

# Evolutionary sensemaking: a managerial metacognitive dynamic capability to reduce information asymmetry

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## Abstract

**Purpose** – How can managers reduce information asymmetry in dyadic manager-external stakeholder relationships in a complex and evolving environment? Addressing this question has significant implications for firm survival, growth, and competitive advantage.

**Design/methodology/approach** – We have adopted a multiparadigm approach to theory building, known as metatriangulation. We integrate the dynamic capabilities, sensemaking, and evolutionary theory literatures to theorize how managers can relate to stakeholders in a complex and evolving environment.

**Findings** – We propose, via a conceptual framework and three propositions, “evolutionary sensemaking” as the managerial metacognitive dynamic capability that helps managers hone their understanding based on the evolutionary changes in the stakeholder’s interpretations of information quality preferences. The framework unfolds across three evolutionary stages: sensing preferences’ variation of the stakeholder, seizing preferences, and transforming for complexity alignment and retention. The propositions focus on managing complexity in stakeholder information quality preference, employing cognitive capabilities to simplify, interpret, and align interpretations for effective information asymmetry reduction.

**Practical implications** – To develop the metacognitive dynamic capability of evolutionary sensemaking, managers need to train for and foster the underlying complex cognitive capabilities by enhancing their (1) perception and attention skills, (2) problem-solving and reasoning skills, and (3) language, communication, and social cognition skills, focusing specifically on reducing the complexity embedded in stakeholder cognition and diverse stakeholder preferences for information quality. Contrary to the current advice to “keep things simple” and provide “more” information to the stakeholders for opportunism reduction, trust-building, and superior governance, our framework suggests that managers hone their cognitive capabilities by learning to deal with the underlying complexity.

**Originality/value** – The proposed framework and propositions address research gaps in reducing information asymmetry. It enriches the dynamic capabilities literature by recognizing complexity (as opposed to opportunism) as an alternative source of information asymmetry, which needs to be addressed in this stream of research. It extends the sensemaking literature by identifying the complexity sources – i.e. stakeholder preferences for diverse information quality attributes and the associated cognitive preference interpretation



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processes. The article enhances evolutionary theory by delving into microprocesses related to information asymmetry reduction, which the existing literature does not thoroughly investigate.

**Keywords** Information asymmetry, Information quality, Dynamic capabilities, Sensemaking, Evolution, Metacognition, Microfoundation

**Paper type** Original article

## 1. Introduction

Information asymmetry in interpersonal relationships between managers and external stakeholders refers to differences in how information is shared between the parties involved (Akerlof, 1970; Bergh *et al.*, 2019). This is the case of a manager who holds key details about a company's input, throughput, or output. At the same time, external stakeholders, such as customers, lack access to this information, resulting in information asymmetry (Nayar, 1990). These relationships are inherently dyadic, signifying a one-on-one interaction or connection between these entities, where information exchange and interaction primarily occur. In this regard, external stakeholders view managerial efforts to reduce information asymmetry as germane to a firm's transparency-increasing initiatives (Schnackenberg and Tomlinson, 2016), such that this effort positively impacts stakeholder trust, business growth, firm survival, and competitive advantage (Harrison *et al.*, 2010). Given the significant implications of reducing information asymmetry for desirable organizational outcomes, it is crucial to understand the microfoundations of information asymmetry reduction at the individual level (e.g. Kulkarni and Ramamoorthy, 2017).

We conceptually examine the microfoundational research question: “*How can managers reduce information asymmetry in dyadic manager-stakeholder relationships in a complex and evolving environment?*” There is voluminous literature in three prominent literature streams – dynamic capabilities (e.g. Donada *et al.*, 2016; Hurley, 2023), sensemaking (e.g. Einola *et al.*, 2017), and evolutionary theory (e.g. Skyrms, 2010) – that tentatively addresses this question. However, we argue that each literature stream – when viewed independently – has significant conceptual gaps. As a result, the cognitive microfoundations of information asymmetry reduction have remained remarkably murky. The integration of the literatures above helps us bridge these gaps and generate a unique and comprehensive explanation of information asymmetry reduction as follows.

According to the dynamic capabilities framework, managers may “sense” and “seize” the opportunities to reduce information asymmetry and generate trust and competitive advantage by “transforming” relationship-building capabilities with stakeholders (e.g. Donada *et al.*, 2016; Hurley, 2023). However, the current dynamic capabilities literature overwhelmingly emphasizes opportunism reduction, and some scholars have extensively criticized opportunism-driven approaches because they overlook *complexity* as another significant (and potential alternative) source of information asymmetry, where complexity refers to many elements with many interactions (Simon, 1996; Daft and Weick, 1984). Sensemaking, i.e. interpreting situations and inherent information (Weick, 2005), can help comprehend how managers can reduce information asymmetry arising from differences between how managers and stakeholders interpret the surrounding complexity. Although there are a few notable exceptions (e.g. Einola *et al.*, 2017; Ndofor *et al.*, 2015), the sensemaking literature investigates the *consequences* of complexity-based information asymmetry, not thoroughly examining *where* the complexity stems from – i.e. the *sources* of complexity that contribute to information asymmetry. Finally, an evolutionary perspective (e.g. Hull, 1988), through its ability to illuminate the adaptive mechanisms and behaviors that arise in response to changing environmental conditions (Weick *et al.*, 2005), allows for a deeper understanding of how managers navigate and respond to the challenges posed by information asymmetry in dynamic and evolving contexts (Cristofaro, 2020; Cristofaro and

Lovallo, 2022). However, the cognitive microfoundations of information asymmetry reduction from an evolutionary standpoint remain largely unexplored in the existing literature.

To address our research question, we propose a conceptual framework by integrating the dynamic capabilities, sensemaking, and evolutionary theory literatures through a metatriangulation approach (Lewis and Grimes, 1999) [1]. We invoke complexity instead of opportunism as a basis for information asymmetry. We also argue that information asymmetry exists because of a difference between an external stakeholder's and manager's "information quality preference interpretations" – i.e. cognitive interpretations of complex information quality attributes – e.g. "layout," "accuracy," etc. (e.g. Lee *et al.*, 2002), and associated preferences. From that, by integrating evolutionary theory with the dynamic capabilities framework and sensemaking, we explain how interpretations vary, are selected, and retained. We propose *evolutionary sensemaking* as a managerial metacognitive dynamic capability – "the ability to develop self-awareness of, and to regulate cognitive . . . processes" (Hodgkinson and Healey, 2011, p. 1504) – that enables managers to deal with stakeholders in a complex and evolving environment. Evolutionary sensemaking unfolds over three stages: (1) sensing variation in stakeholder preferences for complex information quality attributes, (2) seizing preferences, and (3) transforming for complexity alignment and retention, leading to information asymmetry reduction. By introducing evolutionary sensemaking, we highlight the importance of retrospectively making sense of information asymmetry complexity and prospectively preparing for sensing, seizing, and transforming information asymmetry reduction opportunities, with significant implications for business growth, firm survival, and competitive advantage.

