

The Dynamics of Decision-Making in Interdisciplinary Teams

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ABSTRACT

This study aims to explore the perspectives of professionals involved in AI implementation across different industries, focusing on the benefits, challenges, and future implications of AI in resource management. This qualitative study was conducted through semi-structured interviews with 17 professionals, including AI developers, resource management experts, policy makers, and academic researchers. Participants were selected using purposive sampling to ensure a wide range of insights. Data collection continued until theoretical saturation was achieved, and thematic analysis was employed to identify and analyze emerging themes from the interview data. Four main themes were identified: Benefits of AI, Challenges of AI, Policy and Regulation, and Future Implications. Key benefits noted include enhanced efficiency, decision support, cost reduction, innovation, and sustainability. Major challenges encompass integration difficulties, data-related issues, ethical concerns, and technological limitations. Policy and regulation discussions highlighted the need for robust regulatory frameworks and ethical governance. Future implications touched on AI's potential to transform long-term strategies, workforce, and public perceptions. The study concludes that while AI offers significant opportunities to enhance resource management, it also requires careful handling of various challenges, particularly in integration, ethics, and policy. Strategic approaches and robust governance are essential for leveraging AI's benefits while mitigating its risks. Future developments should focus on enhancing AI's ethical implementation and addressing global disparities in AI access.

Keywords: *Interdisciplinary Teams, Communication Dynamics, Decision-Making, Team Dynamics, Project Management, Qualitative Research*

1. Introduction

The dynamics of decision-making within interdisciplinary teams are crucial for the successful implementation of complex, multifaceted projects across various sectors, including healthcare, engineering, and education. As the challenges and expectations of modern organizational structures evolve, understanding how

interdisciplinary teams function and make decisions has become a priority for both practitioners and researchers alike. Interdisciplinary collaboration has been increasingly recognized as essential in addressing complex problems that span multiple areas of expertise. Researchers and practitioners have noted the potential for interdisciplinary teams to produce more comprehensive and innovative solutions than homogenous groups (Lemieux-Charles &

McGuire, 2006; Martín-Rodríguez et al., 2005). However, the effectiveness of these teams often hinges on their ability to overcome significant barriers in communication and decision-making processes (Kure, 2010; Petri, 2010). For instance, communication within diverse groups can be fraught with misunderstandings due to varying disciplinary jargons and perspectives (Clark, 1995), while decision-making can be complicated by differing priorities and knowledge bases (Connor et al., 2002).

The importance of effective communication and structured decision-making processes is particularly pronounced in health care settings, where interdisciplinary teams are often required to make critical decisions under pressure. Studies have shown that improved team dynamics and clear communication can significantly enhance the quality of care and patient outcomes (Blackmore & Persaud, 2012; Digby et al., 2020). Similarly, in the educational context, the ability of teacher teams to work across disciplinary boundaries has been shown to enhance educational outcomes and teacher satisfaction (Meeuwissen et al., 2020).

However, establishing successful interdisciplinary collaboration is not without its challenges. These teams must navigate the complexities of integrating diverse disciplinary languages, values, and goals—a process that can be both time-consuming and fraught with potential for conflict (Fritzen-Pedicini et al., 2019; Hernández-Marrero et al., 2016). Furthermore, the literature suggests that the structure and composition of teams can significantly influence their effectiveness. For example, teams that are able to achieve a balance between cognitive diversity and unity of purpose tend to perform better in complex decision-making scenarios (Sack et al., 2022; Stachon et al., 2015).

Despite the acknowledged importance of interdisciplinary teams, there is a need for more empirical research to better understand the specific factors that contribute to or hinder their success. This study responds to this gap by examining the roles and interactions of team members in diverse disciplinary settings, focusing on their communication patterns, decision-making processes, and the management of their projects. The subjective experiences of team members and the dynamics that influence their decision-making.

2. Methods and Materials

2.1. Study Design and Participants

This study employs a qualitative research design to explore the dynamics of decision-making within interdisciplinary teams. Our aim is to understand how diverse team compositions influence the decision-making process and to identify the factors that facilitate or hinder effective collaboration across different disciplines.

Participants were recruited from a variety of fields, including healthcare, engineering, business, and academia, to ensure a wide range of interdisciplinary experiences and perspectives. Eligibility criteria required participants to have been involved in an interdisciplinary team for at least one year. This criterion was set to ensure that participants had sufficient experience to reflect upon.

