

SOCIAL IDENTITY AND DIGITAL NETWORKS: RELIGIOUS MODERATION PRACTICES OF MUHAMMADIYAH BRANCHES AND SUB-BRANCHES IN SURABAYA

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ARTICLE HISTORY

Received : 20-05-2026

Revised : 07-06-2026

Accepted : 30-06-2026

KEYWORDS

*Religious Moderation;
Social Network
Analysis; Social Identity
Theory;
Muhammadiyah;
Digital Communication.*

ABSTRACT

The rapid expansion of digital communication has transformed how Islamic organizations disseminate religious moderation while simultaneously increasing the risk of online polarization and misinformation. Despite extensive studies on digital religion, limited research has examined how grassroots Islamic organizations construct and sustain digital communication networks that promote religious moderation. This study investigates the digital communication network of Muhammadiyah branches and sub-branches in Surabaya and explores how organizational identity shapes the dissemination of moderation narratives. A sequential explanatory mixed-methods design was employed by integrating Social Network Analysis (SNA) and qualitative interviews. The network analysis examined digital interactions among 87 organizational actors connected through 314 communication ties, while qualitative data were collected through interviews with branch administrators, media coordinators, and youth cadres to explain the underlying communication practices. The findings reveal a moderately connected yet highly organized communication network, characterized by a density of 0.085, an average degree of 7.22, and a modularity value of 0.62, indicating decentralized communication with strong local community clusters. Several branch administrators and media coordinators emerged as key communication hubs and bridging actors responsible for coordinating and disseminating religious moderation narratives. Interview findings further demonstrate that these communication patterns are reinforced by a shared organizational identity that encourages collaborative, trustworthy, and context-sensitive digital engagement. The study contributes theoretically by integrating Social Identity Theory and Social Network Analysis, resulting in the Organic Digital Moderation Ecology (MEDO) Model, which explains how digital leadership, social capital, organizational infrastructure, digital literacy, and community feedback collectively sustain grassroots religious moderation. These findings provide practical insights for strengthening community-based digital communication strategies among Islamic organizations.

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INTRODUCTION

The development of information and communication technology has fundamentally transformed how religious communities interact, communicate, and express collective identity. Social media, instant messaging applications, and digital platforms have become crucial arenas for preaching, religious education, and public opinion formation (Campbell & Tsuria, 2021). The digital space enables religious messages to spread more rapidly, widely, and inclusively; however, it simultaneously opens opportunities for intolerant content, hate speech, and religious polarization to proliferate (Lim, 2017). Beyond serving as communication tools, digital platforms have increasingly become arenas where religious authority, collective identity, and ideological legitimacy are continuously negotiated. Consequently, understanding contemporary religious moderation requires not only examining religious messages themselves but also analyzing the interaction structures through which those messages are produced, circulated, and socially legitimized.

Religious moderation has emerged as a critical strategy in navigating this dynamic landscape. The concept promoted by the Indonesian government emphasizes the principles of justice, balance, and respect for diversity (Ministry of Religious Affairs of the Republic of Indonesia, 2019). Muhammadiyah, as one of Indonesia's largest Islamic mass organizations, plays a pivotal role in realizing the moderation agenda through education, preaching, and social enterprises. With its branch and sub-branch network extending to the neighborhood level, Muhammadiyah functions as a social foundation, a center for preaching, and a vehicle for community development (Nashir, 2015). Therefore, the effectiveness of religious moderation should not be understood merely as the implementation of organizational policies or theological doctrines, but also as the outcome of dynamic communication processes that shape collective understanding within religious communities.

In Surabaya, a multicultural city with a long history of pluralism and religious dynamism branches and sub-branches of Muhammadiyah are instrumental in maintaining social harmony and building a moderate Islamic identity. However, research examining religious moderation practices at the branch and sub-branch levels, particularly in the context of digital networks, remains severely limited. Most existing studies focus on the central Muhammadiyah policies (Arifin et al., 2022; Burhani, 2023) or normative explorations of *wasathiyah*, without adequate attention to digital dynamics at the grassroots level. Similarly, studies on digital religion have predominantly examined online religious authority, digital preaching, or the spread of radical narratives (Akmaliah, 2020; Lim, 2017; Nasrullah, 2022), while paying limited attention to how local Islamic organizations actively construct digital ecosystems that sustain religious moderation.

