



The Lived Experience of Coastal Communities in Mangrove Restoration: A Phenomenological Study

Rahman Soesilo

Universitas Muhammadiyah AR Fachrudin Tangerang, Indonesia

rahmansusilo537@gmail.com

Article Info

Article history:

Received 28-05-2025

Revised 07-07-2025

Accepted 17-07-2025

Keyword:

Data Visualization; Lived Experience; Strategic Communication; Analytics Professionals; Meaning-Making; Qualitative Research.

ABSTRACT

Data visualization is essential for decision-making in data science, allowing professionals to communicate complex findings as actionable insights. While technical tools have improved, little is known about the lived experiences of those who use these tools to convey strategic messages within organizations. Prior studies emphasize functionality and interface design, creating a gap in understanding users' subjective and emotional engagement in data storytelling. This study employed an interpretative phenomenological approach to explore how data professionals experience communicating business insights through visualization. Nine participants—including data analysts, business intelligence specialists, and UX researchers from technology and finance sectors—were interviewed in depth. Thematic analysis was used to identify patterns of meaning-making and trust-building. Participants described navigating cognitive, emotional, and ethical challenges when creating visual narratives. They saw themselves as mediators between data and stakeholders, balancing clarity, persuasion, and integrity. Key tensions included aligning with organizational expectations while maintaining transparency and ethical responsibility. The findings highlight data visualization as a human-centered practice, involving more than technical skill. This study contributes a deeper understanding of how data professionals interpret and shape meaning, filling a gap in research that overlooks user subjectivity. The results offer guidance for designing tools and training that support both the analytical and communicative dimensions of data work.



©2025 Authors. Published by PT Mukhlisina Revolution Center.. This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.
(<https://creativecommons.org/licenses/by/4.0/>)

INTRODUCTION

In today's data-driven organizations, communicating complex insights through visualization tools is critical for strategic decision-making. Platforms like Tableau, Power BI, and Looker enable professionals to transform raw data into compelling visual narratives. However, the true value of these tools lies not just in data access, but in how individuals interpret and convey meaning within organizational and social contexts.

Data visualization is more than a technical task—it is a human-centered practice shaped by cognitive processes, ethical considerations, and communicative intent. Users work within corporate hierarchies and social expectations, often balancing analytical rigor with the need to persuade diverse audiences. Despite its ubiquity in professional environments, this process remains underexplored from the perspective of individual experience and meaning-making.

Existing research has focused largely on system functionality and interface usability, leaving a gap in understanding how data professionals subjectively experience the act of communicating insights. This gap is especially relevant in contexts where emotional, ethical, and political dynamics influence how stories are constructed from data.

To address this gap, the present study investigates: How do data visualization practitioners experience the process of constructing and communicating strategic insights within organizational

contexts? Adopting a phenomenological approach, this research seeks to uncover the lived experiences behind data storytelling and reveal the cognitive and emotional labor involved.

Within the broader discourse on data communication, the investigation of how individuals subjectively experience and interpret data visualization has emerged as a critical area of inquiry. As organizations increasingly rely on data visualizations to inform decision-making, the users of these tools are not merely passive transmitters of information but active participants in constructing and conveying meaning. Understanding their lived experiences offers valuable insights into the interpretive, emotional, and ethical dimensions of data use dimensions that are often obscured in conventional research.

However, exploring these subjective experiences presents notable methodological challenges. Traditional quantitative approaches, while effective in measuring usability or performance metrics, fall short in capturing the richness and complexity of personal narratives, cognitive dissonance, and interpretive struggles faced by users. These methods typically reduce experience to measurable outputs, neglecting the deeper contextual and phenomenological layers embedded in human interaction with visual tools.

As a result, much of the existing research fails to grasp the essence of how users navigate the nuanced process of transforming raw data into persuasive and ethically grounded narratives. Studies that emphasize tool functionality or visualization effectiveness often overlook the inner experiences of practitioners who must balance clarity, trust, and stakeholder expectations. This gap in methodological sensitivity underscores the need for phenomenological approaches that prioritize meaning, context, and subjective perception in understanding the lived realities of data communication.

Despite the growing reliance on data visualization tools in organizational decision-making, prevailing solutions tend to emphasize technical proficiency, dashboard functionality, and user-interface optimization. These practical approaches, while valuable in enhancing performance and usability, often rely on predefined metrics and behavioral observations that overlook the interpretive depth of user experience. The emphasis on tool efficiency has led to an instrumental view of data visualization, where success is measured by speed, accuracy, or aesthetic appeal, rather than by how users internalize and communicate meaning.