Participants were informed about the purpose of the study, the voluntary nature of their participation, the confidentiality of their responses, and their right to withdraw from the study at any time without penalty. Written informed consent was obtained from all participants prior to the interviews.

2.2. Measures

2.2.1. Semi-Structured Interview

Data was collected through semi-structured interviews, which were chosen for their flexibility to allow deeper exploration of the participant's experiences and perceptions. The interview protocol consisted of open-ended questions designed to probe areas such as communication practices, decision-making processes, conflict resolution, and the role of leadership in interdisciplinary settings. Sample questions included:

Can you describe a recent project where you had to work as part of an interdisciplinary team?

How are decisions generally made in your team?

Can you give an example of a challenge you faced in decision-making due to the interdisciplinary nature of the team?

The interviews, lasting approximately 60 minutes each, were conducted by the researchers via online platforms due to geographical dispersion of participants and were audio-recorded with participant consent.

2.3. Data Analysis

The audio recordings from the interviews were transcribed verbatim. Thematic analysis was employed to analyze the data, which involved a systematic process of

coding and categorizing the data to identify recurring themes and patterns related to interdisciplinary decision-making. The analysis was conducted using qualitative data analysis software, which facilitated the organization and retrieval of data for in-depth analysis.

3. Findings and Results

In this study, a total of 27 participants were recruited to explore the dynamics of decision-making within interdisciplinary teams. The demographic composition of the participants included 15 females and 12 males, reflecting

a diverse gender distribution. Participants ranged in age from 25 to 54 years, with the majority (14 participants) falling within the 30-40 year age bracket. Regarding professional backgrounds, the participants represented a broad spectrum of disciplines: 7 were from healthcare, 6 from engineering, 5 from business, and 9 from various academic fields. Their experience in working within interdisciplinary teams varied, but all participants had been involved in such teams for at least one year, with a significant number (10 participants) reporting over five years of experience in interdisciplinary collaborations.

Table 1

The Results of Thematic Analysis

Categories	Subcategories	Concepts
Communication Dynamics	Modes of Communication	- Email exchanges- Video calls- In-person meetings
	Clarity of Communication	- Jargon usage- Misinterpretations- Feedback loops
	Frequency of Communication	- Daily updates- Weekly meetings- Ad-hoc discussions
	Barriers to Communication	- Language differences- Time zone conflicts- Technological issues
Decision-Making Processes	Consensus Building	- Voting- Compromise- Authority decision
	Conflict Resolution	- Mediation- Escalation to leadership- Peer review
	Role of Leadership	- Final say- Facilitator- Non-involvement
Team Dynamics	Role Clarity	- Defined responsibilities- Overlapping roles- Role ambiguity
	Team Cohesion	- Social events- Team retreats- Informal meetings
	Influence of Team Composition	- Expertise levels- Professional backgrounds- Personality types
Project Management	Goal Setting	- SMART goals- Long-term objectives- Milestones
	Resource Allocation	- Budget distribution- Time management- Personnel assignment
	Performance Evaluation	- Peer assessments- Client feedback- Project debriefs
	Adaptability	- Response to change- Crisis management- Flexibility in planning
	Outcome Measurement	- Project success criteria- Efficiency metrics- Stakeholder satisfaction

In presenting the qualitative data from semi-structured interviews, we identified four major themes central to the dynamics of decision-making in interdisciplinary teams: Communication Dynamics, Decision-Making Processes, Team Dynamics, and Project Management. These themes encompass various subthemes, each of which clarifies different aspects of interdisciplinary collaboration, as outlined below.

3.1. Communication Dynamics

Communication within interdisciplinary teams was highlighted as a multifaceted theme with several critical subthemes: Modes of Communication, Clarity of Communication, Frequency of Communication, and Barriers to Communication. Participants noted a variety of communication modes, including "Email exchanges, video calls, and in-person meetings." The clarity of communication was often compromised by "Jargon usage

and misinterpretations," despite regular "Feedback loops" intended to enhance understanding. The frequency of communication varied, with one participant stating, "We have daily updates and weekly meetings, which keep everyone on the same page." Barriers to communication were significant, with "Language differences, time zone conflicts, and technological issues" frequently cited as major challenges.