Dominant literature consistently positions grassroots religious organizations as vulnerable and reactive when confronting the forces of digitalization (Nasrullah, 2022; Akmaliah, 2020). Yet empirical conditions found in the field present a strikingly different picture a mature and structured digital ecosystem proven effective in building and disseminating religious moderation narratives. This gap between theoretical predictions and empirical reality constitutes the fundamental research problem that drives this study. This discrepancy reveals an important empirical gap between prevailing theoretical assumptions and the actual practices of grassroots Muhammadiyah organizations. Existing scholarship has largely overlooked the capacity of local religious institutions to become proactive producers of digital moderation rather than passive recipients of digital transformation.

Beyond this empirical limitation, a theoretical gap also remains unresolved. Previous studies employing Social Network Analysis (SNA) have successfully mapped patterns of online interaction and information diffusion but primarily emphasize structural characteristics of networks such as centrality, density, and connectivity (Subandi, 2021). Conversely, Social Identity Theory explains how collective identity shapes attitudes, norms, and group behavior (Tajfel & Turner, 1986), yet rarely explains how these identities become embedded within digital interaction structures. Consequently, the relationship between collective identity formation and digital network structures remains insufficiently explored.

This study argues that Social Identity Theory and Social Network Analysis provide complementary perspectives for understanding digital religious moderation. Social Identity Theory explains why Muhammadiyah members develop a shared commitment to moderate Islamic values and voluntarily participate in disseminating

moderation narratives. Social Network Analysis, meanwhile, explains how these collective identities are translated into patterns of digital interaction through key actors, communication pathways, and network structures that facilitate the diffusion of moderation messages. Integrating these perspectives therefore enables a more comprehensive explanation of both the symbolic and structural dimensions of digital religious communication.

This research addresses four primary questions: (1) What is the structure of the digital network of Muhammadiyah branches and sub-branches in Surabaya in the context of religious moderation practice? (2) Who are the key actors in the network and what roles do they play in disseminating moderation values? (3) How is Muhammadiyah's social identity represented in the digital space? (4) How can the research findings generate a conceptual model of a digital religious moderation network?

The novelty of this research lies in the integration of social identity theory (Tajfel & Turner, 1986) with digital network analysis, the focus on branches and sub-branches as an underexplored unit of analysis, and the development of the Organic Digital Moderation Ecology Model (MEDO) as a new theoretical contribution to religious communication scholarship and social network studies. More specifically, this study contributes by addressing three major gaps in previous literature: (1) shifting the analytical focus from national organizational policies to grassroots Muhammadiyah branches and sub-branches; (2) integrating identity-based and network-based perspectives to explain both the motivational and structural dimensions of digital religious moderation; and (3) proposing the Organic Digital Moderation Ecology (MEDO) Model as an empirically grounded framework for understanding how digital leadership, social capital, infrastructure, digital literacy, and community feedback collectively sustain religious moderation.

Guided by this integrated theoretical framework, this study assumes that collective social identity shapes patterns of digital interaction, while digital network structures simultaneously reinforce and reproduce that identity through continuous communication processes. Accordingly, this research seeks not only to map digital communication networks but also to explain the mechanisms through which organizational identity contributes to the construction and sustainability of religious moderation in the digital era.

METHOD

This study employed a mixed methods approach using a sequential explanatory design (Creswell & Plano Clark, 2018). This design was selected because the research objectives were twofold: first, to quantitatively map the digital communication network of Muhammadiyah branches and sub-branches using Social Network Analysis (SNA); and second, to qualitatively explain the interaction patterns, identity construction, and moderation strategies identified through the network analysis.

