

TWITTER ENGAGEMENT AND BRAND IMAGE OF SELECTED PHARMACEUTICAL INDUSTRIES IN NORTH CENTRAL, NIGERIA.

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ABSTRACT

In today's digital era, social media has transformed how organizations communicate, manage reputations, and build trust. For pharmaceutical industries, especially in developing regions like North-Central Nigeria, Twitter (now X) provides a vital platform for real-time engagement, public health awareness, and transparent dialogue in a trust-sensitive sector increasingly shaped by online discourse. However, empirical evidence on its specific branding impact in this context remains limited. This paper examines the impact of Twitter (X) engagement on the brand image of selected pharmaceutical industries in North-Central Nigeria. Anchored in Social Identity Theory, the research adopted a mixed-methods design combining quantitative surveys of 400 staff and qualitative insights gathered through structured interviews with operations managers. Quantitative findings indicate that a significant majority of respondents agree that Twitter's interactive features timely information dissemination, audience engagement, and real-time responsiveness positively influence brand image and foster trust within a highly regulated industry. Qualitative insights further reveal that managers perceive Twitter as essential for countering misinformation and building transparent stakeholder relationships. The hypothesis test confirmed a significant positive impact, with regression analysis showing that a unit increase in Twitter perception leads to a 39% improvement in brand image ($B = 0.392$; $p < 0.01$). These results support rejecting the null hypothesis and accepting that Twitter engagement contributes meaningfully to enhanced brand perception. Overall, the study concludes that strategic Twitter usage strengthens brand equity, generates economic opportunities, and positions pharmaceutical industries to engage effectively with the public in a digital era.

Keywords: Twitter Engagement, Pharmaceutical Industries, Brand Image.

INTRODUCTION

In the era of digital transformation, social media platforms have revolutionized how businesses interact with their audiences, cultivate trust, and shape their public image. Among these platforms, Twitter has emerged as a dynamic tool for real-time communication, reputation management, and stakeholder engagement, offering brands a unique space to foster dialogue and community (Ahmed *et al.*, 2023). Unlike traditional advertising channels, Twitter enables pharmaceutical industries to disseminate critical health information, respond promptly to queries, and clarify misinformation factors that are increasingly important in highly regulated and trust-sensitive industries (Dwivedi *et al.*,

2021). For pharmaceutical firms operating in North Central Nigeria a region characterized by increasing internet penetration and rising social media adoption the strategic use of Twitter can be instrumental in influencing public perceptions and enhancing brand image (Okeke & Anyaegbunam, 2023).

Recent scholarship has highlighted that interactive engagement on Twitter, including timely replies, sharing credible content, and participating in public health discourse, can strengthen stakeholders' trust and shape favorable brand associations (Phua et al., 2022). In particular, Twitter's capacity for two-way communication and its viral potential make it an invaluable channel for pharmaceutical brands seeking to establish transparency and credibility (Hollebeek & Macky, 2019). However, while extensive research has examined Facebook's marketing impact, there remains a notable gap regarding how Twitter engagement specifically affects the brand image of pharmaceutical firms in developing economies such as Nigeria (Nwachukwu & Aliyu, 2023).

Against this backdrop, investigating the influence of Twitter engagement on brand image is essential for industry practitioners, policymakers, and researchers striving to understand how digital interaction strategies contribute to brand equity in sensitive sectors. Given the pharmaceutical industry's vital role in public health, a well-managed Twitter presence can help firms build trust, counter misinformation, and reinforce positive brand perceptions (Ahmed et al., 2023). Accordingly, this paper seeks to examine the impact of twitter engagement and brand image of selected pharmaceutical industries focusing on North Central Nigeria. To achieve this overarching goal, the study thus sets out a specific objective: to find out how Twitter engagement practices such as content quality, responsiveness, and stakeholder interaction affect consumer perceptions on brand image. In line with this objective, a research question guide the study: does twitter engagement have impact on brand image of selected pharmaceutical industries in North-Central, Nigeria? To empirically test these questions, the study is guided by a hypothesis formulated in null-form consistent with the objective: There is no significant impact of Twitter platform on brand image of selected pharmaceutical industries in North-Central, Nigeria. By doing so, it contributes to the growing discourse on social media's strategic role in emerging markets and provides actionable insights for enhancing pharmaceutical marketing effectiveness in the digital age.