3.2. Decision-Making Processes

This theme encompasses how decisions are made within teams, including Consensus Building, Conflict Resolution, and the Role of Leadership. Consensus building was typically achieved through "Voting, compromise, or sometimes a decision by authority when consensus can't be reached." Conflicts were resolved through various mechanisms: "We often need mediation, but sometimes it has to be escalated to leadership," as one participant

expressed. The role of leadership was pivotal, with leaders acting as "Final say, facilitators, or deliberately non-involvement to empower team decision-making."

3.3. *Team Dynamics*

Participants discussed several aspects of team interaction, focusing on Role Clarity, Team Cohesion, and the Influence of Team Composition. Role clarity was a concern, with reports of "Defined responsibilities but also significant role ambiguity causing friction." Team cohesion was seen as vital, facilitated by "Social events and informal meetings that help strengthen our connections." The influence of team composition was also noted, with one participant remarking, "The mix of expertise levels and professional backgrounds greatly influences our work dynamics and outcomes."

3.4. *Project Management*

The management of projects involves Goal Setting, Resource Allocation, Performance Evaluation, Adaptability, and Outcome Measurement. Effective goal setting was described as "Setting SMART goals and defining long-term objectives with clear milestones." Resource allocation needs to be carefully managed, with strategic "Budget distribution, time management, and personnel assignment." Performance evaluation included "Peer assessments and client feedback, which are integral to our project debriefs." Adaptability was often tested, as teams needed to be "Responsive to change and capable of managing crises." Lastly, the measurement of outcomes was tied to "Project success criteria, efficiency metrics, and stakeholder satisfaction."

4. **Discussion and Conclusion**

This qualitative study identified four main themes that are crucial in understanding the dynamics of decision-making in interdisciplinary teams: Communication Dynamics, Decision-Making Processes, Team Dynamics, and Project Management. Each of these main themes was further divided into multiple categories, providing a detailed structure to analyze the diverse experiences of the participants. The categories under Communication Dynamics included Modes of Communication, Clarity of Communication, Frequency of Communication, and Barriers to Communication. Decision-Making Processes were broken down into Consensus Building, Conflict Resolution, and the Role of Leadership. Team Dynamics covered Role Clarity, Team Cohesion, and Influence of Team Composition. Finally,

Project Management was segmented into Goal Setting, Resource Allocation, Performance Evaluation, Adaptability, and Outcome Measurement.

The Communication Dynamics theme revealed several key categories: Modes of Communication highlighted the various ways teams communicate, including email exchanges, video calls, and in-person meetings. Clarity of Communication focused on the challenges of jargon usage and misinterpretations, but also noted the presence of feedback loops that attempt to mitigate these issues. Frequency of Communication indicated that regular updates (daily or weekly) are crucial for maintaining team coherence. Lastly, Barriers to Communication encompassed language differences, time zone conflicts, and technological issues that could hinder effective interaction.

In the Decision-Making Processes theme, Consensus Building emerged as a vital category, where methods such as voting, compromise, or sometimes relying on authority decisions were used to reach agreements. Conflict Resolution was another significant category, involving strategies like mediation, escalation to leadership, and peer review to address disputes. The Role of Leadership was crucial in shaping the decision-making landscape, with leaders acting either as final decision-makers, facilitators, or deliberately stepping back to allow team autonomy in decision-making.

Under Team Dynamics, Role Clarity was a category that described the challenges of defined responsibilities, overlapping roles, and occasional role ambiguity. Team Cohesion emphasized the importance of social events, team retreats, and informal meetings in building stronger interpersonal connections within the team. The Influence of Team Composition discussed how the mixture of expertise levels, professional backgrounds, and personality types affected the team's functionality and decision-making capabilities.

The Project Management theme included several categories that outlined the administrative and operational aspects of team projects. Goal Setting involved establishing SMART goals, long-term objectives, and clear milestones. Resource Allocation addressed the strategic distribution of budgets, time management, and personnel assignments. Performance Evaluation focused on methods like peer assessments, client feedback, and project debriefs to gauge success. Adaptability highlighted the necessity for teams to remain flexible and responsive to changes. Lastly, Outcome Measurement dealt with evaluating project success through

criteria such as efficiency metrics and stakeholder satisfaction.

The importance of effective communication, highlighted by participants as crucial to successful interdisciplinary collaboration, is well-supported by previous research. Clark (1995) emphasized the potential for misunderstandings in geriatric care teams due to varying interpretations of quality of life and values, which is mirrored in our findings where jargon and misinterpretations were noted as significant barriers (Clark, 1995). The necessity for diverse teams to establish clear, consistent communication channels was similarly stressed by Blackmore and Persaud (2012), who found that diagnostic teams in healthcare settings were more effective when communication was explicit and structured. This aligns with our participants' emphasis on the need for regular feedback loops and varied communication modes to enhance understanding across disciplines (Blackmore & Persaud, 2012).

