Generative AI and Problem Framing in Wicked Problems: The Innovative Product Launch Case

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Abstract: This paper reports ongoing research into the role of generative AI (GAI) in supporting collective creativity during the problem framing stage of wicked problems. The focus is on the launch of innovative products, seen here as a prime example of a wicked problem within innovation management. The research positions problem framing as the central thread linking all wicked problems and identifies it as a critical barrier in efforts to address such challenges. Utilising a systematic literature review based on PRISMA methodology, the study introduces an initial conceptual framework. This framework illustrates how hybrid workflows involving both humans and GAI might enhance the quality, diversity, and legitimacy of problem framings from a strategic perspective. In mapping the interplay between human judgement and GAI's generative capacity, the paper sheds light on the potential for hybrid approaches to unlock more robust and adaptable strategic options. The research aspires to provide actionable insights for both scholars and practitioners seeking to improve decision-making in complex innovation environments.

Keywords: Generative AI; Wicked Problems; Problem Framing; Collective Creativity; Innovation Management; New Product Development; Hybrid Approaches.

1 Introduction

The challenge of successfully launching an innovative product in the market is essential for most business, but at the same time, it is not yet a well-understood process, despite being commonly studied in innovation management. Researchers and practitioners alike have mapped out the process when it comes to updates to existing product lines or line extensions, but there is no agreement about how the process should be in the case of a truly innovative product. Many questions arise. For example, what is the target market? What problems does the new product solve? Are there enough people bothered enough by the problem who are willing to pay for new a solution? How does the company define commercial success or a successful launch? Ask the product team, marketers, the CFO, development partners (in the case of development partnerships or risk sharing projects) and one will find there is no agreement, sometimes opposing views about the answers. More importantly, early framings of the market opportunity will determine which data is collected, which competing products are considered and analysed, which customer segments are pursued, and so on. Each decision interconnected with the next. Once a chosen framing of the problem / opportunity is completed, and alternatives defined, it is difficult to revisit the product development and launch trajectory. Also, true there is no stopping rule that confirms in advance whether the adopted framing is commercially adequate before the commitment is made. This description of the uncertainty related to the process of developing a new, innovative product aligns with what Rittel and Webber (1973) definition of a wicked problem. A Wicked problem is a problem with no definitive formulation, no stopping rule, and no test for solution adequacy before it is attempted.

The main motivation of this research is the realization that despite extensive attention in the literature to the novelty of the product, the product development process, and the commercialization strategy, the framing of the process has been receiving much less attention. Consider the quality, diversity, and adequacy of the problem framings that precedes the development process. If the framing of the market opportunity is wrong, no amount of execution excellence can produce sustainable commercial success, because execution is always relative to a framing. As Rittel and Webber (1973, p. 161) observed, "The formulation of a wicked problem is the problem." This observation is believed to be particularly valuable in the case of innovative product launches. The formulation of the market challenge is itself the central act of strategic creativity.

In today's business context, we must consider the rise of generative AI (GAI). Particularly, large language models (LLM) have emerged as a tool for augmenting collective creative processes in innovation contexts (Haefner et al., 2021; Doshi and Hauser, 2024). LLM offer potentially valuable capabilities for problem framing. Consider what GAI applications can do to rapidly synthesizing knowledge sources to generate alternative framings and market hypotheses to supplement existing framings. Yet, the literature identifies a fundamental structural limitation. LLM are not trained to question the adequacy of the framing they are given (Denning and Arquilla, 2022). Without deliberate human governance, GAI is as likely to amplify an inadequate problem frame instead of challenging it.

This paper summarizes our research in progress aimed at addressing the intersection of GAI, collective creativity, and problem framing in the innovative product launch context. The main purpose of this research is to develop a conceptually grounded and practically applicable framework for hybrid human-GAI problem framing workflows. More specifically, the proposed framework may benefit from both for GAI's idea generation potential and limitations to strategically and commercially contest framing environments. This paper also includes a literature review with the theoretical foundations of the framework. It also describes the proposed research methodology currently underway. Moreover, we describe a preliminary conceptual framework and outline anticipated contributions. Lastly, we identify areas where feedback would advance this research.

