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Nash Bargaining Dynamics in the Age of Artificial Intelligence and Social Media: An Empirical and Theoretical Analysis

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Abstract- ***This paper investigates the transformation of bargaining behaviour in digital environments by integrating Nash Bargaining Theory with emerging influences shaped by artificial intelligence (AI) and social media algorithms. As social platforms increasingly mediate interpersonal and collective interactions, the logic of negotiation, conflict resolution, and cooperation is altered by algorithmic ranking systems that determine visibility, credibility, and information access. Using insights from the Nash Bargaining in the Age of AI and Social Media Dataset, this study develops a hybrid theoretical–empirical model to examine how AI-driven recommendation engines, engagement metrics, and network centrality modify bargaining power and reshape fallback positions in ways that deviate from classical Nash predictions. The findings reveal that users with algorithmically amplified exposure tend to achieve disproportionate bargaining outcomes independent of intrinsic contribution value, while those with limited visibility experience suppressed bargaining leverage even when producing high-quality inputs. These results underscore the emergence of new digital externalities and negotiation asymmetries rooted in platform governance and algorithmic design. The study contributes to behavioural economics, digital sociology, and computational game theory by demonstrating how technologically mediated ecosystems require updated bargaining models that incorporate algorithmic fairness, transparency, and participatory governance. The paper concludes with implications for platform regulation, digital policy, and the evolving political economy of AI-mediated interactions.***

Keywords: Nash Bargaining, Artificial Intelligence, Social Media Algorithms, Digital Negotiation, Algorithmic Influence, Bargaining Power, Online Behaviour, Game Theory.

I. INTRODUCTION

The emergence of artificial intelligence (AI) and algorithmic social media systems has transformed how individuals negotiate, communicate, and establish influence within digital environments. Classical Nash Bargaining Theory assumes transparent information flows and stable utility structures, yet these assumptions collapse in algorithmically curated ecosystems where visibility, credibility, and access to information are no longer uniformly distributed. In Nigeria and other emerging economies, empirical studies already show that digital infrastructures significantly alter economic interactions and outcomes. For instance, Eke (2019) demonstrated that shifts in teledensity and telecommunications penetration directly influence economic behaviour and power asymmetries within markets. Earlier, Eke (2015) observed that ICT systems fundamentally reshape decision-making and performance outcomes across sectors, highlighting technology's mediating role in cooperative and competitive human interactions. These insights suggest that the digital environment—especially one governed by AI algorithms—creates new structures of bargaining power.

Social media platforms intensify these effects through algorithmic ranking systems that privilege highly visible actors and suppress others, thereby altering fallback positions and influencing negotiation outcomes. International evidence indicates that algorithmically mediated visibility influences perceived credibility and bargaining leverage, even when substantive contributions are equivalent (Bakshy et al., 2015). Similarly, AI-driven content personalization distorts informational symmetry, producing negotiation advantages for users whose content aligns with algorithmic optimization rules (Tufekci, 2015). Recent computational social science models further show that algorithmic amplification can modify equilibrium outcomes in strategic interactions by

shaping behavioural expectations and perceived payoffs (Rahwan et al., 2019).

Despite these developments, limited scholarship integrates Nash Bargaining Theory with the realities of AI-mediated digital ecosystems. This study fills that gap by examining how algorithmic visibility, engagement structures, and social influence indicators reshape bargaining power and cooperation online. Using empirical insights from the Nash Bargaining in the Age of AI and Social Media Dataset, the paper develops an extended bargaining model that accounts for the digital determinants of modern negotiation behaviour.

II. LITERATURE REVIEW

The evolution of bargaining dynamics in digital ecosystems has increasingly drawn scholarly attention, particularly as artificial intelligence (AI), algorithmic decision-making, and social media engagement reshape human behaviour and economic interactions. Foundational research in digital economics emphasizes the central role of technological infrastructures—such as telecommunications networks, mobile platforms, and digital payment systems—in transforming negotiation processes, information flows, and cooperative behaviour. Eke (2016), in one of the earliest Nigerian studies linking telecom behaviour with economic outcomes, demonstrated that smartphone data bundle consumption and subscriber constraints significantly influenced individual and institutional decision patterns. His findings highlight that digital resource availability—especially data access—is a structural determinant of bargaining power in technologically dependent environments.

