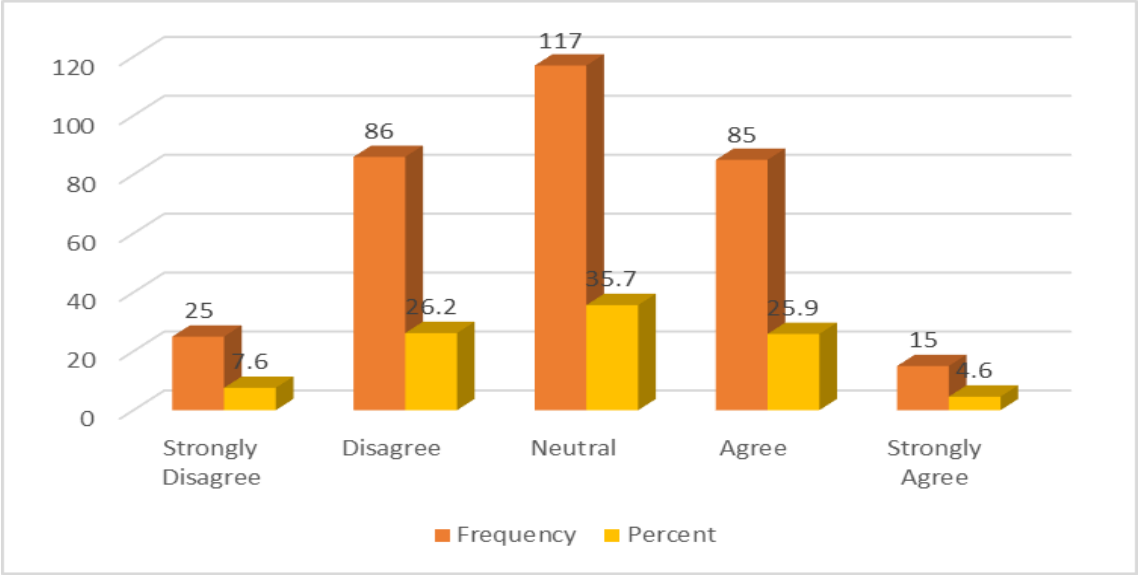

Figure 4.35
I am willing to invest time and money into a brand's decentralized engagement initiatives if I see value in them.

Figure 4.35 shows that a divided view on investing time and money into a brand's decentralized engagement initiatives. While 30.5% of participants A or SA if they perceive value, 33.8% D or SD. A significant 35.7% remain N, suggesting uncertainty or cautious consideration toward such initiatives among a large portion of consumers.

Table 4.17
Long-Term Value

		SD	D	N	A	SA
I believe that brands using Web 3.0 will continue to provide long-term value to their consumers.	Frequency	26	88	110	84	20
	Percent	7.9	26.8	33.5	25.6	6.1
My trust in an FMCG brand increases if I see its Web 3.0 strategy as future-proof.	Frequency	38	88	96	76	30
	Percent	11.6	26.8	29.3	23.2	9.1

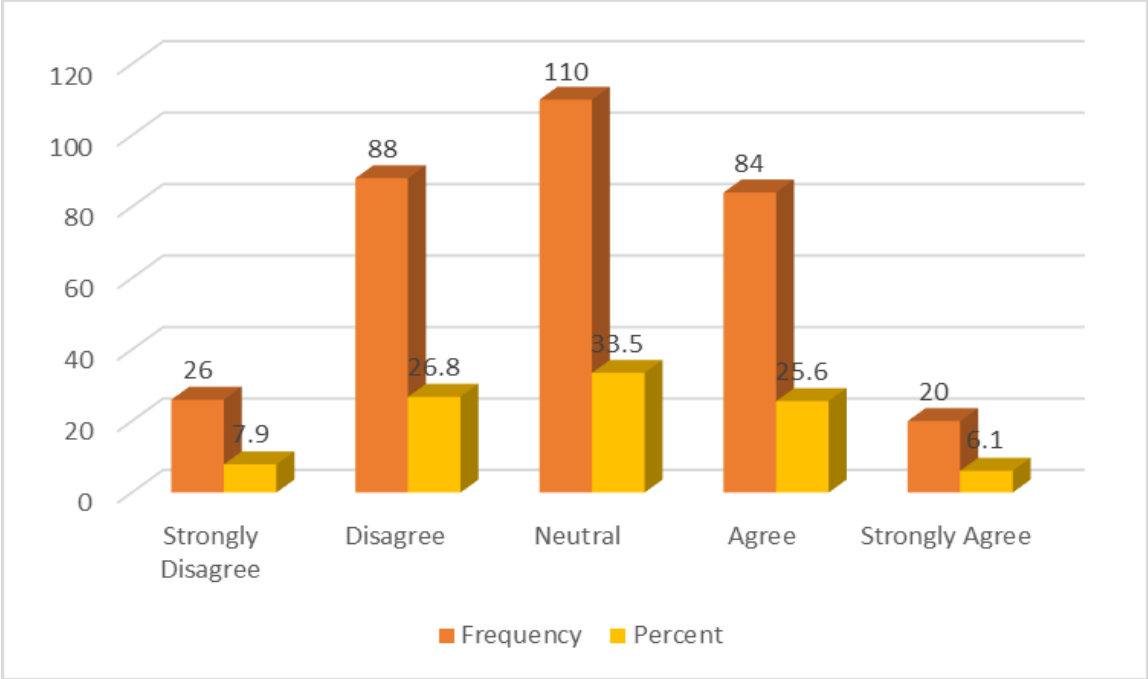

Figure 4.36
I believe that brands using Web 3.0 will continue to provide long-term value to their consumers

According to figure 4.36 reveals a fairly balanced perception regarding the long-term value of brands using Web 3.0 technologies. While 31.7% of respondents A or SA that such

brands will offer lasting value, a slightly larger segment (34.7%) D or SD. With 33.5% remaining N, it suggests that many consumers are still uncertain or forming opinions about the future impact of Web 3.0 in branding.

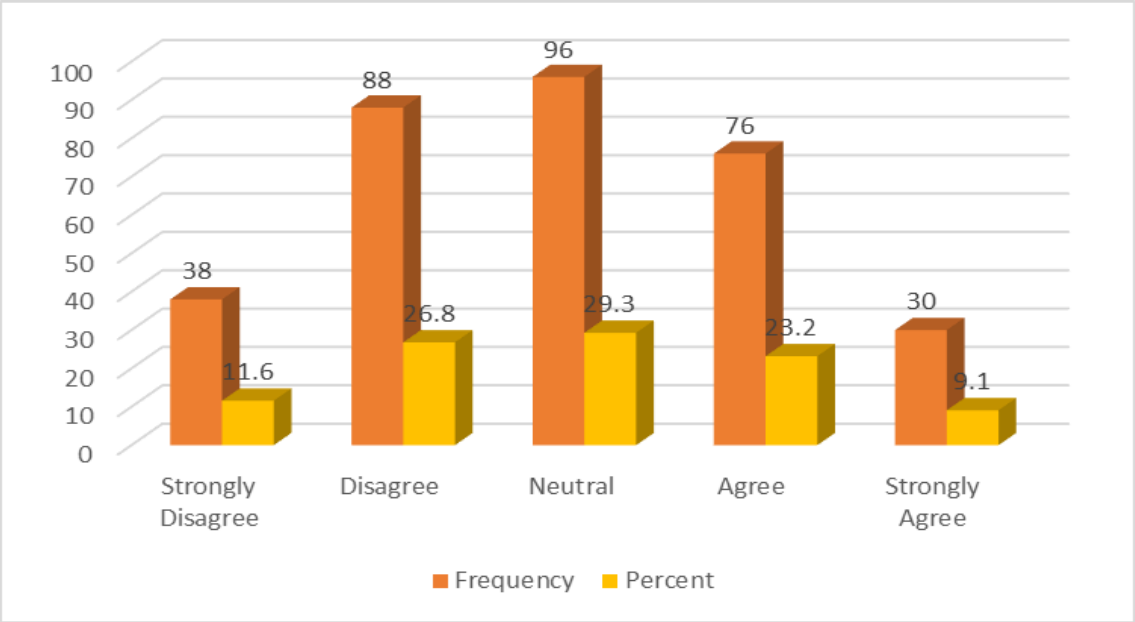

Figure 4.37
My trust in an FMCG brand increases if I see its Web 3.0 strategy as future-proof.