In offering our integrated theoretical framework, we respond to Bergh *et al.*'s (2019) call for synthesizing diverse theories to enhance predictive insights and fill existing gaps in understanding information asymmetry reduction. By bridging theoretical divides and leveraging the complementary strengths of dynamic capabilities, sensemaking, and evolutionary theory, we provide novel insights into the cognitive processes underlying information exchange and interaction dynamics between managers and external stakeholders. To develop evolutionary sensemaking, managers should invest in cognitive capabilities about information quality preference interpretations, such as enhancing the necessary cognitive capabilities, improving communication abilities, encouraging cognitive diversity, and creating a culture of psychological safety. These, empower managers to navigate complexity, align interpretations, and reduce information asymmetry in dyadic stakeholder relationships.

The rest of the work is organized as follows. Section 2 illustrates an example of information asymmetry in a dyadic manager-stakeholder relationship. Next, following the three meta-triangulation steps (Lewis and Grimes, 1999), Section 3 outlines the *groundwork* of the theorization. Thus, it defines the subject phenomenon (IA), interpreted by conflicting or complementary paradigms, i.e. dynamic capabilities, sensemaking, and evolutionary theory, and offers *paradigm analysis*. Section 4 proposes the *theoretical integration* that transcends paradigm dualism and develops a framework and a set of propositions for evolutionary sensemaking. Section 5 discusses limitations, suggestions for future research, and managerial implications. Section 6 presents conclusions about leveraging evolutionary sensemaking to foster beneficial stakeholder relationships.

## 2. An illustrative example

Consistent with similar studies in the literature (e.g. Breslin *et al.*, 2021), we invoke a running example to illustrate our research question and substantiate concepts [2]. John is a civil engineering *manager* at a consulting firm that reviews and approves land development proposals submitted by real estate owners. A typical review and approval process lasts about

six to nine months. Jane is a senior engineer (an *external stakeholder*) at a real estate company that submitted a land development proposal to John's firm. John's firm charges Jane's company (client) fees depending on the processing time, which depends on the engineering modeling requirements. To ensure transparency, John interacts with Jane biweekly to provide detailed status updates, explain engineering nuances, and request occasional technical revisions.

However, John was confused when Jane remarked after about four months that she did not need *extensive* status updates. Jane said, "The updates need to give me a clearer idea about the time required for the technical revisions. You must *lay out* the information well and submit a *comprehensive* summary of my firm's modifications. I can then present it to my firm and estimate the time and money needed for the revisions." It appeared to John, in hindsight, that Jane was probably confused about the interpretation of her information quality preferences for the first few months.

This example illustrates the tip of the complexity iceberg under the surface of sensemaking and information asymmetry. Jane's interpretations of her preferences for various information quality attributes are not only vast, but they are often conflicting. For example, consider the variety of *information quality attributes* (e.g. Lee et al., 2002; Nelson et al., 2005). While much of the literature focuses on the *quantity* of information distributed between parties, the *quality of information* is also fundamental in interpretation and preference formation (Lesca et al., 2012). Information quality encompasses comprehensiveness, layout, and recency (Lee et al., 2002; Nelson et al., 2005). In a dyadic relationship with a manager, stakeholders make decisions based on chosen information quality attributes and associated weights, influencing their preferences and actions (Harrison et al., 2010).

In addition to explicitly stating that she preferred the information to be "comprehensive," Jane may implicitly like the information to be "error-free" and "up-to-date." Furthermore, Jane's preferences seemed somewhat conflicting. How can the shared technical information be "comprehensive" and "not extensive"? Also, John thought that Jane was cognitively very "abstract" (e.g. Benet-Martínez et al., 2006), stating that she needed a "comprehensive summary" without providing any "concrete" instructions. In other words, what essential points should be included in the "summary"? What should the summary layout and length be? When pressed to elaborate on her needs and communicate her preferences, Jane said, "Send me the summary, and I will look it over." Understanding Jane's information quality preference interpretation is essential for John because his firm may get more business from Jane. How can John make sense of Jane's complex and evolving information quality preference interpretations to reduce IA? We argue, and theoretically propose, that it is crucial for John to continuously (1) "sense" the variations in Jane's complex and evolving preferences for various information quality attributes, (2) "seize" preference interpretations, and (3) "transform" for complexity alignment and retention, where John's interpretation of Jane's complex information quality preferences matches Jane's interpretation [3].

### 3. Groundwork and paradigm analysis – existing approaches to managing information asymmetry

#### 3.1 Information asymmetry: premises

Information asymmetry is conceptualized in much of the existing literature as hidden information in an exchange relationship (e.g. Bergh et al., 2019), where an opportunistic party either does not reveal the information that s/he possesses (Akerlof, 1970; Vanhaverbeke et al., 2002) or actively manipulates it (Arrow, 1971) to exploit the informational advantage for their gain (Williamson, 1985). For instance, a manager (John) might erect barriers to limit the diffusion of certain information, leading to information asymmetry between him and

the stakeholder (Bergh *et al.*, 2019). Consequently, the asymmetric information partitioning between a manager (John) and a stakeholder (Jane) can impede effective decision-making and collaboration.

However, in addition to opportunism, other behavioral barriers may be salient in the dyadic relationships between John and Jane because they relevantly limit transparent information sharing. These barriers include cognitive complexity – the degree to which an individual’s (John’s) cognitive processes involve the ability to perceive, understand, and navigate complex and multifaceted information, situations, or stimuli – that *can* potentially shape the dynamics of information exchange between the two parties (Gomez-Mejia *et al.*, 2000). This can pose strategic challenges in sharing information transparently with an external stakeholder (Jane) within the dyadic context.

This work discusses how a manager can overcome cognitive complexity as a behavioral barrier to information asymmetry reduction in a complex and evolving environment.

### 3.2 Dynamic capabilities and metacognition

Teece *et al.* (1997) categorize organizational-level dynamic capabilities based on the organization’s capacity to (1) identify and respond to opportunities and threats (*sensing*), (2) take advantage of opportunities by allocating resources effectively (*seizing*), and (3) maintain competitiveness by enhancing and reconfiguring the tangible and intangible assets (*transforming*) (also see Leemann and Kanbach, 2022).