The mediating role of telecommunications in shaping economic and negotiation outcomes is further supported by Musa, Magaji, Eke, and Salisu (2022), who employed ARDL modeling to establish that mobile telecommunication expansion positively and significantly drives economic growth in Nigeria. Their work underscores a broader implication: when communication infrastructures expand, individuals possess greater informational leverage, visibility, and influence—key ingredients for favourable bargaining outcomes. Similarly, digital financial infrastructures have been shown to alter traditional patterns of economic interaction. Ismail, El-Yaqub, and Eke (2025) found that digital payment technologies substantially enhance efficiency in Nigerian banking institutions, suggesting that algorithm-driven financial systems create new transactional incentives and reshape cooperative behaviour between consumers and firms. These insights align with the notion that AI-mediated systems modify fallback positions, opportunity sets, and expected payoffs within bargaining frameworks.

Eke's (2015) empirical study on ICT and water management in West Africa further illustrates how digital technology enhances performance outcomes, accountability, and resource optimization. This body of work collectively confirms that technological systems—whether in finance, telecommunications, or infrastructure management—create measurable effects on human decision-making, negotiation behaviour, and institutional performance. These empirical foundations are essential for understanding how AI-driven social media platforms transform bargaining power. In algorithmic environments, visibility, digital reputation, and engagement metrics become new forms of currency that can be strategically leveraged in negotiation contexts.

International scholarship supports this theoretical shift. For instance, Tufekci (2015) demonstrated that modern algorithmic systems distort informational symmetry by selectively amplifying certain actors based on behavioural predictions rather than merit or contribution. Such distortions create unequal bargaining environments where individuals with algorithmically privileged visibility secure disproportionate influence. This aligns with recent computational game theory models suggesting that algorithmic amplification alters equilibrium outcomes by shifting perceived payoffs and changing the structure of cooperative possibilities.

Together, the reviewed studies suggest that digital infrastructures—ranging from telecommunications networks to AI-mediated social media algorithms—reshape bargaining behaviour by altering access to information, modifying visibility, and influencing preference formation. However, few studies explicitly connect these technological determinants to Nash Bargaining Theory or develop empirical models that capture how algorithmic structures modify fallback positions and negotiation leverage. This gap provides a strong foundation for the present study, which integrates classical bargaining theory with contemporary digital behavioural patterns using

the Nash Bargaining in the Age of AI and Social Media Dataset.

The integration of artificial intelligence into social media platforms has created complex digital environments where traditional notions of bargaining, cooperation, and negotiation are increasingly mediated by algorithms. AI systems determine what users see, whose content becomes amplified, and how interactions evolve over time. These algorithmic architectures modify the distribution of power by influencing visibility and altering informational symmetry—two elements central to bargaining theory. As such, understanding Nash bargaining in AI-mediated environments requires grounding in the broader scholarship on digital influence, social networks, and automated content curation.

A foundational strand of literature emphasizes how social media algorithms shape public visibility and influence patterns. Bakshy, Messing, and Adamic (2015) demonstrated that algorithmic ranking on Facebook significantly structures individuals' exposure to diverse viewpoints. This selective visibility not only affects opinion formation but also creates asymmetries in influence, wherein certain actors disproportionately shape discussions due to algorithmic preference rather than bargaining skill or informational merit. Such distortions introduce non-rational elements into bargaining environments, thereby challenging classical equilibrium predictions.

Parallel evidence from digital sociology highlights that algorithmic systems do not merely filter information; they actively participate in shaping behavioural expectations. Tufekci (2015) explained that modern AI systems exert computational agency by learning from behavioural data and optimizing content delivery in ways that reinforce engagement. These mechanisms alter what actors perceive as feasible negotiation outcomes, affecting fallback positions and altering payoff expectations—core variables in Nash bargaining models. The implication is that bargaining outcomes in algorithmic contexts reflect not only participants' preferences but also the structural biases embedded within platform design.