Figure 4.37 shows that a varied perception of trust in FMCG brands is based on their Web 3.0 strategies. While 29.3% of respondents remained N, 26.8% D and 11.6% SD that a future-proof Web 3.0 strategy increases trust. Conversely, 23.2% A and 9.1% SA, indicating a moderate but not overwhelming association between Web 3.0 strategies and brand trust.

Table 4.18
Transparency

		SD	D	N	A	SA
I trust FMCG brands that provide transparent product and operational information.	Frequency	96	110	66	42	14
	Percent	29.3	33.5	20.1	12.8	4.3

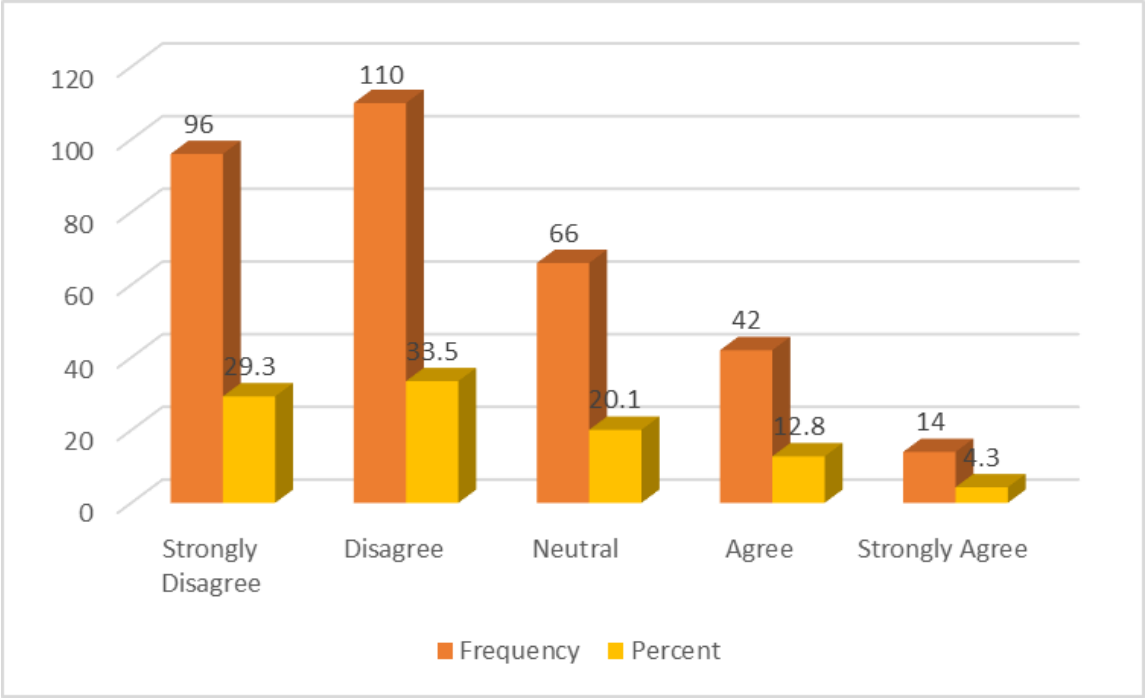

Figure 4.38
I trust FMCG brands that provide transparent product and operational information.

Figure 4.38 above indicates that skepticism among respondents regarding trust in FMCG brands that provide transparent product and operational information. A majority (33.5%) D and (29.3%) SD, suggesting that transparency alone may not be sufficient to build trust. Only 12.8% A and 4.3% SA, while 20.1% remained N, reflecting overall uncertainty or lack of conviction on this matter.

Table 4.19
Authenticity

		SD	D	N	A	SA
I perceive brands using Web 3.0 strategies as more authentic.	Frequency	18	123	120	59	8
	Percent	5.5	37.5	36.6	18	2.4

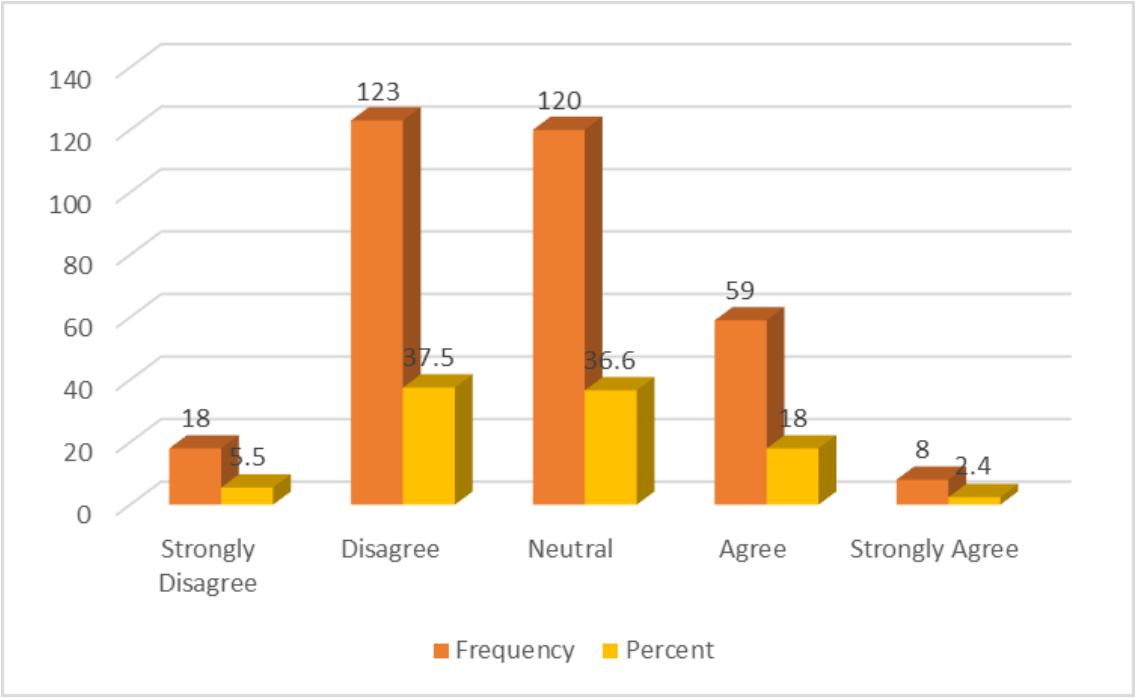

Figure 4.39 I
I perceive brands using Web 3.0 strategies as more authentic.

Figure 4.39 suggests that consumer perceptions of authenticity in brands using Web 3.0 strategies are generally cautious. While 20.4% A or SA that such brands appear more authentic, a significant 43% D or SD. Additionally, 36.6% remain N. This indicates that although a small group views Web 3.0 branding positively, the majority are either skeptical or undecided about its authenticity.