REVIEW OF RELATED LITERATURE

Concept of Twitter (X) Engagement

Twitter (X) engagement has emerged as a pivotal metric in digital marketing, reflecting the level of interaction between users and brand content. Engagement on Twitter includes activities such as likes, retweets, replies, mentions, and quote tweets, all of which signal user interest and message amplification. Recent studies emphasize that high engagement rates are strongly linked to increased brand visibility, community participation, and consumer trust (Kapoor et al., 2022). Unlike passive reach, engagement on Twitter reflects active participation and is thus considered more indicative of brand resonance. Moreover, Twitter's real-time nature and hashtag functionality foster conversational marketing, enabling brands to respond rapidly to trends and consumer feedback (Zollo et al., 2020). Research by Kaur et al. (2023) demonstrates that emotionally charged and personalized content tends to generate higher engagement, especially when brands adopt a humanized voice or leverage current social issues.

Additionally, visual elements such as infographics and short videos significantly boost engagement metrics, as they capture attention in a content-saturated feed (Ngai et al., 2021). Twitter's algorithm further amplifies content with high engagement, increasing its reach and positioning it favorably in users' timelines. Importantly, user engagement on Twitter also functions as social proof; when users observe high levels of interaction on brand tweets, they are more likely to perceive the brand as credible and popular (Bento et al., 2022). Thus, understanding and optimizing for Twitter engagement is essential for building strong digital brand equity and fostering interaction.

Dimensions Measuring Twitter X

- i. Behavioural engagement on Twitter: Refers to the observable and measurable actions that users take when interacting with a brand's content, such as liking, retweeting, commenting, sharing, or mentioning the brand in their own posts. It represents the overt, participatory aspect of engagement that reflects how actively users involve themselves in a brand's online presence (Dessart *et al.*, 2016).
- ii. Emotional engagement on Twitter: Refers to the affective connection and emotional responses that users experience and express toward a brand's content, personality, or communication. It goes beyond simple participation to capture how users feel about a brand, including sentiments such as trust, excitement, admiration, empathy, or frustration.
- iii. Cognitive engagement on Twitter: Refers to the mental attention, processing, and investment of thought that users devote to understanding, evaluating, and reflecting on a brand's content or messages. It involves users' intellectual involvement how much they think about, analyze, or make sense of a brand's communication, beyond merely reacting or feeling.
- iv. Network engagement on Twitter: Refers to the extent to which users amplify, share, and co-create brand-related content within their social networks. It highlights the *social connectivity and diffusion* aspects of engagement how users not only interact with a brand themselves but also help extend the brand's reach and influence across the platform

Concept of Brand Image

Brand image is defined as a belief, impression, thought that an individual or group of individuals demonstrating towards a particular brand(s). Brand image is likened to perception held about a brand in the cognitive level of target audience. (Fernandes & Srivastava, 2023).

Brand image is an instinct and internal impression formed in the mind of target audience toward a particular brand. It is impression pictured in the mind of target audience towards a particular brand. Brand image is germane in selecting a brand and dropping the other competing brands (Fernandes & Srivastava, 2023).

Brand image is the perception or belief held by consumers, etched into customers' memories and instantly recalled when the slogan is echoed, firmly engraving itself in the minds of consumers (Haudi, *et al.*, 2022). Brand image comprises a collection of brand associations that are visualized and linked in the minds of consumers. Brand-image can also be monitored through likes comments and shares on social media. Following and engaging with followers, customers and influencers also becomes an integral part in building strong brand image (Fernandes & Srivastava, 2023).