Advances in computational game theory further reinforce the need to reinterpret bargaining dynamics in the digital age. Rahwan et al. (2019) introduced the concept of "machine behaviour" to argue that AI-driven systems must be treated as strategic actors within multi-agent environments. This perspective suggests that bargaining scenarios involving AI-mediated platforms require an expanded analytical framework where algorithms modify the bargaining set by influencing communication channels, timing, and visibility. Such modifications can generate equilibrium shifts, leading to bargaining outcomes divergent from classical Nash solutions.

Scholars in digital economics also provide evidence that information ecosystems affect negotiation efficiency and power asymmetries. Acemoglu and Restrepo (2019) showed that algorithmic technologies reshape labour markets and economic interactions by reallocating informational advantages and redefining collaborative structures. While their work focuses on macroeconomic systems, the implication for bargaining is that AI redistributes strategic advantage, enhancing the leverage of individuals whose behaviour aligns with algorithmic optimization. This resonates with findings from platform governance studies demonstrating that digital reputation metrics—such as follower count, engagement rates, and algorithmic amplification—operate as new forms of economic capital in negotiation spaces (Van Dijck, 2013). These symbolic indicators influence credibility assessments, negotiation power, and the likelihood of cooperative outcomes in social media-mediated interactions.

Collectively, these studies converge on a central insight: algorithmic systems fundamentally reshape bargaining environments by altering visibility, informational symmetry, and strategic expectations. Yet, despite extensive work on AI influence, few studies explicitly integrate these mechanisms into formal bargaining models. The empirical gap is especially pronounced in African and emerging-market contexts, where digital infrastructures and social media adoption are rapidly expanding. The present study addresses this gap by employing the Nash Bargaining in the Age of AI and Social Media Dataset to examine how digital visibility, engagement metrics, and algorithmic amplification restructure bargaining power and negotiation behaviour.

Building on earlier studies, a growing body of interdisciplinary scholarship emphasizes how

negotiation, cooperation, and strategic behaviour are increasingly shaped by digital infrastructures driven by artificial intelligence. In classical Nash Bargaining Theory, individuals negotiate from positions defined by utility functions, rational expectations, and clearly identifiable fallback options. However, digital-era bargaining departs significantly from these assumptions, as individuals now negotiate within algorithmically filtered environments where visibility, access, and persuasive capacity are externally mediated by platform architectures. This shift has prompted calls for extended bargaining models that integrate digital behavioural dynamics, algorithmic influence, and socio-technical constraints.

One stream of research examines how social influence mechanisms embedded in digital platforms alter strategic behaviour. Sundararajan (2016) argued that digital reputation, peer affirmation, and algorithmic ranking collectively form a "crowd-based influence system" that modifies individuals' expectations and willingness to cooperate. These influence structures can either enhance or distort negotiation outcomes depending on how algorithms distribute attention and visibility. When applied to bargaining theory, these insights suggest that negotiation leverage may stem less from intrinsic utility or rational argumentation and more from one's algorithmically mediated social capital.

Another important dimension relates to information asymmetry in AI-driven systems. According to Helbing et al. (2019), automated digital environments operate as "black-box ecosystems" where users lack transparency regarding how algorithms process their data and shape their interactions. This opacity introduces uncertainty into bargaining contexts, as actors cannot fully predict how their strategic moves will be interpreted or amplified by platform mechanisms. Bargaining power thus becomes partially dependent on algorithmic compatibility, with users who exhibit high-engagement patterns enjoying stronger fallback positions and greater negotiation leverage.

Furthermore, digital behavioural economics highlights the role of personalized content streams in shaping perceptions, preferences, and decision pathways. Studies by Sunstein (2017) reveal that algorithmic personalization produces "filter bubbles" that reinforce pre-existing attitudes and create polarized cognitive environments. In bargaining contexts, such cognitive segmentation can reduce the likelihood of cooperative outcomes, as parties negotiate from ideologically insulated positions and underestimate the preferences of others. This phenomenon is particularly pronounced in social media environments where AI enhances emotional content, thereby influencing behavioural responses that deviate from rational actor assumptions.

Network science research adds yet another layer of complexity. Barabási (2016) demonstrated that digital networks operate according to preferential attachment rules, whereby actors with initial advantages—such as high engagement or visibility—gain disproportionate influence over time. When mapped onto bargaining scenarios, this implies that negotiation influence becomes path-dependent, favouring actors who achieve early algorithmic amplification. Such dynamics can create structural inequalities that persist independent of merit or contribution quality, further distancing bargaining outcomes from the symmetric fairness conditions envisioned by Nash.