Table 4.20
Reliability

		SD	D	N	A	SA
I find brands that consistently deliver quality products more reliable.	Frequency	22	66	116	103	21
	Percent	6.7	20.1	35.4	31.4	6.4

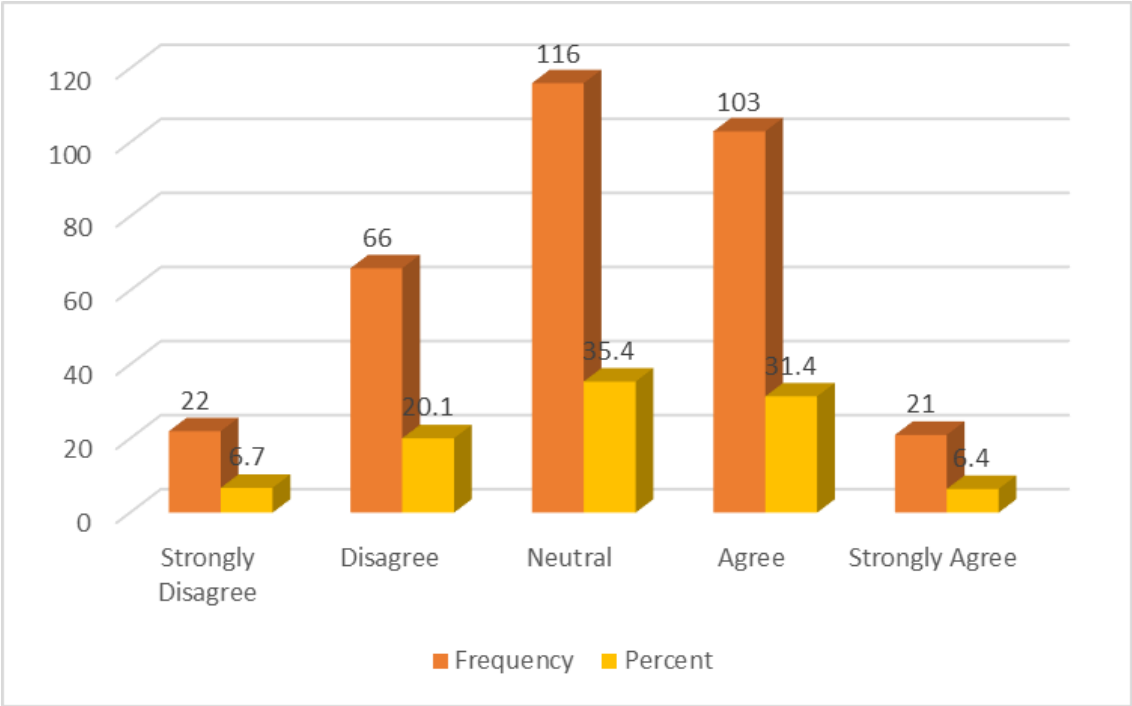

Figure 4.40
I find brands that consistently deliver quality products more reliable.

According to Figure 4.40 shows that consistent product quality plays a notable role in shaping brand reliability. A total of 37.8% of respondents A or SA that they find brands more reliable when they consistently deliver quality products. Meanwhile, 26.8% express disagreement, and 35.4% remain N. This suggests that while many value consistencies, a considerable portion either questions its influence or holds a N stance.

Table 4.21
Ethical Practices

		SD	D	N	A	SA
Ethical business practices increase my trust in an FMCG brand.	Frequency	29	96	85	86	32
	Percent	8.8	29.3	25.9	26.2	9.8

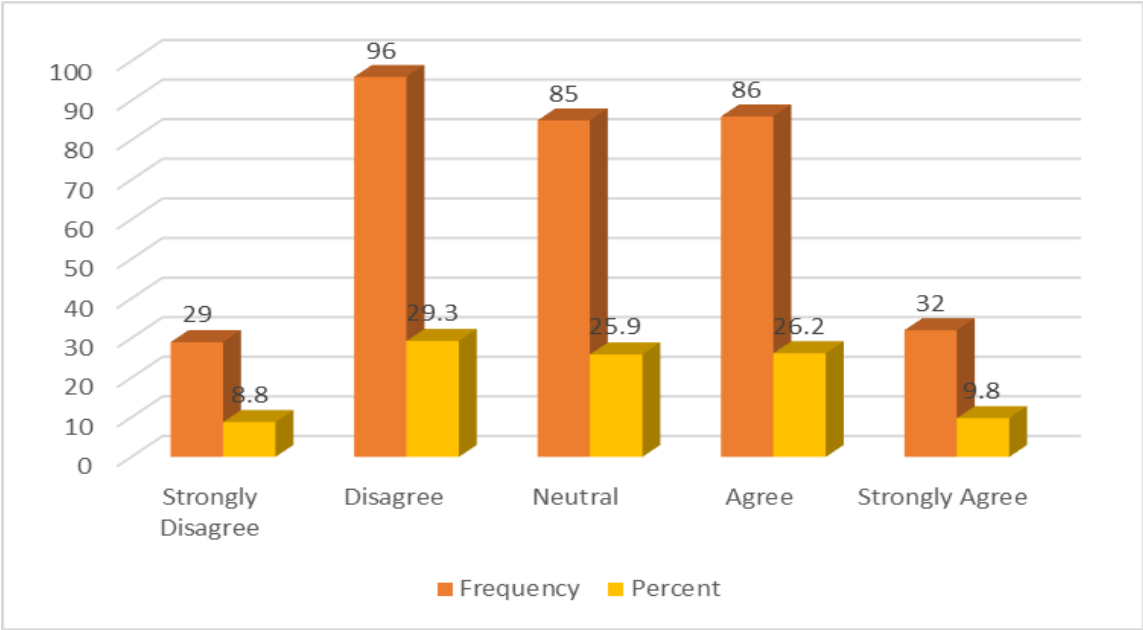

Figure 4.41
Ethical business practices increase my trust in an FMCG brand.

Figure 4.41 shows a fairly balanced distribution of opinions on whether ethical business practices increase trust in FMCG brands. While 29.3% D and 8.8% SD, a nearly equal portion (26.2%) A and (9.8%) SA, expressed positive sentiment. With 25.9% N responses, the findings suggest a divided perception on the trust-building impact of ethical conduct in FMCG.

4.3 Descriptive Analysis

Table 4.22
Descriptive Statistics

	N	Mean		Std. Deviation	Variance
	Statistic	Statistic	Std. Error	Statistic	Statistic
What is your age group?	328	2.43	.061	1.109	1.231
What is your gender?	328	1.67	.041	.738	.545
What is your highest level of education?	328	3.29	.073	1.326	1.759

Which region do you currently reside in?	328	4.32	.122	2.217	4.917
What is your current employment status?	328	2.79	.075	1.355	1.836
How frequently do you purchase FMCG products online?	328	2.88	.069	1.248	1.557
How familiar are you with Web 3.0 concepts such as blockchain, decentralized communities, and virtual engagements?	328	2.63	.065	1.169	1.366
Participation Level	328	2.7043	.04449	.80578	.649
Decision-Making Influence	328	3.2622	.04523	.81921	.671
Community Trust	328	3.2409	.04923	.89164	.795
Frequency of Interaction	328	2.7287	.04349	.78762	.620
Quality of Experience	328	3.3506	.04556	.82521	.681
Ownership of Virtual Goods	328	3.2774	.04978	.90150	.813
Social Connectivity	328	3.1768	.04648	.84184	.709
Awareness of Blockchain Use	328	2.8201	.04322	.78282	.613
Perceived Verifiability	328	3.2927	.04360	.78965	.624
Accountability	328	3.3628	.04589	.83102	.691
Security	328	3.2104	.04323	.78301	.613
Tangible Benefits	328	2.8537	.04456	.80703	.651
Intangible Benefits	328	3.3506	.04678	.84716	.718
Cost-Benefit Ratio	328	3.2774	.04996	.90488	.819
Long-Term Value	328	3.2012	.04757	.86155	.742
Brand Trust	328	3.0976	.03800	.68821	.474
Valid N (listwise)	328				

Descriptive data provide light on demographics, participants' level of awareness with Web 3.0 principles, and their opinions on many matters pertaining to the brand. For instance, the average score for "Brand Trust" (3.10) reflects moderate trust in FMCG brands, with a

relatively low standard deviation (0.47), suggesting consistent responses across participants. "Accountability" and "Quality of Experience" have higher mean scores (3.36 and 3.35), indicating a strong belief that brands should demonstrate transparency and provide a good experience. "Participation Level" (2.70) and "Decision-Making Influence" (3.26) point to moderate engagement and impact of Web 3.0 initiatives in influencing consumer behavior. With higher variability in "Tangible Benefits" (1.56) and "Tangible Benefits" (1.57), respondents show diverse opinions about the perceived value of such initiatives. The spread in the data across multiple variables suggests that opinions on Web 3.0 adoption, BC's role in FMCG, and engagement strategies differ significantly. However, overall, the data indicates a increasing recognition of the benefits and potential of Web 3.0 technologies, with a noticeable trend of increasing value placed on transparency, accountability, and long-term brand trust.