However, Teece *et al.* (1997) also acknowledge the role of managerial cognition as a microfoundation. This led to *dynamic managerial capabilities*, which refers to “the capabilities managers employ to build, integrate, and adapt organizational resources and competencies” (Adner and Helfat, 2003, p. 1012) to deal with evolving environments. According to Helfat and Peteraf (2015), the sensing, seizing, and transforming components are underpinned by various “cognitive capabilities” – i.e. abilities related to acquiring, processing, and using information – that underpin sensing, seizing, and transforming dynamic capabilities. To *sense* opportunities, a manager (John) needs to activate two cognitive capabilities – “perception” and “attention.” Perception, as the mental process organizing sensory information, is influenced by prior experiences, thereby guiding individuals to recognize the patterns underlying various opportunities and threats swiftly. Attention enables John to discover new opportunities by focusing on relevant details and ensuring effective environmental scanning. The cognitive capabilities of “problem-solving” and “reasoning” are essential for *seizing* opportunities and responding to emerging threats because they aid John in deciphering the situation when dealing with complex or ambiguous problems. The *transforming* process entails John developing “language proficiency” and “communication,” which encompass articulating verbal and nonverbal cues and inspiring the workforce. Additionally, “social cognition” enables John to understand different perspectives and build trust in the evolutionary business landscape.

Dynamic managerial capabilities provide many salient insights into how managers can prepare for information asymmetry reduction by limiting opportunism and promoting trust (e.g. Donada *et al.*, 2016; Hurley, 2023). For example, a manager (John) can sharpen his dynamic managerial capabilities by being considerate, fair, and open to Jane’s feedback to build trust (Hurley, 2023). In summary, the dynamic capabilities literature helps us understand how John may *prospectively* sense and seize the opportunities for information asymmetry reduction and leverage the cognitive capabilities accordingly. However, as stated earlier, the dynamic capabilities literature places considerable emphasis on opportunism as a source of information asymmetry, while *complexity* has been seriously underexplored as an alternative basis for information asymmetry (e.g. Einola *et al.*, 2017; Ndofor *et al.*, 2015).

Reducing information asymmetry involves effectively leveraging cognitive capabilities, which can be consciously done via *metacognition* (Hodgkinson and Healey, 2011). This entails

not only the cognitive abilities required for task execution but also a higher-order awareness and comprehension of these cognitive processes. By “thinking about thinking,” John can gain insights into his decision-making strategies, assess the efficacy of his approaches, and adapt accordingly (Flavell, 1976). Metacognition enhances John’s ability to navigate complexities, anticipate challenges, and foster organizational resilience. Thus, integrating metacognition into discussions of dynamic managerial capabilities provides a nuanced understanding of how a manager’s cognitive processes drive organizational adaptive behavior. Evolutionary sensemaking emerges as a crucial component, synthesizing cognitive capabilities with metacognitive awareness to foster agile responses to complex and dynamic environments.

### 3.3 Organizational sensemaking

Weick’s (1995) seminal work delves deeply into the sensemaking process rooted in individuals’ mental activity to interpret their complex and evolving environments (see Cristofaro, 2022 for a review). The sensemaking framework involves complexity, enactment, selection, and retention (Weick *et al.*, 2005). Sensemaking commences with a manager (John) recognizing chaotically complex situations (made of unclear and sometimes equivocal meanings), triggered not only by grandiose events but also by any perceived deviation from the expected state of the world (Weick *et al.*, 2005, p. 409). These triggering events serve as raw material for sensemaking, sparking emotional and cognitive responses on John’s part that direct attention and initiate the sensemaking process (Maitlis and Christianson, 2014).

At the core of this sensemaking process is “enactment,” defined as the mechanism managers activate to make sense of the complex world around them (Weick, 1995). *Enactment* creates an “enacted environment,” a subjective construct containing cues – i.e. anything that can be perceived with senses (Rudolph *et al.*, 2009) – whose meanings are open to multiple interpretations (Weick, 1995). The sensemaking process is initially retrospective because enactment is a step ahead of cognition (Weick, 1995). Enactment consists of two key components: “noticing” and “bracketing” (Weick *et al.*, 2005). “Noticing” occurs when presented with information or a stimulus; John cognitively interprets some information cues while ignoring others due to their attached utilities (Harrison *et al.*, 2010). Simultaneously, in the “bracketing” phase, John filters through myriad pre-existing and newly extracted cues, categorizing them into “bracketed environments” (Weick *et al.*, 2005). These environments are mental representations of reality shaped by John’s perceptions and environmental cues (Weick *et al.*, 2005).

John’s mental schemata (or models) serve a dual purpose during enactment. A schema is “the network of interrelations that is believed to normally hold among the constituents of the concept in question [. . .] That is, in as much a schema underlying a concept stored in memory corresponds to the meaning of that concept, meanings are encoded in terms of typical or normal situations or events that instantiate that concept” (Rumelhart, 1980, p. 34). Schemata not only facilitate the recognition of disparities, but they also play a fundamental role in the active process of “labeling.” As individuals encounter new cues or reinterpret existing ones, these mental frameworks are utilized to label the cues, inserting them into evolving schemas. A *label* is a parsimonious means of structuring and simplifying the social environment for understanding and communicating about an object. Labeling is far from rigid or predetermined. Instead, it occurs organically, driven by the ongoing interaction between mental models and the environment. Therefore, the labeled cues – for John – are not inert information but dynamic elements suggesting potential managerial actions (Rudolph *et al.*, 2009). This could involve anything from managing and coordinating resources to distributing organizational tasks.

In summary, the sensemaking framework provides valuable insights into how a manager interprets cues retrospectively in complex environments. However, there is not much clarity



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in the sensemaking literature about the *sources* of complexity and the sensemaking microprocesses underlying information asymmetry reduction.

### 3.4 Generalized Darwinism

In the evolutionary theory, the Generalized Darwinism perspective draws from the variation-selection-retention principles and replicators-interactors mechanisms at an abstract level of analysis (e.g. Hodgson, 2013; Hull, 1988; Breslin, 2011). Following Hull (1988), these principles have subsequently been transferred to the social domain as follows: (1) *blind variation*, i.e. mutations and recombinations are random and not foreseeable and act on present routines, competencies, and/or business practices (i.e. genotypes), (2) *selection* of the variety of configurations produced by variation (i.e. phenotypes) that according to the fitness rule determines the probability a variation will survive or reproduce, and (3) *retention* of selected variations (Hodgson and Knudsen, 2010).