Lastly, platform governance literature emphasizes that AI systems create new regulatory challenges in ensuring equitable bargaining environments. Gillespie (2018) noted that platforms act as custodians of visibility and influence through algorithmic moderation practices, which can advantage or disadvantage users based on opaque rules. As bargaining outcomes depend on information flow, these governance decisions effectively shape negotiation possibilities at a structural level. The implication is that contemporary bargaining must be analyzed not merely as an interaction between individuals but as a socio-technical process embedded within AI-regulated ecosystems.

Collectively, these findings reveal that AI-driven social media systems fundamentally recalibrate negotiation behaviour by introducing new forms of power, information asymmetry, and behavioural bias. Despite the breadth of literature on digital influence, relatively few studies integrate these dynamics into formal bargaining theory. The present study addresses this gap by applying Nash Bargaining Theory to AI-mediated environments using the Nash Bargaining in the Age of AI and Social Media Dataset to empirically analyze how algorithmic visibility, engagement metrics, and digital reputation shape bargaining outcomes in online contexts.

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III. THEORETICAL FRAMEWORK

This study is anchored on the Nash Bargaining Theory, which provides a foundational model for analyzing cooperative decision-making under conditions of strategic interdependence. In its classical formulation, the Nash Bargaining Solution (NBS) assumes that rational actors negotiate to maximize joint utility while considering their respective fallback positions or disagreement points. The equilibrium solution is derived from the maximization of the Nash product, which reflects each party's utility gain relative to their fallback outcome. While robust in traditional economic exchanges, this model presupposes transparent information flows, stable preferences, and negotiation environments free from external distortions.

However, AI-driven social media ecosystems introduce structural dynamics that challenge these assumptions. Algorithms determine visibility, engagement, and perceived influence, which in turn alter the relative bargaining power of interacting parties. As Tufekci (2015) and Rahwan et al. (2019) argue, algorithmic curation shapes behavioural expectations and modifies informational symmetry, thereby influencing actors' fallback positions and feasible strategy sets. Individuals with higher algorithmic amplification possess greater negotiation leverage, independent of substantive contribution or rational argumentation. Thus, bargaining outcomes in digital environments are co-produced by human preferences and algorithmic architectures.

To account for these complexities, this study adopts an extended Nash Bargaining Framework that incorporates algorithmic visibility and engagement metrics as determinants of bargaining strength. Within this framework, fallback positions are reconceptualized as digitally mediated opportunities shaped by platform-driven exposure and network centrality. This extension enables a more accurate analysis of bargaining dynamics in AI-mediated social contexts, where negotiation outcomes reflect both human agency and algorithmic influence.

IV. METHODOLOGY

This study employs a quantitative research design using secondary data derived from the Nash Bargaining in the Age of AI and Social Media Dataset, which was compiled from digitally mediated interactions across selected social media environments. Secondary data analysis is particularly appropriate for this research because it permits the examination of large-scale behavioural patterns that cannot be feasibly collected through primary surveys or experimental methods (Johnston, 2017). The dataset contains structured variables on algorithmic visibility, engagement metrics, interaction histories, network attributes, and recorded negotiation outcomes, offering a rich empirical foundation for evaluating bargaining dynamics in AI-mediated contexts.

The dataset represents pre-existing observations extracted from platform-generated analytics and digital interaction logs, capturing how users respond to algorithmic amplification, network positioning, and social influence cues. Key variables were operationalized as follows: algorithmic visibility was measured using exposure indices generated by the platform; engagement was captured through likes, comments, and sharing frequencies; network centrality represented users' structural position within follower–interaction clusters; and bargaining outcomes were quantified through a composite index reflecting achieved negotiation success relative to fallback alternatives. Because the dataset is pre-structured, no new data were collected; instead, the analysis focuses on deriving insights from the patterns already embedded in the dataset.

The analytical process included descriptive statistics to summarize distributional patterns, correlation analysis to examine linear associations among study variables, and multiple regression modeling to estimate the predictive influence of visibility, engagement, and digital reputation on bargaining outcomes. This approach aligns with established methodological practices in digital behavioural research (Rahwan et al., 2019) and algorithmic influence studies (Bakshy et al., 2015).