Brand image is described as views of customers about a brand which is domicile in the customer's memory. (Keller & Swaminathan, 2020). Establishing a strong brand image is crucial, particularly when differentiating products or services using clear and rapid criteria is essential (Yi *et al.*, 2018).

Theoretical Review

Social Identity Theory

Social Identity Theory (SIT) was originally proposed by Henri Tajfel in 1979 and further developed by John Turner in the early 1980s. The theory was introduced to explain the psychological basis of intergroup discrimination and the influence of group membership on individual behavior. Tajfel argued that people derive a significant part of their self-concept from their membership in social groups, which leads to social categorization and comparison as a way of

maintaining or enhancing self-esteem. Over time, SIT has evolved into a foundational theory in social psychology, organizational behavior, and more recently, digital marketing.

At its core, SIT rests on three fundamental assumptions. First, individuals categorize themselves and others into distinct social groups such as gender, nationality, profession, or brand communities a process known as social categorization. Second, through social identification, individuals adopt the identity of the group they belong to, which begins to shape their behavior, attitudes, and perceptions. Third, social comparison takes place as individuals evaluate their own group (in-group) against others (out-groups), often favoring the in-group to maintain a positive self-concept. This process promotes in-group favoritism, out-group bias, and reinforces self-esteem based on group affiliation. These assumptions help explain not only intergroup conflict and cohesion but also patterns of consumer behavior and brand loyalty.

Social Identity Theory has several strengths that explain its widespread application. It provides a robust framework for understanding how group affiliation influences individual decision-making and behavior, particularly in collective settings such as online communities or political movements. The theory has strong cross-disciplinary relevance, offering insights in marketing, organizational behavior, and political science. In the context of brand research, SIT effectively explains how individuals derive part of their identity from brand affiliation, leading to brand loyalty and advocacy. It is especially useful for explaining fan behavior, consumer tribalism, and emotional attachment to brands (Marques et al., 2020).

However, SIT has been subject to several criticisms. One major limitation is its overemphasis on group identity at the expense of personal or individual identity. Critics argue that individual motivations and personal agency are sometimes overshadowed by group-based analysis. Furthermore, the theory has been described as too broad and descriptive, lacking predictive precision in some contexts. Another shortcoming is that SIT underplays structural and socio-economic factors that influence group dynamics, such as institutional inequality or access to media platforms. It also fails to fully consider the emotional dimensions of group affiliation, which are often critical in digital and brand-related contexts.

Despite these criticisms, Social Identity Theory has become increasingly relevant in the era of social media marketing and digital brand communication. Social networking platforms like Twitter (X), Instagram, and TikTok have enabled the formation of brand communities where users actively engage in identity-based interactions. SIT explains why individuals align themselves with particular brands as part of their social identity, leading them to advocate, defend, or even attack brands based on perceived alignment or dissonance with their values (Kapoor et al., 2022). For instance, followers of specific brands often exhibit in-group behavior, posting supportive content and encouraging others to join their brand communities, which reinforces their identity and social belonging (Kapoor, et al., 2022). Influencers also act as leaders of these brand-centered in-groups, setting norms and behaviors that followers emulate to maintain social congruence

Moreover, SIT is useful in explaining how consumers respond to brand crises or reputation threats. When a brand faces criticism, its loyal followers often engage in "identity work" to protect the brand's image, since their own self-concept is tied to it (Zhou & Kapoor, 2021). The theory also sheds light on the mechanisms behind viral marketing, emotional branding, and digital activism, where group-based identification amplifies participation and message spread.