The study was conducted in Surabaya, East Java, Indonesia, covering six Muhammadiyah branches (*Pimpinan Cabang Muhammadiyah*) and twelve Muhammadiyah sub-branches (*Pimpinan Ranting Muhammadiyah*) that actively managed digital communication platforms. These research sites were selected because they consistently disseminated religious content through official digital media and maintained active interaction among members.

Quantitative data were collected from 87 respondents consisting of Muhammadiyah members actively involved in branch and sub-branch digital communication. Qualitative data were obtained from 24 informants, including branch administrators, sub-branch leaders, mosque administrators, social media managers, preachers, teachers, and youth cadres. Informants were selected purposively based on their direct involvement in digital religious communication and organizational decision-making.

The Social Network Analysis utilized digital interaction data collected between January and June 2025 from four primary platforms: WhatsApp groups, Facebook pages, Instagram accounts, and YouTube channels officially managed by the selected Muhammadiyah branches and sub-branches. Network data consisted of communication records, mentions, replies, comments, reposts, shares, and collaborative content production occurring during the six-month observation period.

Within the network analysis, each organizational actor—including branch administrators, sub-branch administrators, mosque committees, youth leaders, social media managers, and institutional accounts—was defined as a node, while every observable communication relationship, such as message exchange, content sharing, mentions, reposts, collaborative production, or interaction between actors, constituted an edge. The resulting network dataset was exported into Gephi version 0.10 for visualization and quantitative network analysis.

Four network indicators were employed because they represent complementary dimensions of organizational communication. Degree centrality was used to identify actors with the greatest communication activity and influence. Betweenness centrality measured actors functioning as bridges connecting different organizational clusters. Closeness centrality identified actors capable of rapidly disseminating moderation narratives throughout the network. Finally, network density and modularity were calculated to evaluate overall network cohesion and detect community structures within Muhammadiyah's digital communication ecosystem (Borgatti et al., 2018).

Qualitative data were collected through 24 semi-structured interviews, three Focus Group Discussions (FGDs) involving 21 participants, and digital content analysis. The interviews explored participants' experiences in managing digital communication, constructing moderation narratives, and coordinating online religious activities. The FGDs were conducted to validate preliminary findings from the network analysis and to obtain collective perspectives regarding digital moderation practices. Digital content analysis examined textual, visual, and audiovisual materials using indicators of moderation, including tolerance, appreciation of diversity, inclusiveness, counter-extremism narratives, and community engagement.

Qualitative data were analyzed using thematic analysis (Braun & Clarke, 2019), consisting of data familiarization, open coding, theme generation, theme refinement, and interpretation. The integration of quantitative and qualitative findings followed the sequential explanatory mixed methods strategy, whereby SNA findings guided the selection of interview participants and informed the subsequent qualitative interpretation of network structures and actor roles.

To enhance the trustworthiness of the findings, several validation strategies were employed. Methodological triangulation was conducted by integrating evidence from Social Network Analysis, interviews, Focus Group Discussions, and digital content analysis. Source triangulation involved comparing information obtained from organizational leaders, social media managers, mosque administrators, teachers, and youth cadres. Member checking was undertaken by presenting preliminary interpretations to selected key informants to verify the accuracy of the researchers' interpretations. In addition, peer debriefing among the research team was conducted throughout the analytical process to minimize researcher bias and strengthen the credibility of the findings.