The Generalized Darwinism approach is based on the concept of *replicators* transferred to other subjects, such as individuals, groups, or organizations, through successive replications and *interactors*, i.e. entities interacting with their environment, leading to diverse replications due to various influencing factors (Breslin, 2011). Following a practice view (Breslin, 2016), replicators are managerial (John's) cognitive structures and understandings, like schemata, and interactors are John's behaviors, socially situated practices, language, and narratives. Units of analysis are enacted by individuals, groups, and organizations, modified through actions, and interact with the external world, resulting in the differential replication of meaning. Hull (1988) suggested that the same entity can sometimes fulfill replication and interaction functions. In the socially constructed concept of organizations, knowledge transfer involves engaging others in tasks and is facilitated through communication and shared language.

In summary, the variation-selection-retention and replication-interaction principles and the cognitive processes describe how a manager copes with evolutionary pressures. However, there needs to be more clarity regarding the cognitive microprocesses underlying information asymmetry reduction.

Table 1 summarizes the key concepts, basic models, and research gaps in the dynamic capabilities, sensemaking, and evolutionary theory literature discussed above and how an integrated approach can bridge these gaps.

## 4. Evolutionary sensemaking

By integrating the dynamic capabilities, sensemaking, and evolutionary theory literatures, we propose *evolutionary sensemaking* as a managerial metacognitive dynamic capability, a cognitive mechanism for managers to continuously adapt their understanding based on the complex and evolving stakeholder information quality preference interpretations, explicitly focusing on the reduction of information asymmetry within dyadic manager-stakeholder relationships.

One of the fundamental sources of complexity is the variety of the stakeholder's (Jane's) *preferences* in the sense of values, wants, or utilities (March, 2006, p. 204) and how John interprets information based on Jane's preferences. In this regard, we highlight the centrally embedded complexity of (1) information quality attributes and (2) cognitive capabilities underlying Jane's preferences for these information quality attributes. In evolutionary terms and adopting a continuity view (Hull, 1988), we identify John's and Jane's mental schemata (including information quality preferences) as the replicator-interactor underlying evolutionary sensemaking. In summary, the evolution of mental schemata through the processes of variation, selection, and retention within and between a manager (John) and an external stakeholder (Jane) is the basis of evolutionary sensemaking.

**Table 1.**  
Existing approaches (DC, SM, and GD) to managing IA and evolutionary sensemaking as managerial metacognitive dynamic capability (MDC)

	Dynamic capabilities (DC)	Sensemaking (SM)	Evolutionary theory – generalized darwinism (GD)	Evolutionary sensemaking as managerial dynamic capability (MDC)
Level of analysis	Organizational, individual (managerial dynamic capabilities)	Mainly individual	Mainly organizational	Individual (with focus on the manager-external stakeholder relationship)
Basic model	Sensing and seizing opportunities, and transforming assets	Evolutionary shifts, enactment, selection, retention	Variation, replication and interaction	Sensing (information quality preference) variations, seizing interpretations, and transforming for selection and retention (complexity alignment)
Cognitive microfoundations	Perception, attention, problem-solving, reasoning, language, communication, and social cognition	Various cognitive processes underlying enactment (bracketing, labeling), selection (cognitive complexity dimensions), and retention (plausibility)	Mental schemata	Cognitive processes underlying DCs, sensemaking, and evolutionary theory stated here in the three adjacent boxes on the left
Current research gaps related to information asymmetry (genesis and reduction)	Emphasis on opportunism reduction Inadequate attention to complexity as a source of IA	Inadequate attention to sources of information asymmetry complexity	Inadequate attention to microprocessual foundations of information asymmetry	Bridging the gaps in the existing literature Complexity (instead of opportunism) as a source of IA Complexity is embedded in information quality preference interpretations Evolutionary sensemaking MDC and underlying cognitive processes as information asymmetry microfoundation
Selected references	Helfat and Peteraf (2015), Heubeck (2023), Teece <i>et al.</i> (1997), Hodgkinson and Healey (2011), Leemann and Kanbach (2022)	Cristofaro (2022), Maitlis and Christianson (2014), Weick (1995), Weick <i>et al.</i> (2005)	Hodgson (2013), Sarta <i>et al.</i> (2021)	Cristofaro (2020), Sheng (2017)

**Source(s):** Own elaboration



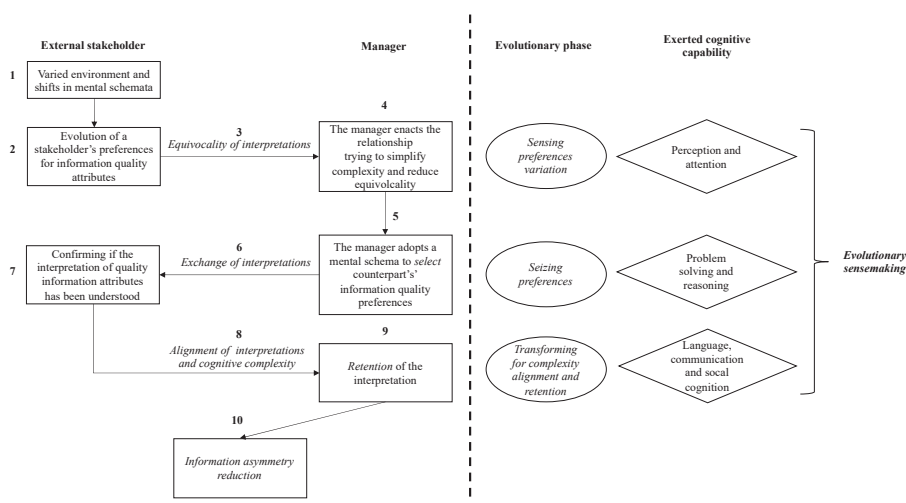
Our proposed framework (Figure 1) describes how evolutionary sensemaking unfolds, leading to the evolution of information asymmetry reduction between a manager and an external stakeholder.

In the presented framework, we delve into the dynamics of manager-stakeholder relationships, focusing on the interplay between information quality preferences and the cognitive processes of the involved parties – i.e. the manager (John) and the external stakeholder (Jane). This framework unfolds across three evolutionary phases: (1) *Sensing preferences’ variation* – We discuss the evolving landscape of a stakeholder’s (Jane’s) complex information quality preferences. (2) *Seizing preferences* – We illuminate the equivocality reduction strategies a manager (John) employs as he navigates complexity by filtering and condensing diverse information quality attributes. (3) *Transforming for complexity alignment and retention* – We emphasize complexity alignment and information asymmetry reduction, ensuring a harmonized interpretation of external stakeholder preferences is retained.

Following the dynamic capabilities literature (Helfat and Peteraf, 2015; Heubeck, 2023), we identify the *cognitive capabilities* behind each stage. We argue that the overall orchestration of these cognitive capabilities pertains to evolutionary sensemaking. In the following sections, we will delve deeply into the three evolutionary phases that unfold over ten steps, addressing the intricacies of this process and the implications of evolutionary sensemaking for information asymmetry reduction.