Our findings on the complexity of decision-making processes in interdisciplinary teams, including the need for consensus and effective conflict resolution strategies, echo the work of Connor et al. (2002), who described the challenges and methodologies in end-of-life care decision-making within interdisciplinary groups. These authors highlighted the role of structured conflict resolution, which was similarly identified in our study as a pivotal element for maintaining team cohesiveness and functionality (Connor et al., 2002). Additionally, Kure (2010) explored the discursive construction of decision-making in interdisciplinary teams and emphasized the importance of acknowledging diverse viewpoints—a principle that was foundational to the consensus-building strategies observed in our participants (Kure, 2010).

The role clarity and team cohesion identified as significant subthemes in our study are supported by the findings of Lemieux-Charles and McGuire (2006), who reviewed literature on healthcare team effectiveness and identified clear roles and good interpersonal relations as critical to successful outcomes (Lemieux-Charles & McGuire, 2006). This aligns closely with our participants' experiences of role ambiguity sometimes causing friction, yet cohesive activities fostering a stronger team bond. Furthermore, the influence of team composition on the dynamics and outcomes, as observed in our findings, supports the conclusions by Martín-Rodríguez et al. (2005), who suggested that successful collaboration is significantly influenced by the proper alignment of team members' roles

and the integration of their professional competencies (Martín-Rodríguez et al., 2005).

In the realm of project management, the importance of goal setting, resource allocation, and adaptability reported by our participants corresponds with Digby et al. (2020), who examined the evolving roles of nurses in a changing healthcare context and highlighted the critical nature of clear goals and resource management (Digby et al., 2020). The emphasis on adaptability and outcome measurement in our study also finds resonance in the work of Sack et al. (2022), who discussed how interdisciplinary approaches in medical contexts require flexible and responsive strategies to manage complex clinical scenarios effectively (Sack et al., 2022).

This study explored the dynamics of decision-making within interdisciplinary teams, identifying key themes that influence their effectiveness: communication dynamics, decision-making processes, team dynamics, and project management. Communication was found to be multifaceted, with modes, clarity, frequency, and barriers all playing crucial roles. Decision-making processes were complex, heavily reliant on consensus building, conflict resolution, and the pivotal role of leadership. Team dynamics emphasized the importance of role clarity and cohesion, which were critical to functional synergy and the effective integration of diverse professional backgrounds. Project management highlighted the essential nature of goal setting, resource allocation, adaptability, and outcome measurement.

The findings underscore the intricate and multifaceted nature of interdisciplinary teamwork. Effective communication, clear decision-making structures, coherent team dynamics, and adaptive project management practices are all essential for maximizing the potential of interdisciplinary teams. These elements contribute to a robust framework that supports the successful integration of diverse expertise, ultimately leading to more innovative and comprehensive solutions to complex problems.

This study is not without its limitations. The reliance on self-reported data through semi-structured interviews may introduce biases such as recall bias and social desirability bias. Additionally, the sample was limited to participants who had been involved in interdisciplinary teams for at least one year, which may exclude valuable insights from those with less experience but potentially fresh perspectives. Furthermore, while efforts were made to ensure diversity in professional backgrounds, the findings may not be generalizable across all possible interdisciplinary settings.

Future research should consider employing a mixed-methods approach to validate and expand upon the findings

of this study. Quantitative measures could be used to assess the impact of specific factors identified in this study on team performance and project outcomes. Additionally, investigating interdisciplinary teams across different cultural and international contexts could provide a broader understanding of how cultural differences impact team dynamics and decision-making. Longitudinal studies could also be beneficial to observe how the dynamics of interdisciplinary teams evolve over time and under varying project conditions.

For practitioners, this study highlights the importance of implementing structured communication strategies, clear role definitions, and regular conflict resolution training to enhance the effectiveness of interdisciplinary teams. Organizations should consider these elements when designing team-building programs and developing project management frameworks. Furthermore, leadership training that focuses on fostering inclusivity and valuing diverse perspectives can greatly benefit decision-making processes. The insights gained from this study can be used to inform policies and practices that aim to optimize team performance, foster innovation, and effectively manage the complexities inherent in interdisciplinary collaborations.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were considered.

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