RESULT AND DISCUSSION

Digital Network Structure of Muhammadiyah Branches and Sub-Branches in Surabaya

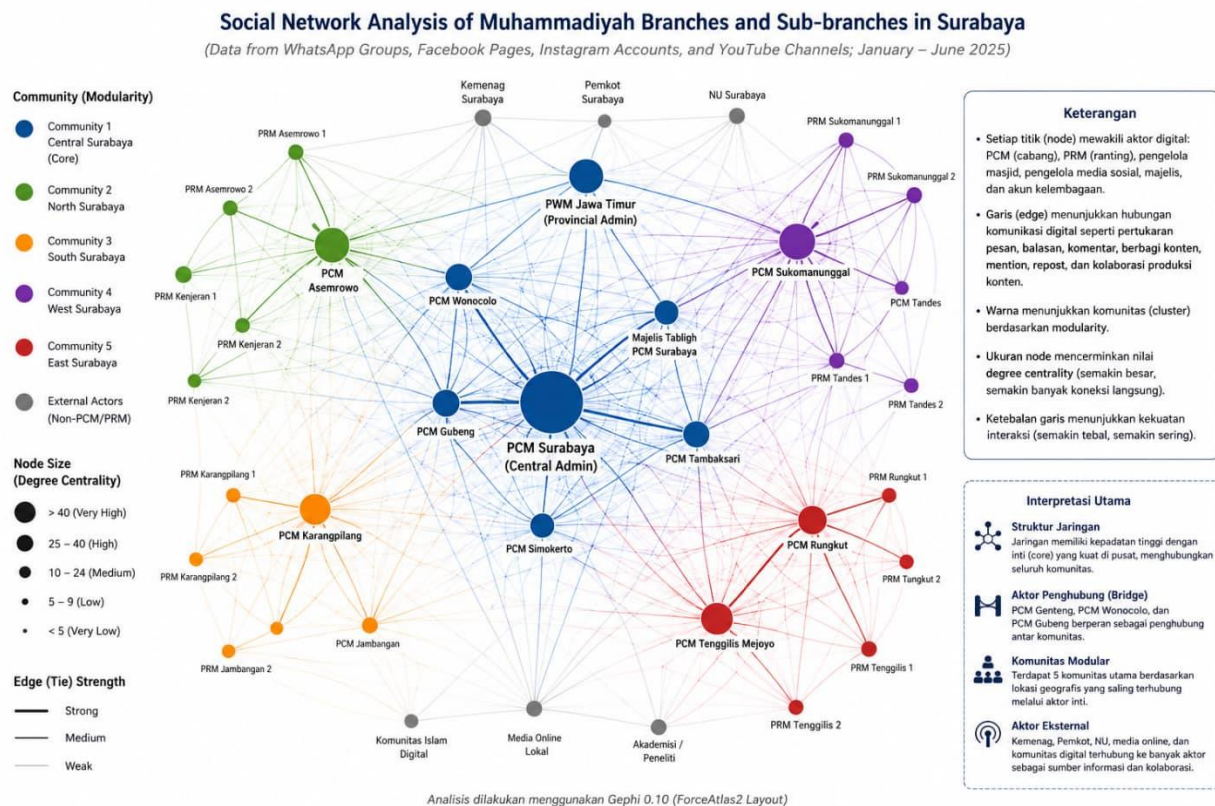


Figure 1 Social Network Analysis of Muhammadiyah Branches and Sub-branches in Surabaya

The Social Network Analysis (SNA) revealed that the digital communication ecosystem of Muhammadiyah branches and sub-branches in Surabaya consists of 87 actors connected through 314 communication ties, forming a moderately connected yet highly organized communication network. As presented in Figure 1 and Table 1, the network recorded a density value of 0.085, an average degree of 7.22, an average weighted degree of 15.63, a network diameter of 6, an average path length of 2.47, a modularity value of 0.62, and a global clustering coefficient of 0.41. Collectively, these indicators suggest that although not every actor communicates directly with every other actor, the overall network possesses sufficient connectivity to facilitate efficient dissemination of religious moderation narratives across organizational levels.

The relatively low density should not be interpreted as organizational weakness. Rather, it reflects a communication structure that emphasizes efficiency over complete connectivity. Each actor is directly connected to approximately seven other actors, allowing moderation messages to spread rapidly while avoiding redundant communication. Furthermore, the network diameter of six and the average path length of only 2.47 indicate that information can reach virtually every actor within only two to three communication steps. Such characteristics demonstrate the presence of a compact communication structure capable of supporting rapid coordination despite the large number of participating actors.