Hypothesis 1:

- **H0** There is no significant relationship between decentralized communities and brand trust in FMCG brands.
- **H1** There is a significant relationship between decentralized communities and brand trust in FMCG brands.

Table 4.23
Correlation Analysis

			Decentralized Communities	Brand Trust
Spearman's rho	Decentralized Communities	Correlation Coefficient	1.000	.356**
		Sig. (2-tailed)	.	.000
		N	328	328
	Brand Trust	Correlation Coefficient	.356**	1.000
		Sig. (2-tailed)	.000	.
		N	328	328
**. Correlation is significant at the 0.01 level (2-tailed).				

According to Spearman's rho correlation analysis, there is a slight positive link (r = 0.356) between decentralized communities and brand trust in FMCG brands. At p = 0.000, the level of significance is lower than the 0.01 cutoff. A statistically significant correlation exists between the two variables, according to this. As a result, the null hypothesis (H_0), according to which decentralized communities and brand trust do not significantly correlate, is disproved. The acceptance of the alternative hypothesis (H_1) demonstrates that decentralized communities have a favorable influence on brand trust. Customers' trust in FMCG brands tends to rise in tandem with their level of engagement in decentralized communities.

Hypothesis 2:

- **H0** There is no significant effect of virtual engagements on brand trust in FMCG brands.
- **H2** There is a significant effect of virtual engagements on brand trust in FMCG brands.

Table 4.24
Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	79.993			
Final	57.584	22.408	1	.000

The model with predictors performed far better than the one with only intercepts, as seen in the table with the data for fitting the model. Take a look at the data; the -2 Log Likelihood dropped from 79.993 to 57.584 and the Chi-Square value was 22.408 (df = 1, p <.001). It seems like the final model matches the data really well. Incorporating the predictor into the logistic regression model appears to substantially increase its explanatory power.

Table 4.25
Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	46.431	15	.000
Deviance	20.117	15	.167

The table displays the results of the goodness-of-fit tests, which are mixed. The significant results of the Pearson Chi-Square test ($\chi^2 = 46.431$, df = 15, $p < .001$) suggest that there may be a fit issue. The non-significant Deviance Chi-Square test ($\chi^2 = 20.117$, df = 15, $p = .167$) indicates a decent model fit. Given that logistic regression usually gives the nod to the Deviance test, we may say that the model fits the data rather well.

Table 4.26
Pseudo R-Square

Cox and Snell	.066
Nagelkerke	.076
McFadden	.033

The pseudo-R-squared values show that the model has a modest ability to explain. The R2 values for McFadden, Cox, and Snell are 0.033, 0.066, and 0.076, respectively, although Nagelkerke's is slightly higher. In logistic regression, these numbers indicate that the model only partially accounts for the dependent variable's variance, which is common, especially when there is just one predictor. The model still achieves statistically significant performance improvements over the null model.

Table 4.27
Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[BT2 = 1.00]	-2.881	1.139	6.403	1	.011	-5.113	-.650

	[BT2 = 2.00]	1.257	.614	4.195	1	.041	.054	2.461
	[BT2 = 3.00]	4.407	.667	43.642	1	.000	3.100	5.715
	[BT2 = 4.00]	6.558	.737	79.106	1	.000	5.113	8.004
Location	VE	.942	.193	23.785	1	.000	.564	1.321
Link function: Logit.								

According to the parameter estimates from the ordinal logistic regression, virtual engagement (VE) considerably raises brand trust in FMCG companies, with a p-value of 0.000, a standard error of 0.193, and an estimate of 0.942. Additional evidence of significance is provided by the fact that the effect's 95% confidence interval does not include zero and ranges from 0.564 to 1.321. So, instead of holding that virtual engagement does not have any noticeable effect on brand trust, the study supports the alternative hypothesis (H_2) and rejects the null hypothesis (H_0). This implies that among FMCG customers, greater virtual involvement greatly raises brand confidence.

Hypothesis 3:

- **H0** There is no significant impact of blockchain transparency on consumer trust in FMCG brands.
- **H3** There is a significant impact of blockchain transparency on consumer trust in FMCG brands.

Table 4.28
Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	80.062			
Final	55.922	24.139	1	.000

Model fitting data reveals a considerable enhancement over an intercept-only model in the finished product. A Chi-Square value of 24.139 with 1 df was obtained when the -2 Log Likelihood decreased from 80.062 to 55.922 at a significance level of p <.001. This indicates that the addition of the predictor substantially enhances the model's ability to explain the outcome, demonstrating that the logistic regression function provides a good fit to the data.

Table 4.29
Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	63.277	15	.000
Deviance	20.301	15	.161

The goodness-of-fit results show that the Pearson Chi-Square test is significant (χ^2 = 63.277, df = 15, p < .001), suggesting some potential misfit of the model. However, The Deviance Chi-Square test shows that the model fits the data quite well, as it is not significant (χ^2 = 20.301, df = 15, p =.161). Despite the Pearson test's result, the model can be regarded as having a sufficient fit because the Deviance test is typically thought to be more reliable in logistic regression.

Table 4.30
Pseudo R-Square

Cox and Snell	.071
Nagelkerke	.082
McFadden	.036

The pseudo-R-squared values demonstrate that the model explains a little fraction of the overall outcome variance. R^2 values vary across the three variables; for example, Nagelkerke has 0.082, McFadden has 0.036, and Cox and Snell have 0.071. Despite the model's explanatory capacity, these numbers demonstrate that it fails to account for a

substantial portion of the variance. Although the effect size is minor, the data nevertheless demonstrate that the model outperforms the null model.

Table 4.31
Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[BT2 = 1.00]	-2.537	1.169	4.712	1	.030	-4.828	-.246
	[BT2 = 2.00]	1.571	.655	5.749	1	.016	.287	2.855
	[BT2 = 3.00]	4.733	.710	44.419	1	.000	3.341	6.125
	[BT2 = 4.00]	6.921	.783	78.098	1	.000	5.386	8.456
Location	BT1	1.044	.205	25.845	1	.000	.642	1.447
Link function: Logit.								

The findings of the ordinal logistic regression demonstrate that consumers have more faith in brands of FMCG when blockchain transparency (BT1) is present. The p-value is 0.000, the standard error is 0.205, and the estimate is 1.044. The 95% confidence interval ranges from 0.642 to 1.447, indicating a positive and statistically significant effect. This study rejects the null hypothesis (H_0), which claims that there is no correlation between blockchain transparency and consumer trust, because the p-value is much smaller than the 0.05 significance level. By confirming that greater BC openness greatly increases customer trust in FMCG brands, the study supports the alternative hypothesis (H_3).

Hypothesis 4:

- **H0** There is no significant relationship between consumer-perceived value of Web 3.0 engagement and brand trust in FMCG brands.
- **H4** There is a significant relationship between consumer-perceived value of Web 3.0 engagement and brand trust in FMCG brands.

Table 4.32
Correlations Analysis

			Brand Trust	Consumer Perceived Value
Spearman's rho	Brand Trust	Correlation Coefficient	1.000	.249**
		Sig. (2-tailed)	.	.000
		N	328	328
	Consumer Perceived Value	Correlation Coefficient	.249**	1.000
		Sig. (2-tailed)	.000	.
		N	328	328
**. Correlation is significant at the 0.01 level (2-tailed).				

The Spearman's rho correlation analysis found a small but positive link ($r = 0.249$) between customers' trust in FMCG enterprises and the perceived value of Web 3.0 interaction (p-value of 0.000, less than the 0.01 significance level). This proves that there is a statistically significant connection. The study's findings provide credence to H_4 and disprove H_0, the former of which states that the two variables are unrelated and that consumers do not trust brands. This implies that customers' trust in FMCG brands tends to rise, albeit slowly, as they see more value in Web 3.0 involvement.