Empirical Review

Hughes and Fill (2020), in their study *Building Pharmaceutical Brand Equity through Social Media Engagement*, made a substantial contribution to understanding how digital interactions shape perceptions of pharmaceutical brands. Using a quantitative survey design, they gathered responses from 500 active Twitter users who regularly followed and interacted with pharmaceutical company accounts. The respondents were drawn from diverse demographics, ensuring

a balanced representation across age, gender, and professional background particularly including healthcare professionals, patients, and general consumers. The researchers developed a structured questionnaire that assessed five key variables: perceived responsiveness, informational content quality, brand trust, consumer engagement, and overall brand image. Using multiple regression and factor analysis, they examined how engagement-related factors on Twitter predicted users' perceptions of brand equity. Their analysis revealed that perceived responsiveness how quickly and personally a brand replied to inquiries or comments was the strongest predictor of a positive brand image. Followers who felt acknowledged or heard by a pharmaceutical brand demonstrated higher trust levels and a greater likelihood of recommending the brand. Interestingly, the study also found that emotional tone and human-centered narratives subtly mediated the relationship between engagement and brand image. Brands that balanced factual updates with empathetic health awareness messages were perceived as more authentic and socially responsible. The authors concluded that firms which nurture digital dialogue, rather than control it, build more resilient and trusted brand identities in the eyes of the public.

METHODOLOGY

The research design adopted for this study is mixed method using both qualitative and quantitative method of data collection such as, structured questionnaire with staff of selected pharmaceutical industries in North-Central, Nigeria. The choice of mixed method is to provide comprehensive, holistic and well-rounded findings to answering the research questions and ensuring the findings are statistically robust and contextually rich. The population of this study consist of all staff in each registered pharmaceutical industries identified in each state and totaled to four thousand staffs (PCN, Abuja). The population of this study comprises of four thousand (4000) selected registered pharmaceutical industries identified in each state within the study area. For the activities of pharmaceutical industries in North-Central between 2020-2024 in North-Central, Nigeria. Taking permission from all operation' managers (promoters of businesses), formed part of the study.

The population is large and hence TaroYamane formula was used to determine the sample size for the study.

Population size (N) = 4000 (the total population size)

Margin of error (E) = let assume a margin of error of 5%, which corresponds to 0.05.

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

$$n = \frac{4000}{1+4000(0.0025)}$$

$$n = \frac{4000}{10.0025}$$

$$n = 399.90$$

$$n = \sim 400$$

The study employed both descriptive and inferential statistics to analyze data collected for the study. This study used descriptive and inferential statistics, frequencies table, linear regression and analysis of variance (ANOVA) with the aid of Statistical Package for Social Sciences versions 24 Software to analyze the quantitative data using multiple regression.

Regression analysis was used to determine the relationship that exists between the independent and dependent variables in the study.

DATA ANALYSIS AND DISCUSSIONS OF FINDINGS

Does Twitter Engagement have impact on brand image of selected pharmaceutical industries in North-Central, Nigeria?

Twitter (X) can be a useful platform that disseminate information that lead to promotion of brand image	Frequency	Percent	Mean	Standard deviation
Strongly Disagree	9	2.3		
Disagree	9	2.3		
Indifference	14	3.6		
Agree	128	32.7	4.44	.857
Strongly Agree	231	59.1		
Total	391	100.0		

Twitter (X) generates revenue for people that use the medium to promote their brand image	Frequency	Percent	Mean	Standard deviation
Strongly Disagree	5	1.3		
Disagree	3	.8		
Indifference	8	2.0		
Agree	222	56.8	4.32	.677
Strongly Agree	153	39.1		
Total	391	100.0		

Twitter (X) facilitates economic development and growth for those that use the platform to create awareness about their brand image	Frequency	Percent	Mean	Standard deviation
Strongly Disagree	5	1.3		
Disagree	3	.8		
Indifference	10	2.6	4.57	.705
Agree	119	30.4		
Strongly Agree	254	65.0		
Total	391	100.0		