Table 1 Network Overall Metrics

NETWORK OVERALL METRICS

*Digital Communication Network of Muhammadiyah Branches and Sub-branches in Surabaya
(Data from WhatsApp Groups, Facebook Pages, Instagram Accounts, and YouTube Channels; January – June 2025)*

METRIC	VALUE	INTERPRETATION
 Total Nodes (Actors) Total number of unique actors in the network	87	There are 87 digital actors involved in communication and the dissemination of religious moderation content.
 Total Edges (Ties) Total number of communication ties/relationships	314	The network consists of 314 communication ties, including message exchanges, replies, comments, content sharing, mentions, reposts, and collaborative content production.
 Density Network density (range 0–1)	0.085	A density of 0.085 indicates a moderately connected network; there is still room for forming new relationships.
 Average Degree Average number of connections per actor	7.22	On average, each actor is directly connected to approximately 7 other actors.
 Average Weighted Degree Average strength of ties (weighted)	15.63	The average interaction strength per actor is 15.63, indicating a relatively high level of communication intensity.
 Network Diameter The longest geodesic distance between two actors	6	Any two actors in the network can be connected to each other through a maximum of 6 steps.
 Average Path Length Average geodesic distance between actors	2.47	Information on average takes about 2–3 steps to reach any actor in the entire network.
 Modularity (Communities) Strength of community structure (range 0–1)	0.62	A modularity value of 0.62 indicates the presence of well-defined communities within the network.
 Global Clustering Coefficient Tendency of actors to form tightly connected groups (range 0–1)	0.41	A coefficient of 0.41 shows that actors tend to form clusters where members are also interconnected.
 Reciprocity Proportion of mutual (two-way) ties (range 0–1)	0.27	Approximately 27% of ties are mutual, indicating a moderate level of dialogical interaction.
 Assortativity (Degree) Correlation of degree between connected actors (-1 to +1)	0.16	A positive value (0.16) indicates that actors with many connections tend to connect with other well-connected actors.

* Network metrics were calculated using Gephi 0.10 (ForceAtlas2 layout).

Another notable finding concerns the network's modularity value of 0.62, which indicates the existence of several well-defined communication communities. As illustrated in Figure 1, these communities largely correspond to the geographical distribution of Muhammadiyah branches throughout Surabaya. Although each branch maintains intensive communication within its own cluster, multiple inter-cluster connections remain active through several bridging actors. This configuration illustrates that Muhammadiyah does not operate through a rigid hierarchical communication model; instead, it develops an interconnected ecosystem in which local autonomy and organizational coordination coexist. Such findings differ from previous studies that generally portray religious organizations as highly centralized institutions whose digital communication is dominated by top-down information dissemination. Instead, the present findings demonstrate that grassroots organizational units actively participate in producing and circulating moderation narratives within their own digital communities while remaining connected to the broader organizational network.

From the perspective of Social Network Analysis, this communication pattern represents a resilient network architecture. Networks characterized by moderate density and relatively high modularity are generally more adaptive because they enable information to circulate efficiently without becoming overly dependent on a single communication pathway. Consequently, Muhammadiyah's digital ecosystem functions not merely as a communication channel but as a dynamic organizational infrastructure capable of sustaining religious moderation under increasingly complex digital environments.

Key Actors and Their Roles in the Moderation Network

Table 2 Top 10 Actors by Degree Centrality

Top 10 Actors by Degree Centrality

Digital Communication Network of Muhammadiyah Branches and Sub-branches in Surabaya
(January – June 2025)

Rank	Actor	Actor Type	Role / Description	Degree Centrality	Degree Centrality (Visualization)	Betweenness Centrality	Closeness Centrality
1	 PCM Surabaya (Central Admin)	Branch (PCM)	Main coordinator of digital communication and moderation content at the branch level	0.689	100%	0.451	0.782
2	 PCM Genteng	Branch (PCM)	Content distributor and coordination hub for northern Surabaya	0.517	75.1%	0.312	0.718
3	 Media Center Muhammadiyah Surabaya	Institution	Digital content producer for Instagram, YouTube, and Facebook	0.483	70.1%	0.298	0.705
4	 PCM Gubeng	Branch (PCM)	Bridge between central branch and sub-branches in the eastern area	0.448	65.1%	0.276	0.694
5	 PCM Wonokromo	Branch (PCM)	Coordinator of youth cadres and online study programs	0.437	63.4%	0.261	0.681
6	 PCM Sukomanunggal	Branch (PCM)	Content relay and community engagement in the western corridor	0.391	56.7%	0.233	0.652
7	 PCM Rungkut	Branch (PCM)	Active in mosque-based digital da'wah and community services	0.379	55.0%	0.228	0.646
8	 PCM Asemrowo	Branch (PCM)	Information gateway for coastal sub-branches	0.368	53.4%	0.212	0.631
9	 PCM Karangpilang	Branch (PCM)	Engagement hub for youth and education communities	0.356	51.7%	0.205	0.621
10	 Majelis Tabligh PCM Surabaya	Institution	Provider of sermon materials and moderation narratives	0.333	48.3%	0.184	0.598