4.4 Summary of Findings

This study finds that Web 3.0 branding strategies play a very important role in building trust among FMCG consumers. The contributors in the study were familiar with Web 3.0 concepts like BC and decentralized communities that play a key role in contemporary branding strategies. Consumers were highly valued in key aspects such as accountability, quality of experience and security, hence these factors were deemed important to the type of trust they have in brands. The research found that decentralized communities helped a lot in building brand trust. However, the more engaged people are with them, the stronger they are emotionally and cognitively related to the brand. Also, virtual engagements (immersive and interactive) increased brand trust significantly, as they demonstrate the strong impact of digital experiences in building consumer loyalty and a stronger sense of trust.

In addition to these results, blockchain transparency was identified as a critical factor in the trust that FMCG brand consumers have in the brands. The survey emphasizes that brands are under increasing pressure from the market to demonstrate that their procedures are transparent and verifiable. Blockchain technology, it was thought, offered a powerful tool to boost the confidence of consumers. Additionally, although brand trust showed a weaker correlation to perceived Web 3.0 engagements, results still indicate that consumers who place value in Web 3.0 engagements will trust brands at a higher level. Combined, these findings reveal that for FMCG brands to make lasting relationships with their consumers, decentralized technologies, transparent operations, and engaging with their consumers virtually are key in the new Web 3.0 environment. Alongside the development of Web 3.0, brands that adopt these technologies will be more prepared to create trust, loyalty, and advantage for the business.

4.5 Conclusion

In conclusion, this study shows how Web 3.0 has been a great branding strategy for the FMCG sector by building decentralized communities, engaging virtually, and being BC transparent. It is found that consumers perceive high value in factors such as accountability, security and quality of their interactions with brands, and virtual and decentralized engagements further improve these perceptions. It was also discovered that building consumer trust was about BC transparency, and that is because BC transparency gives verifiability and accountability. Overall results indicate that brands employing Web 3.0 technologies will possess mechanisms to improve consumer loyalty and trust, but with less immediate effect on how perceptions of the value of Web 3.0 engagements contribute to trust. This offers valuable insights to FMCG brands seeking to adjust to a changing digital world, and develop relationship with their consumers through innovative, trust driven practices.

CHAPTER V:

DISCUSSION

5.1 Discussion of Results

The results of this study reveal a growing but cautious consumer interest in the integration of decentralized communities and virtual engagements within Web 3.0 branding strategies in the FMCG sector (Olufemi-Phillips, Igwe, Ofodile, Eyo-Udo, & Adewale, 2024; Kshetri, 2022). While participation in decentralized brand communities remains low, with most respondents indicating limited engagement, Statistical analysis reveals a relatively positive correlation between decentralized communities and trust in brands (Santos, Cheung, Coelho, & Rita, 2022). This suggests that although the current adoption is limited, there exists a favorable perception among consumers who do engage, indicating potential for long-term trust-building through decentralization (Hinmikaiye, Adewale, & Aladenika, 2022).

The analysis of logistic regression indicated that virtual engagement, like immersive experiences and interactions in metaverse environments, has positively influenced brand trust to a great degree (Payal, Sharma, & Dwivedi, 2024). In this case, however, very little consumer impact serves to curb that impact. Instead, there exists an immense amount of neutrality or skepticism in responses. The respondents were mostly not sure about the value and emotional impact the virtual brand experiences, they into trigger a positive shift to consumer sentiment and loyalty to the brands (Lou, Jiao, & Koh, 2021).

Consumer trust was determined by the crucial determinant of BC transparency. Test results confirmed that there is an extremely high and statistically significant association between brand trust and the addition of blockchain-enabled transparency (van Dijk, 2021). Despite this, knowledge about BC among FMCG brands' awareness regarding its use is

limited. For brands using BC for transparency, it is not only an issue of them being able to implement the technology but also of how they communicate about using and the benefits of it wisely to build consumer trust (Norbu, Park, Wong, & Cui, 2024).

Further, the study found a weak but significant association between consumer-perceived value of Web 3.0 engagement and brand trust. Although consumers are still developing opinions on whether these technologies truly add value, those who do perceive benefits exhibit higher levels of trust (Yang & Battocchio, 2021). This emphasizes the importance of crafting value-driven digital experiences that are not only innovative but also clearly beneficial and relevant to the consumer's needs and expectations.

Overall, the data reflects a market in transition, where consumer trust is increasingly influenced by the principles of decentralization, transparency, and immersive engagement. While skepticism and neutrality dominate current sentiment, there is clear potential for growth (Martínez-López, Aguilar-Illescas, Molinillo, Anaya-Sánchez, Coca-Stefaniak, & Esteban-Millat, 2021). Brands that successfully demonstrate accountability, provide tangible benefits, and communicate the value of their Web 3.0 initiatives are more likely to foster deeper trust and long-term relationships with their consumers.

5.2 Discussion of Research Question One

Q1. What is the role of decentralized communities in fostering brand trust for FMCG brands?

Growing but complex role of the decentralized communities in enhancing the FMCG consumer's brand trust. The communities built on Web 3.0 technology, such as BC, enable the consumers to directly connect with brands in more participatory and transparent way (Olufemi-Phillips, Igwe, Ofodile, Eyo-Udo, & Adewale, 2024). The perception of the brand as open and trusting is strengthened when consumers feel empowered to contribute to opinion, discuss about the brand, or even vote on some decisions with community

governance. Such engagement will convey that the consumer has weight, that his or her voice counts and will instill emotional attachment and loyalty (Boukis, 2019). Firstly, it follows current demands regarding inclusivity and co-creation, which is no longer the case of brands speaking with their audience, but rather of brands being a partner in a dialogue.

Moreover, trusting among the community 'itself' is as well very important. Otherwise, the trust of consumers about the decentralized communities and their fellow members is also likely to diminish, as are the individuals' intentions and behavior (De Filippi, Mannan, & Reijers, 2020). If the space is chaotic, exclusive or unregulated, the space can dissipate all the trust it tries to create. That is a signal that the good thoughts should go into the good community design, that is, good norms, great moderation, and organized ways of contributing. With such frameworks, the brand will have a much better view into how decentralized communities can grow to become real ecosystems which enhance trust within the community as well as with the brand (De Filippi, Mannan, & Reijers, 2020).

In conclusion, decentralized communities can be powerful mechanisms for fostering brand trust in the FMCG sector, but their success relies on more than just technological infrastructure. Brands have had to bet on creating open, transparent and value driven places of business that have ears to listen to the voice of the consumer (Nwabekee, Abdul-Azeez, Agu, & Ijomah, 2024). As people came to accept Web 3.0 and the more, we know about what it is, the more decentralized communities will have the opportunity to forge themselves up as the central pillars of having communities that build trust in brand strategy.

5.3 Discussion of Research Question Two

Q2. What is the effect of virtual engagements on FMCG brand trust?

Customers' interactions with FMCG firms in digital spaces are increasingly being shaped by virtual engagements. These interactions, which range from gamified loyalty programs and interactive websites to immersive experiences like AR, VR, and the metaverse, give marketers creative opportunities to strengthen their bonds with their target consumers (Chowdhury, Fuad, Nipa, & Nath, 2023; Xi & Hamari, 2021). When executed well, these interactions give customers a more individualized and emotionally compelling way to learn about a brand's beliefs, goods, and narrative. Stronger perceptions of brand authenticity, transparency, and relevance all essential elements of trust in today's digital-first marketplace, can result from this increased contact (Chowdhury, 2024).