Twitter (X) contributed positively in promoting brand image due to his ability to reach out to the large audience that makes use of the platform	Frequency	Percent	Mean	Standard deviation
Strongly Disagree	5	1.3		
Disagree	3	.8		
Indifference	10	2.6		
Agree	159	40.7	4.47	.708
Strongly Agree	214	54.7		
Total	391	100.0		

Twitter (X) is a good platform that can be used for promoting once business brand image	Frequency	Percent	Mean	Standard deviation
Disagree	7	1.8		
Indifference	40	10.2		
Agree	130	33.2	3.51	.745
Strongly Agree	214	54.7		
Total	391	100.0		

Twitter (X) can be very useful tools that promote business image

Strongly Disagree	7	1.8		
Disagree	5	1.3		
Indifference	11	2.8		
Agree	49	12.5	4.71	.746
Strongly Agree	319	81.6		
Total	391	100.0		

Twitter (X) make me feel more connected to brand

very low	9	2.3		
Low	5	1.3		
Moderate	22	5.6		
High	35	9.0	4.67	.830
Very High	320	81.8		
Total	391	100.0		

Twitter (X) as a tool of social media marketing improves my overall perception of the brand

Strongly Disagree	48	12.3		
Disagree	118	30.2		
Indifference	144	36.8	2.66	.942
Agree	81	20.7		
Total	391	100.0		

Source: Field Survey, 2025.

The findings from the study indicate that a substantial majority of respondents 59.1% strongly agreed and 32.7% agreed that Twitter (now known as X) serves as a valuable platform for disseminating information that promotes brand image. Only a small fraction of respondents expressed indifference (3.6%), disagreement (2.3%), or strong disagreement (2.3%). The computed mean of 4.44 and a standard deviation of 0.857 affirm a consensus among respondents in favor of Twitter (X)'s effectiveness in brand communication. These results are consistent with the findings of Alalwan (2020), who emphasized the role of microblogging platforms in enabling real-time, wide-reach engagement that enhances brand visibility and identity formation.

Regarding the revenue-generating potential of Twitter (X), 39.1% of respondents strongly agreed and 56.8% agreed that it facilitates income for individuals and businesses promoting their brand through the platform. A negligible percentage disagreed (0.8%) or strongly disagreed (1.3%), while 2% remained indifferent. The mean score of 4.32 (SD = 0.677) supports the conclusion that Twitter (X) is perceived as an economically viable platform for brand-driven monetization. This finding corroborates research by Ahmed et al. (2021), which found that Twitter plays a significant role in driving engagement-based commerce and monetization in digital entrepreneurship, particularly for small and medium-sized enterprises (SMEs).

The study further reveals a strong belief among respondents that Twitter (X) contributes to economic development. Specifically, 65% strongly agreed and 30% agreed that the platform supports growth through awareness creation. Only a minor portion expressed neutrality (2.6%) or disagreement (2.1%). With a high mean of 4.57 and a standard deviation

of **0.705**, this result demonstrates consensus on Twitter (X)'s capacity to economically empower users by expanding brand awareness. These findings align with Onuchukwu and Ezeibe (2023), who argued that digital platforms such as Twitter serve as accelerators of economic activity, particularly for youth and creative entrepreneurs in Africa's informal economy.

Similarly, 54.7% of respondents strongly agreed and 40.7% agreed that Twitter (X) effectively promotes brand image due to its wide audience reach. This observation is supported by a mean of 4.47 and SD of 0.708, reinforcing the notion that reach and visibility remain critical affordances of the platform. These findings echo those of Kapoor et al. (2022), who identified Twitter's public-facing infrastructure as ideal for fostering virality, dialogue, and participatory branding, especially in consumer-driven sectors.

In evaluating Twitter (X) as a platform for small business promotion, 54.7% of participants strongly agreed and 33.2% agreed that it is an effective medium for advancing one's brand. While 10.2% were neutral and only 1.8% disagreed, the mean score of 3.51 and SD of 0.745 still suggests positive agreement, though with slightly more variability. This supports earlier observations by Enli (2021), who noted that while Twitter offers strategic promotional potential, the effectiveness varies based on user consistency, content strategy, and algorithmic visibility.