#### 4.1 Sensing preferences’ variation

Individual (Jane’s) identity, shaped by experiences, beliefs, and mental schemata, significantly influences sensemaking and is, in turn, influenced by ongoing interactions with the physical and social environment (Weick, 1995), undergoing continuous renegotiation and refinement (Cristofaro and Lovallo, 2022) across different levels (Chen et al., 2023), which causes their *variation* – as depicted in Figure 1 (step 1).



**Note(s):** The running example discusses information asymmetry reduction between the manager and the external stakeholder

**Source(s):** Own elaboration

**Figure 1.** Managerial metacognitive dynamic capability of evolutionary sensemaking for information asymmetry reduction

In dyadic business relationships, Jane's evolving preferences for various information quality attributes, influenced by evolutionary shifts in her mental schema, significantly impact John's perception of complexity and equivocality, as depicted in Figure 1 (step 2). As Jane's preferences evolve, complexity deepens (Tripsas, 2008). Introducing new cues complicates matters for John, making it harder for him to grasp the situation within his existing mental framework. This complexity results from the influx of diverse elements from Jane's varied preferences. Simultaneously, this evolving landscape gives rise to the *equivocality of interpretations* (step 3). Information quality preferences become open to interpretation in this state, especially when one party perceives a shift in the other's mental schema (Guiette and Vandenbempt, 2016). This equivocality leads to confusion in sensing as novel and sometimes conflicting interpretations arise (Weick, 1995).

Therefore, the evolution in Jane's preferences is a catalyst, shaping how John perceives the situation. Perceived alterations in Jane's schema trigger John's heightened attention because John, as a manager, is expected to serve the stakeholder and consider her preferences (Hill and Jones, 1992). Furthermore, the attributes of information quality are intricately tied to the cognitive processes of both Jane and John. Abstract thinking and integration within individuals' mental frameworks lead to nuanced evaluations of information quality attributes (Burlison and Caplan, 1998; Rudolph *et al.*, 2009; Connel and Keane, 2006). Jane and John's cognitive nuances highlight the equivocality in how they structure their mental schemata, often integrating conflicting cognitive evaluations, further complicating the information asymmetry reduction process (step 3).

Consequently, John finds himself navigating a complex and ambiguous terrain, trying to make sense of the situation based on Jane's cues on her preferences for information quality attributes. John engages in "enactment," a process driven by adaptability crucial in dynamic organizational responses (Weick, 1995). Enactment precedes cognition and reflects managers' proactive engagement in shaping organizational strategies (Fergnani, 2022). John's strategic "bracketing" and "labeling," essential components of enactment, help him reduce equivocality and simplify complexity (step 4). Bracketing simplifies the world by allowing John to focus on specific aspects of the complexity while labeling condenses diverse information quality attributes into manageable dimensions. John strategically simplifies complexity through this cognitive process, enhancing his ability to discern pertinent information and reducing equivocality (Weick *et al.*, 2005). For example, empirical research shows that attributes such as "comprehensiveness," "layout," and "accuracy" may be condensed into broader dimensions such as "completeness," "format," and "precision" (Nelson *et al.*, 2005). Therefore, we propose:

- P1. A manager develops "sensing" by enacting variations in a stakeholder's mental schema underlying the preferences for diverse information quality attributes. Then, the manager reduces the equivocality surrounding complexity through "bracketing" and "labeling" diverse attributes of information quality. This is guided by "perception" and "attention" cognitive capabilities.

#### 4.2 Seizing preferences

The selection phase of evolutionary sensemaking involves John choosing and implementing a mental schema to reduce ambiguity (step 5). This process incorporates a historical perspective, analyzing past events to establish consistencies and plausibility in the constructed narrative (Weick, 1995) while looking at how it can prospectively evolve (Cristofaro, 2022). John's problem-solving and reasoning cognitive capabilities allow him to interpret Jane's information quality preferences meaningfully (Heubeck, 2023). These are fundamental to John's capacity to navigate the complexities of Jane's cognitive processes and make sense of her nuanced information quality preferences.

John seizes the differences between various information quality dimensions that Jane values. For instance, he recognizes that “accuracy” and “completeness” represent distinctly different dimensions for Jane. This differentiation enables him to expand his understanding of her preferences only when there is a substantial difference among the dimensions. By doing so, he adopts a structured mental schema to comprehend the relationships between these attributes (Crockett, 1965). For instance, empirical research shows that an individual might cluster similar information quality attributes, such as “recency” and “being up-to-date,” into a unified information quality dimension, “currency” (e.g. Nelson *et al.*, 2005). This ability to seize information quality dimensions showcases John’s problem-solving and reasoning cognitive capabilities. At the same time, when Jane abstractedly articulates preferences across multiple information quality dimensions, such as “accuracy,” “consistency,” and “format,” it highlights her cognitive density. John must employ reasoning to extract the core elements of Jane’s preferences from her dense expressions and understand if an abstract preference (e.g. preferring “brief information”) indicates a broader evaluation criterion rather than a specific, concrete requirement.

Therefore, John’s problem-solving and reasoning cognitive capabilities are pivotal in deciphering Jane’s quality preferences attributes (Helfat and Peteraf, 2015). These enable him to effectively navigate the intricate landscape of Jane’s information quality preferences, aligning his interpretations with the cognitive intricacies expressed by Jane (Benet-Martínez *et al.*, 2006). In addition, John’s adeptness at discerning the underlying motivations behind Jane’s preferences allows him to adapt his strategies accordingly, ensuring that the information provided meets her needs effectively. This ability to delve beyond the surface-level expressions of preference showcases John’s depth of understanding and his capacity for interpretation (Cristofaro and Lovallo, 2022).

Furthermore, John’s proficiency in synthesizing disparate pieces of information and distilling them into coherent narratives contributes significantly to the sensemaking process. By weaving together seemingly unrelated data points, John can construct a comprehensive schema that provides valuable insights into the complexities of the situation at hand. This synthesis facilitates managerial decision-making by encouraging the integration of diverse perspectives and experiences (Toldbod and Dumay, 2023). Moreover, John’s commitment to continuous improvement in catering to the stakeholder’s preferences ensures that his sensemaking abilities remain agile and adaptive in the face of evolving circumstances. The exchange of interpretations (step 6) indicates John’s willingness to challenge his assumptions and refine his approaches. This iterative sensemaking process enhances managerial performance and cultivates a culture of innovation and resilience in the organization (Zhang and Soergel, 2014).