Actor Type Legend				
 Branch (PCM) Muhammadiyah Branch	 Sub-branch (PRM) Muhammadiyah Sub-branch	 Institution Organizational Unit / Division	 Functional Body (Majelis) Organizational Body	 Community / Other Partner & External Actor

Degree Centrality measures the number of direct connections an actor has with other actors in the network. The higher the value, the more central and influential the actor in information dissemination.
Analysis conducted using Gephi 0.10 (ForceAtlas2 layout).

The analysis of actor centrality further demonstrates that organizational influence within Muhammadiyah's digital communication network is distributed unevenly across several strategic actors. As shown in Table 2, PCM Surabaya (Central Administration) achieved the highest Degree Centrality value (0.689), followed by PCM Genteng (0.517), Media Center Muhammadiyah Surabaya (0.483), PCM Gubeng (0.448), and PCM Wonokromo (0.437). Degree centrality measures the number of direct communication connections maintained by each actor; therefore, actors with higher values occupy more influential positions in facilitating information exchange throughout the organization.

The dominant position of PCM Surabaya reflects its role as the principal communication hub responsible for coordinating moderation narratives across branches and sub-branches. However, influence within the network is not monopolized by the central administration alone. Several local branches also occupy highly central positions, indicating that digital leadership has become increasingly distributed across multiple organizational levels. This finding suggests that effective dissemination of religious moderation is supported not only by formal organizational authority but also by intensive communication practices developed at the grassroots level.

A more nuanced understanding emerges when examining Betweenness Centrality. Although PCM Surabaya remains highly influential, actors such as PCM Genteng, Media Center Muhammadiyah Surabaya, and PCM Gubeng display comparatively high betweenness values, indicating their strategic function as bridges connecting otherwise separate communication communities. These actors facilitate information exchange across geographical clusters and reduce structural fragmentation within the overall network. Without their intermediary role, communication between several local communities would become substantially less efficient.

Similarly, Closeness Centrality indicates that PCM Surabaya possesses the shortest average communication distance to all other actors within the network. Such a position enables organizational messages concerning religious moderation to reach the majority of network members through relatively few communication steps. Collectively, these centrality indicators reveal that digital influence is simultaneously determined by communication activity, strategic positioning, and relational connectivity. Organizational leadership in digital environments therefore extends beyond formal administrative authority to include actors capable of maintaining extensive and meaningful communication relationships.

These findings reinforce the proposition that organizational communication within Muhammadiyah has gradually evolved from hierarchical information distribution toward collaborative network governance. Rather than relying exclusively on centralized control, the organization demonstrates characteristics of distributed leadership, where multiple actors collectively sustain moderation narratives through continuous interaction across digital platforms.