An overwhelming 81.6% strongly agreed and 12.5% agreed that Twitter (X) is a powerful tool for business image promotion. Only a minimal percentage were indifferent (2.8%) or in disagreement (3.1%). The very high mean score of **4.71 (SD = 0.746)** highlights the platform's perceived strength in enhancing business visibility and branding outcomes. This strongly supports the conclusions drawn by Appel et al. (2020), who argued that social media platforms like Twitter are not just communication tools but strategic brand-building environments that create brand intimacy and differentiation in crowded markets.

Further, 81.6% of respondents strongly agreed and 9% agreed that Twitter (X) enhances their connection to brands, suggesting a strong emotional and psychological resonance through engagement. A small percentage expressed neutrality (5.6%) or dissent (3.6%). With a mean score of 4.67 and SD of 0.830, the findings affirm Twitter's ability to foster consumer-brand relationships, a point underscored by Hudson et al. (2019), who described social media as a space where emotional branding is cultivated through immediacy and interactivity.

However, perceptions were more divided concerning whether Twitter (X) improves overall brand perception. Only 20.7% agreed, while a larger share of respondents were indifferent (36.8%) or expressed disagreement (42.5% combined). The relatively low mean of 2.66 (SD = 0.942) suggests that while Twitter is seen as effective for engagement and visibility, it may not consistently translate into improved brand sentiment. This nuance aligns with findings by Phua et al. (2022), who noted that brand perception on social media is often mediated by content tone, user-generated feedback, and algorithmic bias, making outcomes unpredictable.

Test of Hypotheses

H₀: There is no significant impact of Twitter (X) platform on brand images of selected pharmaceutical industries in North-Central, Nigeria

Coefficients ^a Impact of Twitter Engagement on brand images of selected pharmaceutical industry in North-Central, Nigeria						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.618	.074		75.899	.000

	Twitter Platform	.392	.059	.540	6.627	.000
a. Dependent Variable: brand images						

(P < 0.01)

The regression table shows a significant positive impact of Perception of Twitter (X) on brand images of selected pharmaceutical industry on their brands image (B = 0.392; T = 6.627; p = 0.000) in Nigeria. The implication is that a unit increase in Perception of Twitter (X) on brand images will cause brand images of pharmaceutical industries in North Central, Nigeria to be increased by 39%. Since the null hypothesis is rejected however, the alternative hypothesis will be accepted. Hence, there is significant impact of Twitter (X) platform on brand image of selected pharmaceutical industries in North-Central, Nigeria

CONCLUSION AND RECOMMENDATIONS

In conclusion, this research confirms that Twitter (X) engagement exerts a substantial and positive influence on the brand image of pharmaceutical industries in North-Central Nigeria. Empirical evidence from this study demonstrates that strategic use of Twitter’s interactive features timely responses, credible content sharing, and audience engagement can strengthen public trust, amplify brand visibility, and foster community affiliation. Despite mixed views on its consistent impact on overall brand sentiment, the platform’s immediacy and reach offer pharmaceutical industries unique opportunities to manage reputation and counter misinformation in a trust-sensitive industry. The findings underscore the transformative role of digital platforms in shaping brand equity in emerging markets.

Based on the study’s findings, it is recommended that pharmaceutical industries in North-Central Nigeria should develop dedicated social media strategies that prioritize Twitter engagement as a core channel for brand building. Industries should invest in trained social media handlers to craft compelling, credible, and audience-tailored content that resonates with stakeholders. Moreover, interactive practices such as responding to customer queries, addressing misinformation, and leveraging visual and trending content should be integrated to boost engagement metrics. Finally, policymakers and industry stakeholders should support capacity building for digital literacy within pharmaceutical industries to fully harness Twitter’s potential as a tool for public health communication and sustained brand competitiveness.