In conclusion, John’s problem-solving and reasoning cognitive capabilities are pivotal in navigating the intricacies of Jane’s information quality preferences. Through his adeptness at discerning underlying motivations, synthesizing disparate information, and fostering a culture of continuous improvement, John exemplifies the essence of effective sensemaking in the organizational context.

- P2. A manager develops “seizing” a stakeholder’s preferences for information quality attributes by selecting information quality dimensions via the adopted mental schema. This is guided by the “problem-solving” and “reasoning” cognitive capabilities.

#### 4.3 Transforming for alignment and retention

After John interprets Jane’s preferences, Jane will likely engage in a feedback loop with John to confirm whether her preferences have been accurately understood and incorporated into the decision-making process. This feedback could involve Jane providing additional clarification or refinement to her preferences based on John’s interpretation (step 7). In this phase, plausibility –

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rather than accuracy – becomes the guiding criterion for keeping possible interpretations of the counterpart information quality attributes, which further influences future sensemaking endeavors (Weick *et al.*, 2005; Rudolph *et al.*, 2009; Cristofaro, 2022).

For example, John may generate a plausible explanation for *why* information asymmetry reduction occurred (i.e. Jane's and John's interpretations matched). In doing so, John may judge plausibly by assessing "concept-coherence," i.e. how well a particular scenario conceptually coheres with prior knowledge (Connel and Keane, 2006). It could be a plausible explanation if the story fits well with John's previous experiences with Jane's interpretations. Another criterion for plausibility may be whether a story allows John to derive causal inferences (Rudolph *et al.*, 2009; Cristofaro and Lovallo, 2022). John's skillful use of language, communication, and social cognition capabilities allows him to establish plausible narratives, enhancing the fit and ensuring an alignment between interpretations (step 8). If John can – with reasonable confidence – say that  $X \rightarrow Y$ , there is a high probability that it would emerge as a plausible explanation, and the fit would be retained (step 9).

To build a plausible, consistent narrative, John adeptly leverages his language, communication, and social cognition capabilities (Helfat and Peteraf, 2015; Heubeck, 2023) to align his interpretations and complexity with Jane's. A key component underlying the fit between John's and Jane's interpretations is a complexity match (Poulis and Poulis, 2016) between their cognitive processes (e.g. Martignoni *et al.*, 2016). A complexity alignment between John's and Jane's mental schemata can occur for various reasons. In general, if John is cognitively complex, he would possess the ability to perceive constructs in more dimensions than those individuals who are not as cognitively complex. Such a high-level understanding of Jane's complex cognitive processes should increase the likelihood of John choosing and emphasizing appropriate information dimensions, thereby increasing adaptability with Jane's preferences and the possibility of a fit (e.g. Bieri *et al.*, 1966).

Individuals perceive their cognitive beliefs as good and correct (Montoya and Horton, 2004). Therefore, Jane may make favorable judgments about John (and *vice versa*), whose cognitive complexity underlying the information quality preferences matches hers. Thus, similarity with John's cognitive complexity will likely reinforce the legitimacy and accuracy of Jane's cognition and the possibility of a fit. On the other hand, dissimilarity with John's complexity of cognition creates uncertainty for Jane regarding her negative thoughts and the possibility of a misfit (Cristofaro, 2022). The misalignment may lead to Jane thinking that her preferences are unmet, resulting in John's firm losing business with Jane and missing out on growth opportunities (e.g. Harrison *et al.*, 2010). Conversely, if John's interpretation of Jane's preferences is *more* complex than Jane's, it may result in many managerial responses that waste valuable resources.

In conclusion, the sensemaking process between John and Jane illustrates the dynamic interplay between cognitive complexity, interpretation alignment, and information asymmetry reduction. Through effective communication, feedback loops, and the establishment of plausible narratives, John and Jane navigate the complexities of information quality preferences. As cognitive alignment (Martignoni *et al.*, 2016) between their mental schemata is achieved, the likelihood of misinterpretation decreases, fostering a mutual understanding that reduces information asymmetry (step 10). This complexity alignment (Poulis and Poulis, 2016) not only enhances the effectiveness of decision-making processes but also strengthens the relationship between John and Jane, laying a foundation for continued collaboration and mutual success. Therefore, we propose the following:

- P3. A manager develops "transforming" by aligning his/her interpretation of the stakeholder's information quality preferences and cognitive complexity with the stakeholder's own and "retaining" the plausible alignment (leading to information asymmetry reduction). This is guided by a manager's adept use of language, communication, and social cognition capabilities.

## 5. Discussion

### 5.1 Theoretical implications

A fundamental understanding of the question: “How can managers reduce information asymmetry in dyadic manager-stakeholder relationships in a complex and evolving environment?” has significant implications for transparency, business growth, firm survival, and competitive advantage. By invoking the literature on dynamic capabilities, sensemaking, and evolutionary theory, this article proposes evolutionary sensemaking as the managerial metacognitive dynamic capability for information asymmetry reduction, consisting of sensing, seizing, and transforming for environmental complexity by leveraging cognitive capabilities, such as perception, attention, problem-solving, reasoning, language, communication, and social cognition.

One of the key propositions in this study pertains to how a manager can prepare for transformation by aligning his complex information quality preference interpretations with the stakeholders’ and retaining a plausible fit. This article describes how a manager can marshal microfoundational cognitive capabilities of language, communication, and social cognition – as part of the metacognitive dynamic capability – to align complex information quality preference interpretations with the stakeholder. This “complexity alignment” (Poulis and Poulis, 2016) is consistent with the “law of requisite variety” (Ashby, 1956) in evolutionary sensemaking, where internal variety (complexity) needs to match the external array to meet the environmental pressures. In this article, a complexity alignment between a manager and a stakeholder’s information quality preference interpretations implies information asymmetry reduction. Given the gaps in the three literature above streams – explicitly about information asymmetry reduction – our article contributes to each literature stream by integrating them.

*First*, there has been much research on the relationship-building dynamic capabilities that primarily involve opportunism reduction in a manager-stakeholder relationship (e.g. Donada *et al.*, 2016; Hurley, 2023). However, this article fills a gap in the dynamic capabilities literature by alerting researchers to *complexity* (Daft and Weick, 1984) as an alternative source of information asymmetry reduction. We hope this article stimulates further research on how evolutionary sensemaking could reduce information asymmetry and promote open strategizing in complex environments (Hautz *et al.*, 2017).

*Second*, some literature in the sensemaking tradition investigates the consequences of complexity-rooted information asymmetry, such as research and development collaborations, financial fraud, and platform-complement relationships (e.g. Einola *et al.*, 2017; Ndofo *et al.*, 2015). However, the current literature does not thoroughly investigate the complexity of sources of information asymmetry. This article identifies the complexity embedded in the diversity of interpretations, which stems from the complexity in preferences for various information quality attributes and underlying cognitive processes. The precise identification of complexity sources should help clarify the connections between these sources (i.e. information asymmetry antecedents) and some of the information asymmetry consequences identified above.