The outcomes of the research support the notion that it is more likely that consumers will trust brands that provide engaging and insightful virtual experiences, as the findings confirm the existence of a clear and significant effect of virtual engagement on brand trust (Khan, Hollebeek, Fatma, Islam, & Rahman, 2019; Yan, Xia, Jiang, & Lin, 2024). Yet, there is a positive association, but many consumers are either cautious or indifferent to virtual brand interactions. There is still, for a significant segment, a view of such experiences as not familiar or not well understood as contributing value (Rane, Achari, & Choudhary, 2023). Therefore, despite this being a powerful tool, and was found to have a strong influence on trust, provided that the experience offered is of a good quality, for a good purpose, and is easy to use. However, for brands that rely too much on flash technology and use it without connecting to actual consumer needs, an emotional bond that you want to harness may not be built.

Another key factor in the effectiveness of the virtual engagement was personalization. Brands that tailor their virtual experiences to the tastes and actions of their

customers tend to enjoy greater consumer trust. Interactive features that allow users to feel emotionally understood include personalized suggestions and interactive storytelling, which, for instance, aid in fostering that bond (Chandra, Verma, Lim, Kumar, & Donthu, 2022). However, there is a chance that they will come off as gimmicky if these experiences are overly generic or in some respects impersonal, just because they are experiences. This demonstrates that for FMCG firms to be genuinely customer-centric, their virtual interactions must be both technologically sophisticated and genuinely customer-facing (Riegger, Klein, Merfeld, & Henkel, 2021).

5.4 Discussion of Research Question Three

Q3. What is the impact of blockchain transparency on consumer trust in FMCG brands?

Transparency on the BC has become a crucial component in determining consumer trust, especially in the FMCG industry where worries about brand accountability, ethical sourcing, and product authenticity are growing. BCT gives customers more transparency than traditional systems by providing the traceability and verifiability of product journeys from origin to delivery (Boukis, 2019). Consumers are more at ease and in charge as a result of companies' increased openness regarding their ingredients, sustainability, and ethical practices. Therefore, companies that publicly tell their clients that they are using BC into their operations tend to have better levels of consumer trust (Hina, Islam, & Dhir, 2024; Bułkowska, Zielińska, & Bułkowski, 2023).

The results of the study prove the positive influence of BC transparency on consumer trust. This increasingly brought the participants more to trust brands that gave them accessible, verifiable text on BC systems (fraud prevention, product authenticity) (Duan & Zhu, 2024; Singh & Sharma, 2023). But it was also quite a significant portion of respondents who were uncertain or had little awareness of the technology. In other words,

BC presents a high degree of trust addition capacity, and yet the gaps in consumer understanding limit this current impact (Anwar, Khan, Kiah, Abdullah, & Goh, 2022). Unless it is done with effective communication and education, the value of BC may not be put to proper use by mainstream consumers (Ahmed & MacCarthy, 2023).

Additionally, BC transparency is beneficial for product verification, but it even goes further to enable brand accountability. As processes are open to public scrutiny, they provide consumers a reason to assume or believe that a brand is honest and responsible (Dong, Abbas, Li, & Kamruzzaman, 2023). The fact that it is impossible to tamper with data recorded by BC ensures credibility. This degree of accountability pinpoints a FMCG brand from the mixing of greenwash and false advertising in the market (Riyoldi, Muhtar, & Karlina, 2023).

In conclusion, the BC can benefit FMCG firms by fostering trust throughout their supply chain. However, as is always the case, more can be retained by focusing on the consumer (Sood, 2025). Additionally, in addition to implementing the technology, organizations will need to inform their target audience about its advantages understandable and straightforward manner. The FMCG business will transform trust from a brand promise to a proven reality as BC awareness grows (Nwariaku, Fadojutimi, Lawson, Agbelusi, Adigun, Udom, & Olajide, 2024).

5.5 Discussion of Research Question Four

Q4. How do consumers perceive the value of Web 3.0 engagement with FMCG brands?

Nowadays, customers' perceptions of the value of engaging with FMCG businesses on the Web 3.0 are mostly shaped by a mix of curiosity, hopeful optimism, and skepticism (Husain, Ahmad, & Khan, 2022). Significant numbers of consumers are still unaware of what Web 3.0 involvement entails, including interactions with interactive metaverse

platforms, virtual communities, loyalty tokens, and NFTs (Hadi, Melumad, & Park, 2024). Although the mood is much more general, there is a feeling of uncertainty, even though some people enjoy it because it is creative and participatory. As a result, even while many customers remain ambivalent or unconvinced of the tangible and emotional worth of these digital experiences, we are still in the Web 3.0 paradigm stage when it comes to brand partnerships (Habachi, Matute, & Palau-Saumell, 2023).

The findings show that the more the site's Web 3.0 engagement is perceived as meaningful, the more consumers tend to link it to higher levels of brand trust. But this widely perceived value hinges mainly upon the right degree of relevance, reward and accessibility of the engagement (Cheung, Pires, & Rosenberger, 2020). For interactions to be positive, however, the digital engagement needs to be passed to your customers as personalized, intuitive, and transparent with a clear win like exclusive access, rewards or community inclusion (Mabkhot, Hasnizam, & Salleh, 2017). On the one hand, if having to engage with such touch points feels too complex or doesn’t have clear utility then they will correctly arm dismissing these as being gimmicks and not useful brand touchpoints.

Perception is also influenced by one's degree of digital literacy and familiarity with cutting-edge technologies. Instead, those who are more familiar with decentralized ecosystems, BC, and NFTs will comprehend the strategic value of being involved with Web 3.0 (Krause, 2024). In contrast, customers who are unfamiliar with these ideas might not be able to recognize any links they have to regular FMCG purchases (Murray, Kim, & Combs, 2023). Such a shift in attitude suggests that FMCG companies must innovate and educate their customers, i.e., help them realize how these new interaction technologies are improving their brand experience.

In summary, while Web 3.0 engagement has potential to transform consumer-brand relationships, its perceived value is not yet universally embraced. For many consumers, the

concept remains abstract or underdeveloped (Ferraro, Wheeler, Pallant, Wilson, & Oldmeadow, 2023). To unlock its full potential, FMCG brands must focus on creating meaningful, user-friendly, and rewarding experiences that demonstrate clear benefits (Räisänen, 2024). As awareness and comfort with these technologies grow, so too will consumer appreciation for the value of engaging with brands in Web 3.0 environments.

5.6 Discussion of Research Question Five

Q5. What are the strategic recommendations for FMCG brands to strengthen consumer trust and loyalty?

FMCG firms must embrace the multifaceted approach in this rapidly evolving digital era to provide transparency, customization, and meaningful connection to growth, customer loyalty, and trust (Shakur, Lubaba, Debnath, Bari, & Rahman, 2024). An essential strategy for navigating Web 3.0 tools like decentralized platforms, virtual assets, and BC is to better inform and educate consumers about their use (Rathor, Zhang, & Im, 2023). According to the study's results, consumers are receptive to BCT and decentralized communities, which enable them to have their demands fulfilled while preserving authenticity and transparency (Stockburger, Kokosioulis, Mukkamala, Mukkamala, & Avital, 2021). However, many people are still unaware of or do not comprehend the technology. FMCG companies should therefore actively contribute to the simplification of these concepts and their clear communication in relation to how they improve the customer experience. (Eseoghene Kupa, Uwaga Monica Adanma, Emmanuel Olurotimi Ogunbiyi, & Nko Okina Solomon, 2024)

Another crucial channel for fostering loyalty and trust was the development of tailored virtual interactions. Companies that offered customers personalized, engaging experiences felt more emotionally connected to them (Weidig, Weippert, & Kuehnl, 2024). It implies that companies should spend money on platforms that offer more

individualized digital experiences, such as gamified loyalty programs, augmented reality try-ons, and metaverse brand spaces, that are always straightforward and user-friendly. However, they cannot be merely entertainment; in order to be regarded as legitimate and valuable, they must present the consumer with pertinent information, uphold the brand's values, and offer genuine value (CRISTACHE, PRICOPOAIA, NĂSTASE, ȘIȘU, TÎRNOVANU, & MATIȘ, 2024).