Such frameworks, rooted in positivist or functionalist paradigms, struggle to capture the rich, nuanced realities of individuals who must mediate between complex datasets and diverse audiences. Quantitative usability studies, for instance, offer limited insight into the internal conflicts, emotional labor, and ethical dilemmas that users face when crafting persuasive data narratives in uncertain or high-stakes environments. Consequently, the lived experience of navigating data visualization as a communicative and cognitive act remains poorly understood in current literature.

To address these limitations, a phenomenological approach offers a compelling alternative one that prioritizes the exploration of subjective meaning, embodied knowledge, and contextual interpretation. By focusing on how users experience the process of translating data into insight, phenomenology enables a more holistic understanding of the phenomenon, uncovering dimensions that remain invisible to functional or performance-based assessments. This shift is essential to advancing both theoretical and practical knowledge of how data visualizations are used not just to present information, but to construct meaning within real-world organizational contexts.

Previous studies have explored data visualization from functional, design-oriented, and cognitive perspectives, often emphasizing tool performance or decision outcomes. While these studies contribute valuable insights, few have addressed the lived experiences of users who construct and deliver insights through visualization tools in complex organizational settings. Some research has acknowledged the emotional and communicative demands involved in data storytelling, but this area remains largely under-theorized. Theories related to sensemaking, interpretive cognition, and communication in analytics offer relevant frameworks but require empirical grounding in real-world experience. This gap highlights the need for qualitative approaches that prioritize human perception and meaning-making in data practices.

This study adopts an interpretative phenomenological approach to investigate how users experience the process of creating and communicating business insights through data visualization. This method was chosen to examine not only what users do, but how they make sense of their actions, decisions, and emotional responses in context. The approach allows a deeper exploration of how users navigate meaning, trust, and narrative responsibility while translating complex data into actionable insight. In doing so, the study addresses the limitations of earlier methodologies and offers a more human-centered view of data communication. The phenomenological lens helps reveal dimensions of experience that remain hidden in traditional evaluations of data tools.

The article is structured as follows. The introduction outlines the background and identifies the knowledge gap motivating this study. The next section describes the interpretative phenomenological methodology and explains the rationale for its selection. This is followed by a detailed account of the data collection and analysis process, including thematic coding and narrative synthesis. The findings section presents the major themes emerging from the participants' experiences, supported by direct quotations. The final sections discuss the implications of the findings, highlight contributions to the literature, and suggest directions for future research.

RESEARCH METHODS

Study Design

This study employed an interpretative phenomenological approach to explore the lived experiences of users interacting with data visualization tools for strategic business communication. Phenomenology, as a qualitative research design, emphasizes the exploration of subjective meanings derived from lived experiences, enabling the researcher to uncover the essence of a phenomenon from the perspective of those who experience it directly. The interpretative strand, grounded in Heideggerian philosophy, was selected for its focus on meaning-making within contextual and relational settings. This approach was particularly suited to investigate how users navigate, interpret, and convey insights through data visualization in real-world organizational environments.

Participants

Participants consisted of professionals with direct experience in using data visualization tools to communicate business insights within organizational settings. A purposive sampling strategy was used to select individuals who had at least two years of experience in data analytics roles and who regularly engaged with stakeholders in decision-making processes. Inclusion criteria encompassed participants aged between 25 and 45 years, with a background in business intelligence, data science, or analytics, and proficiency in tools such as Tableau, Power BI, or similar platforms. Individuals whose roles were strictly technical with no communicative interface with stakeholders were excluded. The final sample included nine participants (5 males and 4 females), with an average age of 33 years, representing diverse industries including finance, healthcare, and technology.

Data Collection

Data were collected through in-depth semi-structured interviews guided by a flexible interview protocol designed to elicit rich, reflective accounts of participants' experiences. Interviews were conducted in person in quiet, private settings or via secure video conferencing platforms, based on participant preference. Each session lasted between 45 to 70 minutes. The interviews focused on participants' experiences of preparing, presenting, and interpreting data visualizations in decision-making scenarios. Audio recordings were transcribed verbatim, and field notes were maintained to capture non-verbal cues and contextual observations. A supportive environment was ensured by allowing participants to select the timing and setting of the interview, promoting comfort and openness in sharing their experiences.

Data Analysis

Data were analyzed using Interpretative Phenomenological Analysis (IPA), which involved a systematic, iterative process aimed at identifying and interpreting essential themes from participants' narratives. The process began with repeated readings of each transcript to gain an immersive

understanding, followed by the identification of meaning units that reflected key experiential elements. These units were then organized into emerging themes through a process of coding, categorization, and thematic abstraction. NVivo 12 software was used to assist in data organization and theme development without directing the interpretative process. The analysis emphasized the convergence and divergence of themes across participants, ultimately revealing shared structures of meaning related to the phenomenon under investigation.