Following Ashby’s (1956) law of requisite variety, often invoked in the sensemaking literature, Poulis and Poulis (2016) conceptualized “complexity alignment.” This article extends the notion of “complexity alignment” to information asymmetry reduction as a novel insight into how complexities match between managerial and stakeholder interpretations influences information asymmetry reduction. Recently, there has been some research regarding how the experiential variety of top managers and the complexity of a firm’s competitive strategies can match the complexity in the external environment (e.g. Fox *et al.*, 2022). The insights gained from this article can shed light on how the complexity alignment and underlying information asymmetry reduction can influence a firm’s strategy involving different stakeholders.

Furthermore, much of the existing sensemaking literature involves retrospective interpretation where enactment precedes cognition (e.g. Weick, 1995). By introducing evolutionary sensemaking (e.g. Cristofaro and Lovallo, 2022; Hodgkinson and Healey, 2011), we highlight the importance of not only *retrospectively* making sense of information asymmetry complexity but also *prospectively* preparing for sensing, seizing, and transforming for information asymmetry reduction opportunities. In other words, this article has significant implications for business growth, firm survival, and competitive advantage.

*Third*, evolutionary theory helps us understand how managers can cope with survival pressures through variation-selection-retention and replication-interaction when the complexity surrounding information asymmetry shifts during evolution. However, the current literature does not offer adequate guidance about the cognitive microprocesses underlying information asymmetry, resulting in “explanatory black boxes” (Felin *et al.*, 2015, p. 589). This article combines the cognitive capabilities from the dynamic capabilities literature (e.g. perception, attention, etc.) and the cognitive microprocesses (e.g. enactment, labeling, etc.) from the sensemaking literature with the mental schemas from evolutionary theory literature to illuminate the information asymmetry microfoundations.

### 5.2 Managerial implications

Many organizations have used evolutionary sensemaking to understand stakeholder behaviors (e.g. Coutu, 2003; Madsbjerg and Rasmussen, 2014). Our article underscores the need for a manager to develop evolutionary sensemaking when dealing with a stakeholder, ultimately aiming to reduce information asymmetry. To implement this framework, organizations can encourage their managers to strengthen the complex cognitive capabilities: (1) perception and attention skills, (2) problem-solving and reasoning skills, and (3) language, communication, and social cognition skills (Helfat and Peteraf, 2015; Heubeck, 2023) underlying the evolutionary sensemaking metacognitive dynamic capability.

*First*, the manager can hone his *perception* and *attention* skills by being in tune with the diverse, sometimes conflicting, and often weak signals about any changes in the stakeholder’s complex preference interpretations, even as s/he leaps first to look for new cues or leaps while looking (Coutu, 2003, p. 88). This should allow the manager to “sense the variations” in the stakeholder’s complex information quality preferences. Our recommendation starkly contrasts the current advice to managers to “keep things simple.” For instance, the sweeping statement that the resolution of information asymmetry requires the manager to provide *more* information to be transparent suffers from a “framing bias” (Tversky and Kahneman, 1981). This is because it assumes a simplified (to the neglect of a more complex) frame of reference, where information asymmetry *means* that the stakeholder has less information, as opposed to the possibility that her interpretation of information quality preferences may be different from the manager’s because of the inherent complexity. We caution the manager that the simplistic tendency of sharing “more” information with the stakeholder undermines the process. In this regard, to improve his attention and perception skills to reduce information asymmetry, the manager can: (1) *develop active listening practices*. This involves hearing what is being said and paying attention to nonverbal cues, tone of voice, and subtle behavioral changes. Suggested techniques are *paraphrasing* (restating the stakeholders’ statements or viewpoints in your own words to ensure understanding and demonstrate active listening) and *summarizing* (condensing the critical points of a discussion or exchange to capture the main ideas comprehensively) to understand stakeholder perspectives comprehensively (2) *conduct a stakeholder analysis*. This requires conducting a thorough stakeholder analysis to identify the diverse stakeholders involved in decision-making. The manager is encouraged to consider each stakeholder’s unique preferences,



objectives, and interpretations of information quality. This can be achieved through surveys, interviews, or focus groups to gather insights directly from stakeholders. (3) *tailor information-sharing strategies*. This means tailoring information-sharing strategies based on each stakeholder's needs and preferences. Rather than adopting a one-size-fits-all approach, the manager is encouraged to customize the type and format of information shared with each stakeholder group. This may involve providing concise summaries for some stakeholders while offering detailed reports or presentations for others. Regular feedback loops can also be established to ensure information sharing aligns with stakeholder preferences (Vaara and Whittington, 2012).

*Second*, to mitigate information asymmetry between the manager and stakeholders, the manager can initiate continuous learning initiatives to enhance team *problem-solving* and *reasoning* skills. In this regard, the manager can: (1) *participate in continuous learning initiatives*. Focused training programs that improve cognitive differentiation, integration, interpretation, and abstract understanding can help the manager develop cognitive complexity (e.g. Da'as *et al.*, 2021). During the learning process, the manager is encouraged to actively engage with course materials, participate in discussions, and apply newly acquired knowledge to real-world scenarios. Upon completion, facilitate opportunities for reflection and integration of learning into everyday practices through peer discussions, mentoring, or practical exercises. This should help the manager to "seize," i.e. effectively decipher the stakeholder's complex information quality preferences. Many managerial training programs emphasize trust-building with stakeholders (e.g. Graafland and De Gelder, 2023); (2) *emphasizing the development of data analysis skills*. Organizations should offer tailored training programs or workshops on data analysis tools and techniques. These initiatives should be designed to meet managers' specific needs and proficiency levels, ensuring they can effectively interpret and utilize data to address information gaps. Organizations should provide access to relevant data sources, software, and tools for hands-on practice and skill development. Additionally, managers should be encouraged to apply their newfound skills to real-world scenarios or projects, with support and guidance available as needed.