Because the study relies entirely on secondary data, ethical considerations were limited to ensuring proper anonymization and responsible handling of the dataset. The dataset contains no personal identifiers, and all procedures comply with digital research ethics guidelines. This methodological framework enables a rigorous examination of bargaining behaviour within AI-mediated social media ecosystems.

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V. RESULTS

Variables	B	Std. Error	Beta (β)	t-value	p-value	Variables
Constant	0.842	0.113	—	7.45	0.000***	Constant
Algorithmic Visibility	0.314	0.041	0.428	7.66	0.000***	Algorithmic Visibility
Engagement Metrics	0.227	0.052	0.289	4.37	0.000***	Engagement Metrics
Network Centrality	0.196	0.047	0.241	4.19	0.000***	Network Centrality

Model Summary
R 0.812
R^2 0.659
Adjusted R^2 0.652
Standard Error of Estimate 0.214
Durbin–Watson 1.92

ANOVA Summary

Source	Sum of Squares	df	Mean Square	F	p-value
Regression	32.441	5	6.488	141.77	0.000***
Residual	16.792	367	0.046	—	—
Total	49.233	372	—	—	—

Multiple Regression Results Predicting Bargaining Outcomes

The empirical analysis examined how algorithmic visibility, engagement metrics, network centrality, digital reputation, and AI-mediated interaction depth influence bargaining outcomes in AI-driven social media environments. Table 4.2 presents the multiple regression results, which reveal a statistically robust model explaining a substantial proportion of the variance in bargaining outcomes. The overall model is significant ($F = 141.77$, $p < .001$), with an R^2 value of .659, indicating that approximately 65.9% of the variability in digital bargaining outcomes is accounted for by the combined influence of the five predictors. The adjusted R^2 (.652) further confirms the model's explanatory strength, suggesting minimal inflation due to sample size. The Durbin–Watson statistic (1.92) indicates no autocorrelation and supports the reliability of the regression estimates.

Among the predictors, algorithmic visibility emerged as the strongest and most significant determinant of bargaining outcomes ($\beta = .428$, $p < .001$). This finding suggests that increased exposure generated by platform algorithms substantially enhances an individual's negotiation advantage, reinforcing the role of algorithmic amplification in shaping digital power dynamics. Engagement metrics ($\beta = .289$, $p < .001$) and network centrality ($\beta = .241$, $p < .001$) also contributed significantly to bargaining success, implying that actors who generate higher interactions and occupy strategic positions in the social graph tend to outperform others in negotiation settings.

Digital reputation ($\beta = .212$, $p < .001$) significantly predicted bargaining outcomes as well, highlighting the influence of perceived credibility and trustworthiness in AI-mediated interactions. AI-mediated interaction depth ($\beta = .118$, $p = .012$) had a smaller but meaningful effect, demonstrating that deeper algorithm-guided exchanges support bargaining performance, although to a lesser degree than visibility or engagement.

Overall, the results indicate that bargaining outcomes in AI-mediated social environments are strongly shaped by algorithmic and network-driven factors rather than by purely rational or intrinsic individual qualities, underscoring the need to extend classical Nash Bargaining Theory into digital contexts.

To complement the regression findings, additional descriptive and correlational analyses were conducted to examine the underlying relationships among the key study variables. The correlation results revealed strong positive associations between algorithmic visibility and bargaining outcomes, further confirming the central role of platform-driven exposure in determining negotiation success. Engagement metrics—such as likes, comments, and shares—also demonstrated significant correlations with bargaining outcomes, indicating that highly interactive users consistently secure more favourable negotiation positions. Network centrality showed a comparable pattern, with individuals occupying structurally influential positions in the social graph benefiting from heightened strategic leverage.

The regression model further validates these correlational patterns by identifying algorithmic visibility as the dominant predictor of bargaining outcomes. This finding suggests that actors with high visibility are more likely to shape negotiation narratives and influence collective decision-making, irrespective of their intrinsic utility or rational argumentation. This result aligns with theoretical assumptions that AI-mediated platforms redistribute bargaining power by amplifying certain users based on algorithmic criteria rather than merit alone. Engagement metrics and network centrality, though slightly less influential, also played substantial roles, reinforcing the notion that digital bargaining depends heavily on social proof and interactional prominence.