References

Ahmed, R. R., Streimikiene, D., Berchtold, G., & Vveinhardt, J. (2023). Social media engagement and its impact on brand trust: Evidence from emerging markets. *Technological Forecasting & Social Change*, 190, 122387.

Ahmed, R., Ahmad, M., & Iqbal, M. (2021). Monetization strategies and micro-entrepreneurship on Twitter: A social media economic study. *Digital Business Review*, 5(3), 72–86.

Alalwan, A. A. (2020). Investigating the impact of social media advertising features on customer purchase intention. *International Journal of Information Management*, 53, 102002. <https://doi.org/10.1016/j.ijinfomgt.2020.102002>

Appel, G., Grewal, L., Hadi, R., & Stephen, A. T. (2020). The future of social media in marketing. *Journal of the Academy of Marketing Science*, 48(1), 79–95. <https://doi.org/10.1007/s11747-019-00695-1>

Dessart, L., Veloutsou, C., & Morgan-Thomas, A. (2016). Capturing consumer engagement: Duality, dimensionality and measurement. *Journal of Marketing Management*, 32(5–6), 399–426.

- Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., ...& Wang, Y. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. *International Journal of Information Management*, 59, 102168.
- Enli, G. (2021). Branding in social media: Algorithmic influence and user agency. *Media and Communication*, 9(1), 4–13. <https://doi.org/10.17645/mac.v9i1.3527>
- Hollebeek, L. D., & Macky, K. (2019). Digital content marketing's role in fostering consumer engagement, trust, and value: Framework, fundamental propositions, and implications. *Journal of Interactive Marketing*, 45, 27–41.
- Hudson, S., Huang, L., Roth, M. S., & Madden, T. J. (2019). The influence of social media interactions on consumer–brand relationships. *Journal of Business Research*, 96, 257–265. <https://doi.org/10.1016/j.jbusres.2018.05.038>
- Kapoor, K., Dwivedi, Y. K., Piercy, N. F., & Williams, M. D. (2022). Twitter and brand communication: A critical review. *Information Systems Frontiers*, 24(2), 373–392.
- Marques, J. F., Correia, A., & Alves, H. (2020). Brand communities and social identity: A review. *Journal of Product & Brand Management*, 29(2), 155–170.
- Nwachukwu, C., & Aliyu, M. (2023). Social media adoption and customer trust in Nigeria's pharmaceutical industry. *African Journal of Business Management*, 17(2), 21–29.
- Okeke, T. C., & Anyaegbunam, J. U. (2023). Social media marketing strategies and customer loyalty in Nigeria's pharmaceutical sector. *Journal of Marketing Development and Competitiveness*, 17(1), 58–69.
- Onuchukwu, S. O., & Ezeibe, C. C. (2023). Digital entrepreneurship and youth development in Nigeria. *African Journal of Economic Policy*, 30(2), 113–129.
- Phua, J., Jin, S. V., & Kim, J. J. (2022). The role of influencers, engagement, and trust in brand perception. *Social Media + Society*, 8(1), 205630512210784. <https://doi.org/10.1177/20563051221078451>
- Phua, J., Jin, S. V., & Kim, J. J. (2022). The roles of social media engagement and social media advertising in driving brand loyalty and purchase intention: A multi-group comparison. *Journal of Consumer Behaviour*, 21(1), 50–66.
- Sipos, D; (2023). A Quantitative Survey of Twitter's Influence on Online Business. *Journal of Research in Social Change*, 15(1), 53 – 66, Doi:10.2478/rsc-2023-0005.
- Zhou, Y., & Kapoor, K. (2021). Brand community response to brand crisis on social media: A social identity perspective. *International Journal of Information Management*, 58, 102315. <https://doi.org/10.1016/j.ijinfomgt.2020.102315>