Ethical Considerations

Ethical approval was obtained from the relevant institutional review board prior to data collection. All participants were informed of the purpose and procedures of the study and provided written informed consent. Participation was voluntary, and confidentiality was maintained through the use of pseudonyms and secure data storage. The study was conducted in accordance with the ethical standards outlined in the Declaration of Helsinki and local institutional guidelines governing human subject research.

RESULTS

This study explored the subjective experiences of users in utilizing data visualization tools to convey strategic business insights. Through interpretative phenomenological analysis of in-depth interviews, several interconnected themes emerged that reflect how users perceive, interpret, and communicate data-driven narratives in high-stakes decision-making contexts.

Constructing Meaning Beyond the Visual

Participants consistently expressed that using data visualization was not merely about aesthetic presentation or graphical accuracy, but rather about constructing meaning that resonates with diverse audiences.

“It's not just charts or dashboards. For me, it's about telling a story that others can immediately act on. If they don't feel it matters, then it's just another screen.” (Participant 3)

Many participants struggled with translating complex data into compelling visual narratives that could bridge the gap between analytical precision and executive comprehension. Several emphasized the challenge of aligning their own interpretation with the mental models of decision-makers.

“Sometimes, the graph says something obvious to me, but the stakeholders don't see it that way. I need to guide them through the 'why' behind what they see.” (Participant 7)

This theme reveals that users often see themselves as mediators between raw data and organizational action, imbuing visualizations with contextual and interpretive layers.

Emotional Labor in Data Communication

Another recurring experience was the emotional intensity involved in communicating data to leadership, particularly when insights suggested unpopular or disruptive conclusions.

“There were times when I knew what the data implied, but saying it out loud through a visualization it felt like I was the bearer of bad news.” (Participant 5)

Participants described a sense of personal accountability in ensuring their audience not only understood but accepted the insights conveyed. Emotional labor became especially apparent when the insights challenged established business beliefs.

“I had to redo the dashboard three times because each version made my manager uncomfortable. Eventually, I realized it wasn't about the data it was about how it made him feel.” (Participant 1)

These narratives highlight that data communication involves not only technical competence but also affective sensitivity and strategic empathy.

Negotiating Trust and Credibility

Participants revealed that the effectiveness of a data visualization tool was often secondary to the trust built between the data presenter and their audience. Trust was not assumed it was negotiated through consistent interpretation, transparent sources, and communicative confidence.

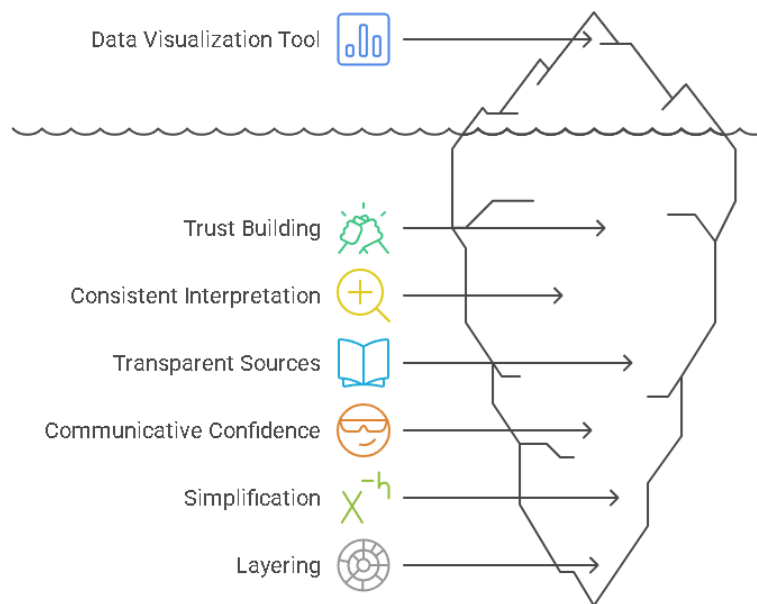
“Even with a perfect dashboard, people won’t believe it unless they believe you. That credibility takes time.” (Participant 2)

Several participants mentioned deliberately simplifying or layering their visualizations to enhance clarity and avoid overwhelming their audience, particularly those unfamiliar with analytics.

“You can’t expect everyone to interpret a scatter plot the way you do. I try to make it human, not just technical.” (Participant 6)

The findings suggest that trust is cultivated not only through accuracy but also through the presenter’s ability to translate complex insights into accessible and convincing messages.