*Third*, the manager needs to improve his *communication* and *social cognition* capabilities (e.g. Whittle *et al.*, 2023), such as empathy and perspective-taking. This should help him "transform," i.e. align his interpretation of the stakeholder's complex information quality preferences with the stakeholder's interpretation and reduce information asymmetry. This can be done via (1) *engaging in plausible storytelling*. This should enhance the manager's adaptability or the ability to simplify complexity by effectively bracketing, labeling, and crafting plausible narratives (e.g. Dawson and Sykes, 2019). Plausible storytelling should improve the fit between the manager's and the stakeholder's information quality preference interpretations by navigating a variety of narratives and plausible explanations and reducing information asymmetry; (2) *promoting cognitive diversity*. This involves actively cultivating a work environment that embraces a variety of perspectives, backgrounds, and ways of thinking. By fostering cognitive diversity, the manager gains access to a broader range of viewpoints and interpretations, increasing the likelihood of finding alignments with the diverse preferences of stakeholders. Through exposure to different perspectives, the manager can develop a more nuanced understanding of stakeholder needs and preferences (e.g. Hodgkinson and Healey, 2011), thereby reducing information asymmetry. Additionally, promoting cognitive diversity encourages creativity and innovation, allowing for exploring various approaches and solutions to complex problems (e.g. Fox *et al.*, 2022). By continuously learning and reflecting on diverse viewpoints, the manager can adapt their communication strategies and decision-making processes to better align with stakeholders' evolving information quality preferences.

### 5.3 Limitations and future research

There are several avenues for future research, given this article's limitations. This article examines information asymmetry reduction in a dyadic manager-stakeholder relationship. The illustrative example included in this work refers to a manager-customer relationship. Can the propositions be generalized to different stakeholders? We argue that information asymmetry arises from a difference between the managerial and stakeholder's interpretations of preferences for various *information quality attributes*. Following the empirical literature on information quality (e.g. Lee *et al.*, 2002; Nelson *et al.*, 2005), we have assumed that the information quality attributes (e.g. "comprehensiveness," accuracy," "recency," etc.) and the associated preferences are largely generic across a variety of stakeholders. However, future research may examine if any idiosyncratic features of information quality attributes and preferences are specific to a particular type of stakeholder and how they affect information asymmetry microfoundations.

Future researchers may empirically investigate evolutionary sensemaking's managerial metacognitive dynamic capability for reducing information asymmetry. Many constructs discussed in this work, such as information quality (e.g. Arazy and Kopak, 2011), cognitive complexity (e.g. Woznyj *et al.*, 2020), cognitive capabilities (e.g. Durán and Aguado, 2022), and sensemaking (e.g. Alvesson and Jonsson, 2022) have been operationalized. Perhaps a qualitative methodology consisting of participant observation, ethnography, and various discursive approaches (e.g. Vaara and Whittington, 2012) may be fruitful for studying evolutionary sensemaking metacognitive dynamic capabilities.

Because this article focuses on managerial sensemaking, we have not considered the role of sensegiving (e.g. Gioia and Chittipeddi, 1991), where the manager would also influence the stakeholder's information quality preference interpretation. This may involve the manager actively leveraging their discursive communication ability (e.g. evocative and framing language) and persuasion, enabled by organizational facilitators such as routines and structures (e.g. Maitlis and Lawrence, 2007). Future research may investigate how managerial framing (e.g. Cornelissen and Werner, 2014) can influence a stakeholder's interpretation of information quality preference.

Connected to the above limit, while this article considers the cognitive effort and outputs of managers and stakeholders in reducing information asymmetry, it is important to acknowledge the limitation of not considering affective-cognitive interactions within and among individuals, as Cristofaro (2020) noted. Future research should explore the interplay between affective and cognitive factors in information asymmetry reduction, considering how emotions and cognitive processes influence decision-making and communication outcomes and the sensemaking-sensegiving process (see Cristofaro, 2022), also impacting the formation of dynamic capabilities (Cristofaro and Lovallo, 2022). Additionally, empirical investigations into the evolutionary sensemaking's managerial metacognitive dynamic capability for reducing information asymmetry are warranted. Qualitative methodologies like participant observation and ethnography could provide valuable insights into the complex interplay between cognitive processes and affective states in information exchange.

Consistent with much of the evolutionary theory literature, our article takes a Darwinian approach, where *variations* are usually assumed to be random, and environmental *selection* processes dictate the survival and *retention* of the fittest variations. In contrast, a Lamarckian perspective of evolution suggests that managerial practices that successfully *adapt* to evolutionary changes in the environment ensure high performance and survival. For example, can a manager be proactive, adapt, and "learn to make sense" instead of reacting to evolutionary shifts in the stakeholder's information preferences? Can selection and adaptation be interrelated? For example, researchers may investigate how different processes, such as learning and managerial inertia (e.g. Levinthal, 1991), can simultaneously shape information asymmetry by incorporating selection and managerial learning elements.

## 6. Conclusions

In conclusion, this article integrates the dynamic capabilities, sensemaking, and evolutionary theory literatures, and it proposes evolutionary sensemaking as a managerial metacognitive dynamic capability to reduce information asymmetry in a dyadic manager-stakeholder relationship. The research highlights the importance of evolutionary sensemaking processes by emphasizing complexity alignment, where managers continuously align their complex information preference interpretations with the stakeholders' own. Contrary to the common notion of providing *more* information to stakeholders, this study advocates for a *more prosperous* (e.g. Daft and Weick, 1984) understanding of stakeholders' complex information preferences. Managers are urged to foster a deeper grasp of the stakeholders' vast and often conflicting interpretations of information preferences. Future research avenues include exploring any idiosyncratic features of information quality preferences of many stakeholders, exploring the interplay of sensemaking and sensegiving, and incorporating elements of learning (in addition to Darwinian selection). By delving deeper into these areas, the research community can continue to address the complexities of information asymmetry, leading to more nuanced and effective strategies for information asymmetry reduction in contemporary organizations.

## Notes

1. The "metatriangulation" approach to theoretical integration entails applying multiple paradigms to explore their differences and interactions, leading to a comprehensive understanding of the phenomena of interest and the paradigms employed (Lewis and Grimes, 1999, p. 676). In essence, this approach facilitates the identification of patterns that bridge different understandings and offer a theoretical platform linking these contrasting or complementary representations. See applications in Cristofaro (2020, 2022).
2. This illustrative example is based on our conversations with a group of engineers at a large civil engineering consulting company located on the United States East coast. Our propositions are not based on inductive/deductive reasoning either grounded in or demonstrated by this example.
3. The above example may be generalizable to many interpersonal exchanges involving a variety of stakeholders such as customers (e.g. Nayyar, 1990), suppliers (e.g. Heide *et al.*, 2014), and communities (e.g. Kulkarni, 2000), among others. We state that information asymmetry arises from a difference in the managerial and stakeholder interpretation of complex *information quality attributes* and the associated preferences. Following the empirical literature on information quality (e.g. Lee *et al.*, 2002; Nelson *et al.*, 2005), we assume that information quality attributes in interpersonal exchanges may be largely generic across different stakeholders. However, we do not claim that the above example generalizes *all* interpersonal information exchanges involving stakeholders. We acknowledge this limitation in Section 5.3.

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