Additionally, by encouraging a consumer's involvement in the community and understanding of their value, brand platforms developed through decentralized or co-creative brand improvement can strengthen loyalty (Jiang, Mastromartino, Yang, Zhang, & Zhang, 2022). It includes building forums for peer-to-peer contact, incorporating customer input into product creation, and involving them in decision-making through token-based governance and polls (Baninemeh, Farshidi, & Jansen, 2023). However, to avoid becoming meaningless or unachievable, these must be actively monitored, inclusive, and goal-oriented. A strong sense of belonging and shared identity can be fostered by these kinds of communities, which can also foster emotional loyalty.

Finally, FMCG brands must maintain consistency in delivering quality and uphold ethical business practices across all channels (Sandeep Sawant, 2021). The study demonstrates that although cutting-edge technologies can foster trust, more conventional elements like reliable product performance, ethical sourcing, and open communication continue to be crucial (Suherlan & Okombo, 2023; Wang, Kumar, Kumari, & Kuzmin, 2022). Incorporating these conventional principles with new Web 3.0 technologies can result in a whole brand experience that is dependable and inventive, ultimately strengthening customer confidence and cultivating enduring loyalty in a market that is becoming more and more digital (Xiangjuan, Xinwei, Yijie, Heng, Xiaofeng, Wenfei, Weinan, & Fanglei, 2025).

CHAPTER VI:

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

6.1 Summary

This research explored the role of decentralized communities and virtual engagements in building brand trust within the FMCG sector under the evolving landscape of Web 3.0. The results revealed a positive yet cautious consumer outlook toward these digital innovations. A statistically significant and modest association was found between decentralized communities and brand trust, even though involvement in these communities is low and active. Transparency, inclusivity, and consumer involvement in brand-related decision-making are characteristics of decentralized models, all of which have been demonstrated to have positive consumer attitudes. Although the idea of creating and sustaining communities in this manner has a lot of potential, the number of brands that are genuinely interacting with consumers shows that there is still room for enhancement in terms of how brands can better convey the purpose and value of these communities.

Businesses discover that meaningful virtual interactions are crucial in establishing brand trust. Virtual interactions that were emotionally compelling and personalized had a greater impact on trust than those that were neutral or sceptical. For instance, due to its capacity to verify product authenticity and uphold accountability, BC transparency emerged as one of the most significant factors influencing consumer trust. Despite this, consumers' awareness of BC in general is still low, which emphasizes the continued importance of consumer education. Furthermore, although the association between brand trust and the perceived value of Web 3.0 engagement was not very strong, it was still statistically significant, demonstrating the critical role that perceived benefit, relevance, and accessibility play in influencing consumer behaviour.

Overall, the findings suggest that FMCG brands are at the forefront of a digital shift, where trust and loyalty can be cultivated through decentralization, immersive technology, and transparent operations. The key lies in simplifying complex technologies, creating meaningful and personalized consumer experiences, and maintaining consistent brand ethics. With the right strategies, these Web 3.0 tools have the potential to progress brand-consumer relationships and establish long-term loyalty in an increasingly digital economy. Web 3.0 engagement perception is in a developmental stage as according to the consumers. Some accept its innovative twists while others suspect. Such digital experiences are perceived as valuable if they are seen as accessible, relevant and rewarding. Higher digital literacy consumers tended to give more positive responses, implying that as awareness of Web 3.0 grows in the public, those views will be more positive.

In conclusion, the study underscores a transitional phase in consumer-brand relationships, where digital trust is being shaped by decentralization, transparency, and immersive engagement. For FMCG brands to capitalize on this shift, they must not only integrate Web 3.0 technologies but also focus on educating consumers, delivering personalized value, and fostering inclusive communities. Strategic investment in these areas can help brands move from transactional interactions to building deep, long-term trust with their consumers.

6.2 Implications

The research's conclusions have some significant ramifications for FMCG businesses aiming to gain the devotion of modern consumers through the use of digital platforms. Firstly, the strategic importance of creating participatory communities and fostering brand trust from these environments is strengthened by the positive association between decentralized communities and trust. No longer is it possible for brands to rely solely on disruptive traditional top-down communication that shuns consumers; brands

must shift to places where consumers feel heard, valued, and are now is invited to a seat at the table to co-create. Decentralized engagement platforms and community governance tools are such an implementation that may lead to a feeling of having ownership, building emotional bonds, and lasting trust.

Secondly, the amount of impact virtual engagement has on brand trust implies that loss of engagement could be devastating and virtual engagement through digital platforms should form the core of brand strategies. Although skepticism and neutrality still prevail among customers, especially towards novel technologies like metaverse, VR and such, those who actually use it in a meaningful way give more trust. It signifies that in this situation, FMCGs should pay attention to user-friendly, emotionally relevant virtual content rather than just focusing on tech gimmicks. They who invest in good intuitive and value rich experiences stand the better chance to attract and build deeper relationships with consumers.

Thirdly, BC transparency was found to be a highly effective driver of trust, reinforcing the need for supply chain openness and data verifiability. However, the low level of consumer awareness about blockchain technologies calls for improved communication strategies. Brands must not only implement BC for backend operations but also translate their benefits into consumer-friendly narratives that enhance credibility.

Finally, the perceived value of Web 3.0 engagement is still evolving. As consumer familiarity grows, so will expectations for meaningful digital interactions. FMCG brands must proactively educate their audiences and tailor Web 3.0 initiatives to real consumer needs. Overall, this study suggests that a balance of technological innovation, ethical practices, and human-centric communication is key to cultivating trust and loyalty in the Web 3.0 branding landscape.

6.3 Contribution of the Study

In the area of digital branding and customer trust in the Web 3.0 era, this study adds significantly to both the scholarly literature and real-world business strategy. By empirically investigating the relationship between virtual brand interactions, decentralized community involvement, and consumer trust in the FMCG industry—an area that has been understudied in the context of emergent Web 3.0 technologies—it fills a major theoretical gap. By incorporating elements specific to the decentralized digital ecosystem, such as blockchain transparency, participatory governance, and immersive virtual experiences, it expands on current models of brand trust.

The study highlights the significance of shifting from one-way, brand-centric messaging to a more collaborative, inclusive, and transparent communication strategy, offering FMCG marketers and brand strategists' practical insights. It emphasizes that although technology tools like virtual interaction platforms and blockchain have a lot of potential, their full worth can only be achieved when combined with accessible and emotionally impactful customer experiences. The study also provides recommendations for how brands may successfully navigate the changing digital landscape in order to foster enduring customer loyalty by emphasizing the need for consumer education and digital literacy. All things considered, the results provide a strategic road map for FMCG companies hoping to prosper in a digitally decentralized world where meaningful interaction, transparency, and co-creation are becoming more and more important in forming trust.

6.4 Recommendations for Future Research

- **Longitudinal Studies on Consumer Behaviour**

  Longitudinal studies tracking consumers' impressions of Web 3.0 technologies throughout time may be considered for future research. Since decentralized

communities and BC-based transparency are still relatively new concepts for many consumers, tracking changes in awareness, engagement, and trust across different periods can provide deeper insights into their long-term impact on brand loyalty.

- **Cross-Industry Comparative Analysis**

  While this study focused on the FMCG sector, Web 3.0 branding strategies are being adopted across multiple industries, including fashion, technology, and healthcare. Future research could compare the effectiveness of these strategies across sectors to understand which elements of decentralized and virtual engagement resonate best with different consumer groups and industry contexts.

- **Consumer Segmentation and Digital Literacy**

  Further studies should investigate how demographic factors such as education level, age, digital literacy, and socio-economic status influence consumer engagement with Web 3.0 technologies. Segmenting consumers based on these variables could help identify specific user personas and tailor branding strategies that align with their preferences, behaviors, and trust-building triggers.

- **Exploring Psychological and Emotional Factors**

  In future research, one can further explore which psychological and emotional dimensions of trust formation in digital environments are more important for the success of human relationships. These could be explored further and studied as to whether emotions, like excitement, skepticism or fear, dictate consumers' willingness to immerse in such platforms based on BC, NFT's or metaverse. Additionally, how emotional experience contributes to long-term brand affiliation.