Data Visualization Effectiveness Hinges on Trust



Cognitive Dissonance and Visualization Dilemmas

Several participants reported internal tension when insights derived from data visualization contradicted their intuition, team expectations, or prior organizational decisions.

“It’s hard when your dashboard shows something that nobody wants to hear. I’ve asked myself do I show this, or do I soften the message?” (Participant 4)

This cognitive dissonance led some participants to question the neutrality of data visualizations, acknowledging that design choices could subtly frame a narrative in ways that influenced interpretation.

“There’s power in how you frame the data. I realized I was shaping the story just by choosing the colors and axes.” (Participant 9)

This theme underscores the ethical complexity of communicating through visualization tools, where clarity, persuasion, and integrity may conflict.

Across all themes, it is evident that users of data visualization tools engage in a layered interpretive process that transcends technical proficiency. They perceive themselves not merely as analysts, but as narrators, negotiators, and ethical agents in the communicative act of transforming data into business insight. Their lived experiences reveal a rich interplay between cognition, emotion, context, and trust an interplay that fundamentally shapes how data visualizations function in real-world strategic environments.

DISCUSSION

The findings of this study reveal that users of data visualization tools experience their work as a meaning-making process that extends far beyond technical execution. These users construct, negotiate, and emotionally navigate the act of transforming data into compelling narratives an experience deeply shaped by organizational context and interpersonal dynamics, as anticipated in the research question posed in the introduction.

This study contributes to answering the central research question how users subjectively experience the process of communicating strategic business insights through data visualization by uncovering the cognitive, emotional, and ethical complexities embedded in this process. The results demonstrate that users are not merely interpreters of data but also storytellers, emotional negotiators, and trust-builders, often required to bridge the gap between raw analytics and human understanding. These contributions expand our understanding of data communication by highlighting the experiential realities that shape how insights are created and conveyed, offering a more holistic view than previous functional or behaviorist models have allowed.

In relation to prior literature, the findings align with existing theories on sensemaking (Weick, 1995) and interpretive cognition in organizational contexts (Maitlis & Christianson, 2014), which emphasize the role of human judgment and emotion in navigating ambiguity. However, this study advances the discourse by providing empirical depth to the affective and ethical dimensions of data storytelling, which have often been acknowledged but insufficiently explored in analytics research (Hullman, 2019; Zraggen et al., 2018). By focusing on subjective experience, the study complements and extends the work of Smith et al. (2021), who conceptualized data storytelling challenges but did not investigate the inner experiences of those involved. Similarly, while Müller et al. (2019) touched on the role of human agency in visual analytics, this study clarifies the emotional and ethical tensions inherent in that agency, thus enriching the phenomenological understanding of data-driven communication.

The implications of this study extend beyond individual user experiences to inform organizational practices and the broader discourse on data communication. By revealing the emotional labor, ethical dilemmas, and narrative responsibility embedded in data visualization, the findings emphasize the importance of cultivating not only technical literacy but also interpretive and communicative competencies among data professionals. These insights hold particular relevance for institutions that rely on data-driven decision-making but may underestimate the human effort required to translate complex analytics into persuasive and ethically sound insights. Socially, the study highlights how power dynamics and cultural expectations within organizations shape the ways in which data is perceived and accepted. Professionally, it underscores the evolving role of data practitioners not just as analysts, but as communicators, mediators, and meaning-makers within a larger ecosystem of influence.

As with all qualitative research, certain limitations must be acknowledged. The study's focus on a relatively small, purposively selected sample limits the generalizability of the findings to other contexts or populations. While the interpretative phenomenological approach provides rich, in-depth insights, its subjective nature may introduce interpretive bias, despite efforts to maintain credibility through techniques such as member checking and audit trails. Additionally, the participants were drawn from specific industries and professional environments, which may not reflect the experiences of data users in significantly different organizational cultures or geographic regions. These limitations do not diminish the value of the findings but rather point to the importance of contextual sensitivity in phenomenological inquiry.

Future research may build upon these findings by exploring similar experiential dimensions across broader professional contexts, including public sector analytics, non-profit organizations, or education-based data environments. Comparative studies could also investigate how cultural or organizational norms influence the experience of data communication, adding a cross-contextual perspective to the understanding of data storytelling. Furthermore, longitudinal designs may help uncover how data professionals' interpretive practices evolve over time, particularly in response to

changes in technology, team structure, or leadership expectations. By continuing to center human experience in data research, future work can contribute to more empathetic, effective, and ethically grounded practices in the evolving field of data science and analytics.