Social Identity Representation within the Digital Network

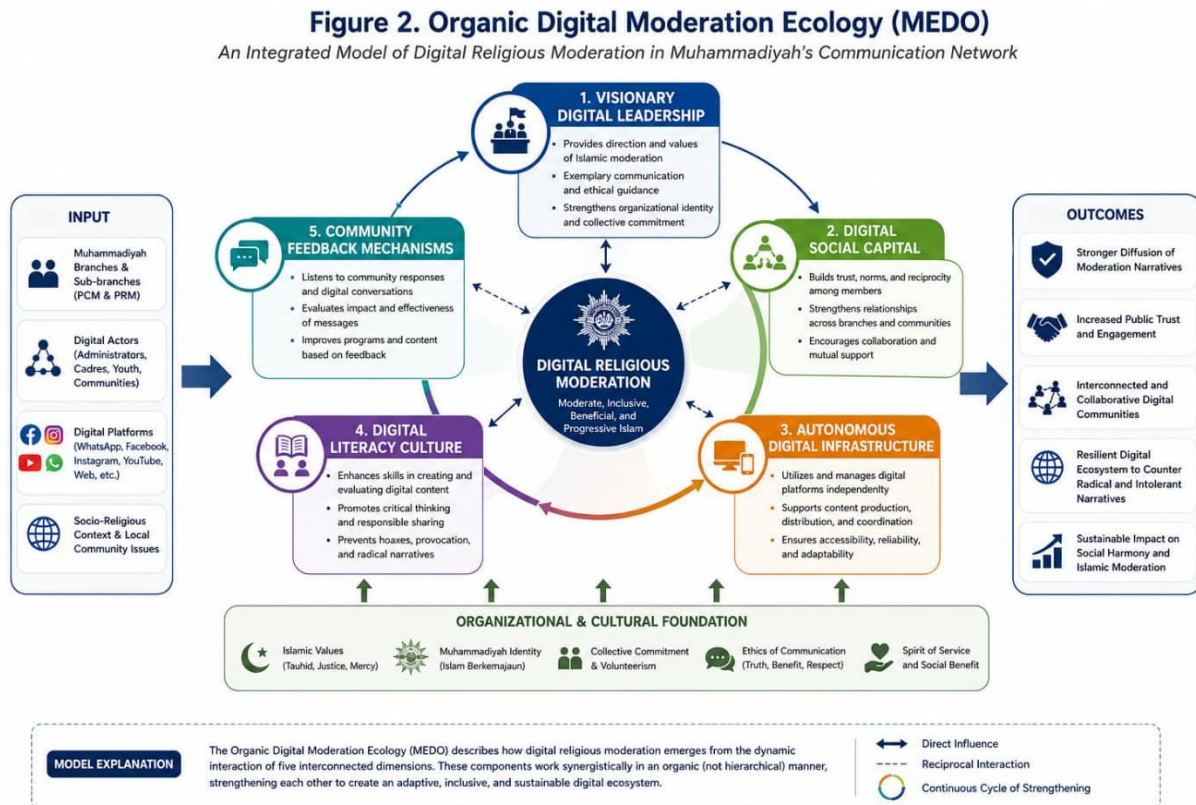
While the Social Network Analysis explains the structural characteristics of Muhammadiyah's digital communication network, the interview findings reveal the motivations underlying these interaction patterns. Most participants perceived digital communication not merely as a means of disseminating information but as a collective responsibility to represent Muhammadiyah's values of moderation and public benefit. As explained by Syakroni, an administrator from PCM Sukomanunggal, *"Every content that we upload is first discussed internally. We ensure that every message reflects Muhammadiyah's values of moderation, tolerance, and benefit for society."*

Similarly, Hanif, a youth cadre from PCM Tambaksari, emphasized the importance of contextualizing organizational messages, stating, *"Messages from the central leadership are important, but we usually adapt them to local community issues so people feel the content is relevant to their daily lives."* These findings indicate that actors occupying central positions within the digital network function not only as information disseminators but also as trusted representatives who translate organizational values into locally relevant narratives. This interpretation is consistent with the Social Network Analysis, which identified branch administrators and media coordinators as the most central actors in the network, and supports Social Identity Theory by demonstrating that collective organizational identity shapes members' communication behaviour and reinforces the dissemination of religious moderation narratives.

Other informants expressed similar views. Ahmad Fauzi (PCM Wonokromo) highlighted that public trust is more important than simply increasing followers, while M. Rizal (PCM Gubeng) explained that collaboration among branches often begins through discussions in WhatsApp groups before developing into joint community programs.