- **Effectiveness of Communication Strategies**

  Given the study's finding that consumers have little knowledge of technologies like BC, future studies should look at how well various brand communication tactics

work to explain these developments. Experimental research could assess the effects of visual design, narrative, and message framing on customer comprehension, perceived value, and ultimately trust.

- **Impact of Regulatory and Ethical Frameworks**

  As Web 3.0 technologies raise new ethical and privacy concerns, future research should investigate the role of regulation and ethical branding in shaping consumer trust. Studies can analyze how brands adhering to transparent data practices and ethical standards fare in terms of consumer trust compared to those with ambiguous policies.

6.5 Conclusion

This research has contributed immensely by offering a step-by-step process of how Web 3.0 technologies, namely decentralized communities, virtual engagements, and BC transparency, will positively influence consumer trust and loyalty in FMCG sector. With the landscape of digital growing, consumers are becoming more and more active in trying to seek authenticity, transparency, and active participation in interactions with brands. The findings show that although engagement levels with decentralized communities still have not materialized fully, those that come into contact with such communities have a favorable perception of them, making such communities power players in trust building. Among all of them, it also displayed that virtual engagement had a great influence on brand trust, more precisely, if they are personalized and emotionally resonant. Although this is the case, many consumers tend to take on a neutral or skeptical stance when they point to how digital experiences should be designed that have a meaning and deliver value. For a better, stronger, and longer-lasting relationship with the consumers rather than brands should concentrate on crafting immersive, user-friendly, and emotionally engaging content. In the

pursuit of brand loyalty, the line between digital and emotional experience will continue to separate itself from technology that has received increasing prominence.

The feature of BC transparency proved to be a particularly powerful contributor to brand trust. The fact that BC allows for verifying product authenticity and boosting supply chain visibility is much in line with growing consumer worries about the ethics of sourcing and honesty. Regardless, the study also demonstrated that customers are unaware of and confused about BC. This displays how important it is for FMCG companies to embrace new technologies and convince their target markets of their merits. Ultimately, the study concludes that Web 3.0 tools can redefine the consumer-brand relationship, but their success depends on strategic implementation and communication. Trust is no longer built solely through product quality or advertising, it is cultivated through openness, engagement, and shared values. FMCG brands that embrace this new digital ethos, educate their consumers, and offer meaningful, transparent interactions will be best positioned to thrive in competitive and rapidly changing digital marketplace.

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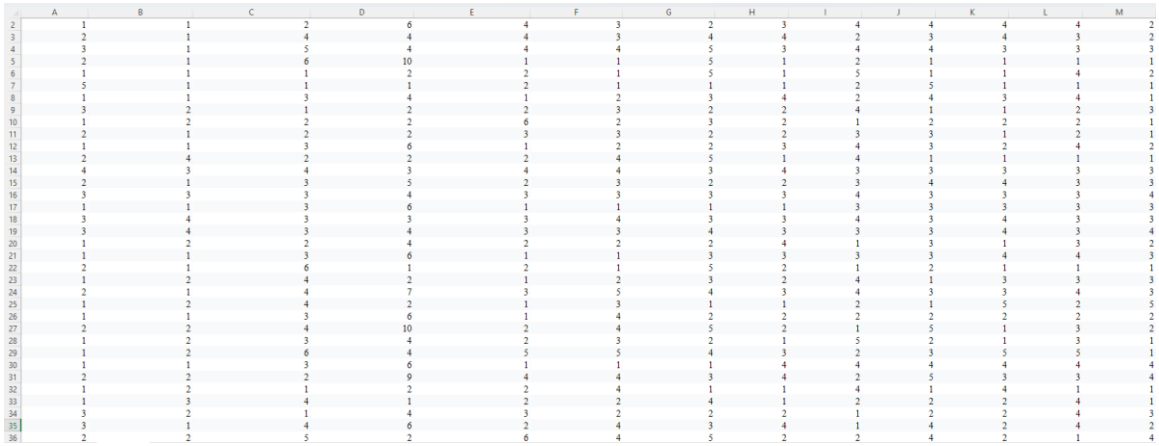
APPENDIX A:

DATASET



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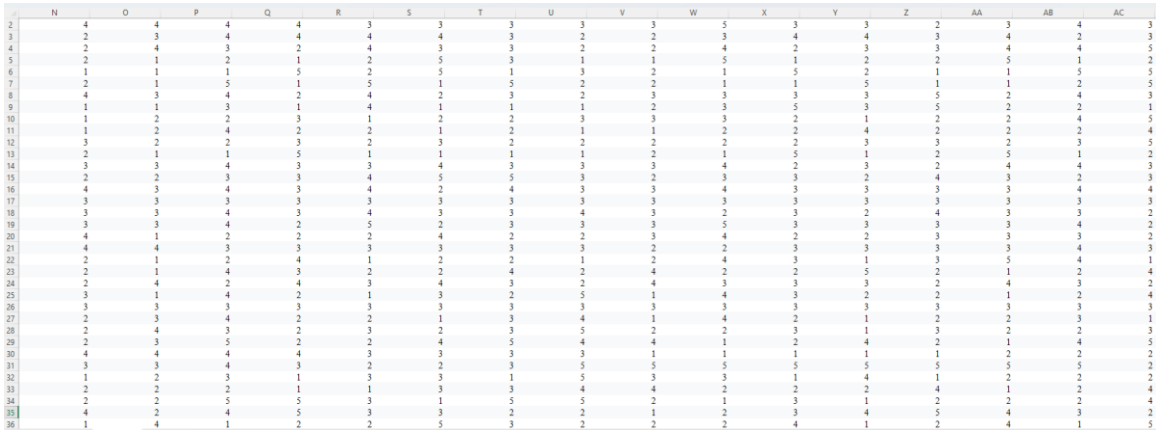

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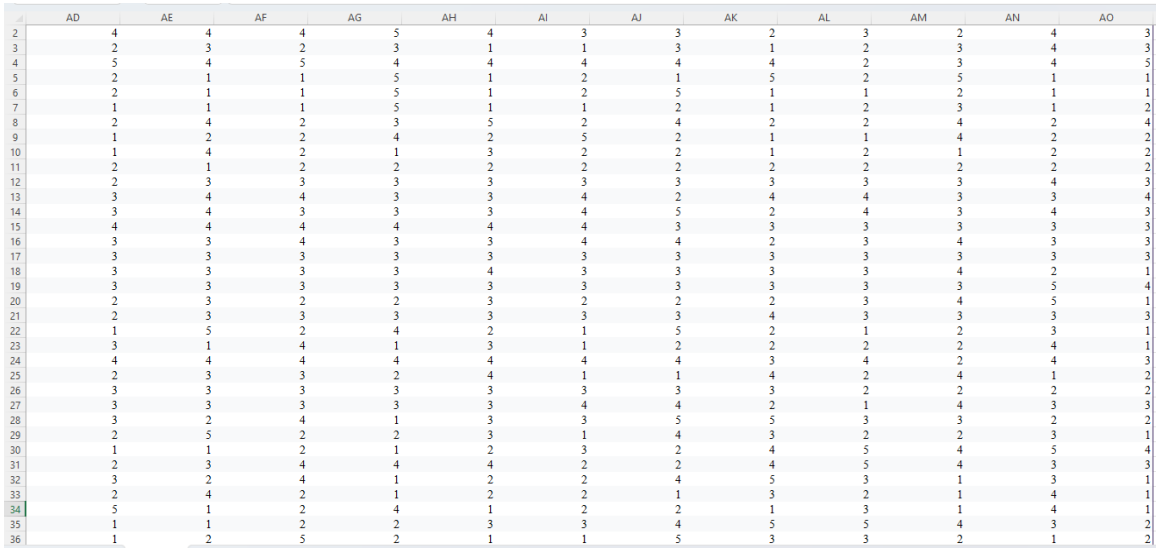

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