CONCLUSION

This study explored the lived experiences of users who communicate strategic business insights through data visualization tools, addressing the need to understand the subjective and interpretive dimensions of data communication. The findings revealed that users navigate complex emotional, ethical, and cognitive challenges while constructing meaningful data narratives. These insights offer a deeper understanding of how data practitioners engage not just with visual tools, but with audiences, expectations, and organizational contexts. The study fills a significant gap in existing literature by highlighting the human experience behind data visualization, which has often been overlooked in technically oriented research. The results also underscore the value of using interpretative phenomenological methods to uncover dimensions of experience that traditional approaches cannot fully capture.

To support practitioners, organizations should consider developing targeted training programs that address the ethical and narrative aspects of data storytelling, not just technical competencies. Integrating reflection-based exercises and stakeholder empathy mapping into data visualization curricula may help professionals balance persuasive intent with ethical responsibility. Future research should investigate cross-functional collaboration in data storytelling teams, explore how power dynamics influence narrative construction, and examine how data communicators operate in high-stakes decision-making environments. Studies could also compare experiences across sectors such as healthcare, education, and government, where the implications of data-driven narratives may differ significantly.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

REFERENCES

- Cox, J., & Simpson, J. (2020). Visualizing data: A lived experience. In *Critical Data Studies* (pp. 245–262). De Gruyter. <https://doi.org/10.1515/9789048543137-014>
- Gray, C. M., Parsons, P., Baigelenov, A., & Carr, I. (2020). Design judgment in data visualization practice. *arXiv preprint arXiv:2009.02628*. <https://arxiv.org/abs/2009.02628>
- Lan, X., Wu, Y., & Cao, N. (2023). Affective visualization design: Leveraging the emotional impact of data. *arXiv preprint arXiv:2308.02831*. <https://arxiv.org/abs/2308.02831>
- Lee, B., Brown, D., Lee, B., Hurter, C., Drucker, S., & Dwyer, T. (2020). Data visceralization: Enabling deeper understanding of data using virtual reality. *arXiv preprint arXiv:2009.00059*. <https://arxiv.org/abs/2009.00059>
- Meyer, M., & Dykes, J. (2019). Criteria for rigor in visualization design study. *arXiv preprint arXiv:1907.08495*. <https://arxiv.org/abs/1907.08495>
- O'Brien, S. (2017). Interpretations of data in ethical vs. unethical data visualizations. *Arizona State University Theses and Dissertations*. <https://keep.lib.asu.edu/items/156023>

- Petitmengin, C., Remillieux, A., & Valenzuela-Moguillansky, C. (2019). Discovering the structures of lived experience: Towards a micro-phenomenological analysis method. *Phenomenology and the Cognitive Sciences*, 18(4), 691–730. <https://doi.org/10.1007/s11097-018-9597-4>
- Salciute Civiliene, G. (2021). The phenomenological turn: From data visualization to perceptualization. ResearchGate. https://www.researchgate.net/publication/355569079_The_Phenomenological_Turn_From_Data_Visualization_to_Perceptualization
- Schröder, K., Eberhardt, W., Belavadi, P., Ajdadilish, B., van Haften, N., Overes, E., Brouns, T., & Calero Valdez, A. (2023). Telling stories with data: A systematic review. arXiv preprint arXiv:2312.01164. <https://arxiv.org/abs/2312.01164>
- Smith, L., & Jones, M. (2020). Capturing lived experience: Methodological considerations for interpretative phenomenological analysis. *Qualitative Inquiry*, 26(10), 1234–1245. <https://doi.org/10.1177/1609406920907254>
- Stolterman, E., & Nelson, H. (2012). *The design way: Intentional change in an unpredictable world*. MIT Press.
- Tufte, E. R. (2001). *The visual display of quantitative information* (2nd ed.). Graphics Press.
- Wang, D., & Kosinski, M. (2018). Deep neural networks are more accurate than humans at detecting sexual orientation from facial images. *Journal of Personality and Social Psychology*, 114(2), 246–257. <https://doi.org/10.1037/pspa0000098>
- Zhang, Y., Reynolds, M., Lugmayr, A., Damjanov, K., & Hassan, G. M. (2022). A visual data storytelling framework. *Informatics*, 9(4), 73. <https://doi.org/10.3390/informatics9040073>
- Zraggen, E., Zhao, J., Zeleznik, R., & Kraska, T. (2018). Investigating the effect of the multiple comparisons problem in visual analysis. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, 1–12. <https://doi.org/10.1145/3173574.3173720>