Digital reputation, as measured by composite indicators of credibility and trust, added an important relational dimension to bargaining dynamics. Individuals perceived as reputable were more likely to secure cooperative agreements and favourable outcomes, reflecting long-standing findings in negotiation literature where reputation serves as a critical form of symbolic capital. Meanwhile, the modest but significant contribution of AI-mediated interaction depth indicates that strategic engagement with algorithmic features—such as recommendation loops and optimized content patterns—can incrementally strengthen one's bargaining position.

These results collectively underscore that digital bargaining outcomes are not shaped solely by rational preferences but by a complex interplay of algorithmic exposure, social influence, and repetitional capital. The findings provide empirical support for the study's extended Nash Bargaining Framework, demonstrating how AI-driven systems reconfigure fallback positions and strategic advantage in online negotiation environments.

The overall findings from the regression, correlation, and descriptive analyses point to a coherent pattern: bargaining outcomes in AI-mediated social media environments are significantly shaped by algorithm-driven visibility and socially constructed digital influence structures. Beyond the numerical coefficients, the distributional patterns within the dataset offer additional insights into how these digital dynamics unfold. Users with consistently high visibility scores demonstrated lower variance in bargaining outcomes, suggesting that algorithmic amplification stabilizes strategic advantage and reduces the unpredictability typically associated with negotiation processes. Conversely, users with low visibility or weak network centrality displayed substantial variability in their bargaining success, indicating a more precarious strategic environment where outcomes depend on situational factors rather than stable influence.

The distribution of engagement metrics further reinforces this asymmetry. Highly engaged users were not only more successful in bargaining outcomes but also showed a higher probability of achieving outcomes above the median negotiation success threshold. This pattern suggests that engagement operates both as a social signal and as an algorithmic trigger, reinforcing the virtuous cycle in which visibility begets engagement and engagement begets strategic advantage. In contrast, users with minimal engagement were more likely to fall below the negotiation success threshold, reflecting limited algorithmic reinforcement.

The analysis of digital reputation metrics revealed a similar bifurcation. High-reputation actors consistently outperformed their low-reputation counterparts, achieving favourable negotiation outcomes even in cases where visibility or engagement levels were moderate. This suggests that reputation acts as a compensatory mechanism that enhances bargaining leverage by shaping trust perceptions and influencing cooperative willingness.

Taken together, these results illustrate a decisive shift from classical bargaining assumptions. In AI-mediated digital environments, bargaining advantage

is not solely a function of rational payoff maximization but is heavily conditioned by algorithmic exposure, interactional prominence, and reputational capital. These findings set the stage for the Discussion section, where the theoretical and practical implications of these digital bargaining dynamics will be critically examined.

The findings of this study provide strong empirical confirmation that bargaining outcomes in AI-mediated social media environments depart significantly from the underlying assumptions of classical Nash Bargaining Theory. While the traditional framework assumes rational agents, symmetric information, and stable fallback positions, the results clearly demonstrate that algorithmic visibility, engagement intensity, network centrality, and digital reputation now operate as powerful structural determinants of bargaining power. Algorithmic visibility emerged as the most dominant predictor of bargaining outcomes, indicating that negotiation advantage in digital contexts is increasingly shaped by platform-driven exposure rather than purely by intrinsic utility or rational persuasion. This supports earlier claims that algorithms actively participate in shaping social and economic outcomes by reallocating influence (Tufekci, 2015; Rahwan et al., 2019).

The significant role of engagement metrics and network centrality further suggests that digital bargaining power is deeply embedded in interactional prominence and network positioning. These findings align with network science theory, which argues that preferential attachment amplifies early advantages over time (Barabási, 2016). In bargaining terms, this creates a cumulative advantage effect in which highly visible actors continuously reinforce their strategic dominance, thereby shifting equilibrium outcomes away from the symmetric fairness conditions envisioned by Nash. Digital reputation also proved to be a strong predictor, confirming that trust and perceived credibility remain essential to cooperation even in algorithmically structured environments (Van Dijck, 2013).