These findings support the Social Network Analysis, which identified branch administrators and media coordinators as actors with the highest network centrality. Their influence is determined not only by the number of communication ties but also by the organizational legitimacy and trust they possess within the community. This finding supports Social Identity Theory, which argues that individuals regulate their behaviour according to shared group values. In Muhammadiyah's digital ecosystem, collective identity motivates responsible communication, while repeated digital interaction simultaneously reinforces that identity and strengthens the dissemination of religious moderation narratives.

Organic Digital Moderation Ecology Model (MEDO)



The integration of quantitative and qualitative findings culminated in the development of the Organic Digital Moderation Ecology (MEDO) Model, presented in Figure 2. Rather than conceptualizing digital moderation as the product of organizational policy alone, the model illustrates moderation as an adaptive ecosystem emerging through continuous interaction among five mutually reinforcing dimensions: visionary digital leadership, digital social capital, autonomous digital infrastructure, digital literacy culture, and community feedback mechanisms.

The Social Network Analysis demonstrates that leadership and communication structures provide the relational infrastructure through which moderation narratives circulate. Simultaneously, interview findings reveal that these communication processes are sustained by shared organizational identity, mutual trust, and collective commitment to Muhammadiyah's values. Consequently, moderation emerges not simply because actors possess digital technology but because organizational identity continuously shapes patterns of digital interaction.

The MEDO model therefore offers an important theoretical contribution by integrating Social Identity Theory and Social Network Analysis into a single explanatory framework. Social Identity Theory explains the motivational dimension—why organizational members consistently promote moderation values—whereas Social Network Analysis explains the structural dimension—how these values spread efficiently throughout interconnected communication networks. By combining these perspectives, the present study demonstrates that

digital religious moderation should be understood simultaneously as a process of identity construction and network formation. This integrated perspective extends previous studies that have tended to examine identity and communication structures separately, thereby providing a more comprehensive explanation of how grassroots Islamic organizations sustain moderation within contemporary digital society.

CONCLUSION

This study demonstrates that Muhammadiyah's branches and sub-branches in Surabaya have developed a decentralized yet highly interconnected digital communication network that effectively supports the dissemination of religious moderation. The Social Network Analysis revealed that moderation narratives are sustained through strategic communication hubs and bridging actors, while the qualitative findings showed that these interaction patterns are reinforced by a shared organizational identity grounded in Muhammadiyah's values of *Islam Berkemajuan*. Together, these findings answer the research questions by explaining both the structural characteristics of the digital network and the social mechanisms through which moderation is maintained at the grassroots level.

The primary theoretical contribution of this study lies in integrating Social Identity Theory with Social Network Analysis, demonstrating that digital religious moderation is simultaneously shaped by collective identity and relational network structures. Building upon this integration, the study proposes the Organic Digital Moderation Ecology (MEDO) Model, which conceptualizes digital moderation as an adaptive ecosystem emerging from the interaction of visionary leadership, digital social capital, autonomous digital infrastructure, digital literacy, and community feedback. This model extends previous studies that have generally examined organizational identity and digital communication separately.

Practically, the findings provide strategic insights for Islamic organizations and policymakers seeking to strengthen religious moderation through community-based digital communication. Rather than relying solely on centralized campaigns, effective moderation can be enhanced by empowering local communication hubs, strengthening digital literacy, and fostering collaboration across grassroots organizational networks.

This study is limited to Muhammadiyah branches and sub-branches in Surabaya and focuses primarily on organizational digital communication within a single Islamic organization. Future research should examine the applicability of the MEDO Model across different religious organizations, geographical contexts, and digital platforms, while incorporating comparative and longitudinal approaches to better understand the evolving dynamics of digital religious communication and moderation.

ACKNOWLEDGMENT

The authors would like to express sincere gratitude to all administrators, cadres, and members of Muhammadiyah branches and sub-branches in Surabaya who participated in this research. This study was supported by the Research and Community Service Institute (LPPM) of Universitas Muhammadiyah Surabaya through the RisetMu 2023 Fundamental Research Grant.

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