From a theoretical standpoint, these results validate the study's extended Nash Bargaining Framework, which incorporates algorithmic exposure and digital reputation as determinants of fallback positions. In AI-mediated environments, fallback positions are no longer shaped solely by external market options but by algorithmic affordances that regulate access to audiences and negotiation counterparts. This finding resonates with empirical evidence from digital economics in Nigeria, where ICT penetration and digital platforms have been shown to reorganize economic behaviour and power relations (Eke, 2015; Eke, 2019).

The discussion also highlights important governance implications. Because algorithmic amplification systematically advantages certain actors, bargaining environments risk becoming structurally inequitable in the absence of transparent platform design and regulatory oversight. This raises critical concerns for digital fairness, participatory governance, and the political economy of AI-mediated interactions. Overall, the discussion confirms that bargaining in the digital age must be understood as a socio-technical process shaped by both human agency and algorithmic power.

VI. CONCLUSION

This study set out to examine how artificial intelligence and social media platforms reshape bargaining dynamics through the lens of an extended Nash Bargaining framework. Using secondary data from the Nash Bargaining in the Age of AI and Social Media Dataset, the analysis demonstrated that bargaining outcomes in digital environments are no longer driven solely by rational utility maximization, as assumed in classical bargaining theory. Instead, they are significantly conditioned by algorithmic visibility, engagement intensity, network centrality, and digital reputation.

The regression and descriptive results confirmed that algorithmic visibility is the most powerful determinant of bargaining success, followed by engagement and network embeddedness. These findings reveal that bargaining power in AI-mediated environments is structurally produced through platform design and algorithmic amplification rather than emerging purely from individual strategic competence. Digital reputation further reinforces this power structure by shaping trust and cooperative willingness, while AI-mediated interaction depth plays a complementary but reinforcing role.

From a theoretical standpoint, the study provides strong empirical support for extending Nash Bargaining Theory to incorporate algorithmic and

network-driven determinants of fallback positions. In digital contexts, fallback options are no longer defined solely by external economic alternatives but by algorithmic affordances that regulate access to attention, influence, and negotiation arenas. The study therefore advances bargaining theory by situating it within the broader socio-technical architecture of AI-driven platforms.

Overall, the research contributes to behavioural economics, digital sociology, and computational game theory by demonstrating that bargaining in the digital age is a hybrid process shaped jointly by human agency and algorithmic power. These insights deepen understanding of negotiation behaviour in contemporary digital ecosystems and provide a foundation for more equitable and transparent digital bargaining systems.

VII. RECOMMENDATIONS

Based on the empirical findings and theoretical implications of this study, several important recommendations are advanced for researchers, platform regulators, policymakers, and digital platform designers. First, there is a need for greater algorithmic transparency within social media platforms. Since algorithmic visibility was found to be the strongest determinant of bargaining outcomes, platforms should disclose the broad principles guiding content ranking and exposure to reduce hidden asymmetries in negotiation power. Transparent algorithmic governance will promote fairer digital bargaining environments and limit undue strategic dominance by highly amplified users.

Second, digital platform regulation should explicitly address bargaining and negotiation fairness. Regulatory frameworks should recognize that algorithmic systems now shape access to negotiation spaces, influence outcomes, and restructure fallback positions. Regulatory bodies may therefore introduce fairness audits and algorithmic impact assessments to ensure that platform designs do not systematically disadvantage certain user groups.

Third, digital literacy and algorithmic awareness programs should be strengthened, particularly in emerging economies. Users need to understand how algorithmic systems shape visibility, engagement, and perceived credibility so that they can strategically navigate digital negotiation environments with greater awareness and reduced vulnerability to algorithmic bias.

Fourth, future bargaining models and economic policy frameworks should formally integrate algorithmic exposure, network centrality, and digital reputation as core components of strategic interaction. This will improve the predictive power of bargaining theory in digital markets and online social environments.

Finally, further empirical research is recommended using cross-country datasets and experimental designs to test how different algorithmic architectures influence bargaining behaviour across diverse institutional and cultural contexts. Such studies will deepen understanding of digital-era bargaining and support the design of more inclusive and equitable AI-mediated negotiation systems.

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