2 Theoretical Background

2.1 The Innovative Product Launch as a Wicked Problem

Rittel and Webber (1973) have defined wicked problems based on their characteristics. The most basic and most important for this research is the idea of wicked problems having no definitive formulation. Every attempt to define a wicked problem reveals aspects previously hidden. Stakeholders with different values, interests, and worldviews seldom agree on anything related to the problem. Buchanan (1992) extends this insight to design contexts, arguing that all design problems share this wicked character because their definition depends on contested human values.

The innovative product launch challenge fits with the basic definition of a wicked problem within the domain of innovation management. The market problem is not deterministic, it defined. What the product is, who it serves, what need it addresses, and what constitutes commercial success are all contested among product teams, market strategists, investors, and distribution partners. Early framings of the market opportunity will determine which data is collected, which competing products are considered and analysed, which customer segments are pursued, and so on. Each decision interconnected with the next. Once a chosen framing of the problem / opportunity is completed, and alternatives defined, it is difficult to revisit the product development and launch trajectory. Also, true there is no stopping rule that confirms in advance whether the adopted framing is commercially adequate before the commitment is made. Calling it a wicked problem is not about semantics; it is about changing the way with deal with problem. The development of a new innovative product as a wicked problem requires ongoing, collaborative framing by everyone involved.

2.2 Problem Framing, Collective Creativity, and GAI

According to Schön (1983), problem framing is about a cognitive and social process of actors selecting, organising, and communicating their understanding of a situation in ways to make solutions clear and viable. In wicked problem contexts, effective framing requires the integration of diverse stakeholder perspectives. Also, it requires the building of sufficient shared understanding to enable coordinated action. The creative competency that wicked problem framing demands is called divergent reframing. Divergent framing is the capacity to generate, hold, and evaluate multiple competing understandings of a situation while avoiding premature definition (Amabile, 1983; Martin, 2007).

Generative AI offers three capabilities potentially relevant to this process. It offers more breadth of association across domains that human participants would not readily connect. Moreover, it offers rapid scenario generation of alternative framings; and assumption surfacing when appropriately prompted. However, the literature also raises significant concerns. Doshi and Hauser (2024) demonstrate that at the collective level, GAI assistance tends to reduce the diversity of framings generated, as participants converge on AI-generated option. Doshi and Hauser call it a homogenisation effect. This is particularly problematic for wicked problem framing, where the richness of the collective framing space is essential. Denning and Arquilla's (2022) claimed the problem with context and GAI is a compounding concern. GAI systems elaborate whatever framing they are given rather than questioning it (Denning and Arquilla, 2022), which can trap collaborative groups in inadequate framings by generating plausible content within those frames.

2.3 Hybrid Approaches and Governance

The limitations discussed in the previous section of this paper trigger an interest in hybrid workflows. Hybrid workflows may combine GAI's generative breadth with the political judgement, contextual sensitivity, and evaluative capacity that only human participants can provide. This research however proposes that the value of hybrid systems is in the mutual offset of the weaknesses of both GAI and human cognition, a synergy where the unique strengths of one compensate for the inherent limitations of the other (Dellermann et al. 2019). GAI challenges human cognitive fixation and groupthink, while humans challenge GAI's tendency toward historical bias, framing amplification, and political inadequacy. This "offsetting-weakness" model carries direct design implications for hybrid workflows and represents one of the central theoretical contributions this research aims to develop.

An important governance concern accompanies this model. Wu et al. (2025) proposed that human-GAI collaboration improves task performance outcomes while simultaneously reducing participants' intrinsic motivation, as engagement shifts from deep problem immersion to surface-level evaluation of AI outputs. This shift threatens the "*intrinsic motivation principle of creativity* by Amabile (1983). According to Amabilie, creative breakthroughs depend on individuals being driven by the inherent challenge and interest of a task rather than simplified evaluative roles. In wicked problem framing contexts, the political legitimacy of the resulting frame depends on the genuine investment of stakeholders in its development. This motivational dynamic is not simply a matter of design preference; it is an important concern for the quality and resilience of the framings produced. To ensure effectiveness, hybrid workflow design must intentionally foster authentic human engagement, rather than relegating participants to the role of curators of content generated by artificial intelligence.

3 Research Approach

The research applies PRISMA 2020 systematic literature review (Page et al., 2021) currently. PRISMA is employed because the relevant literature spans multiple disciplinary communities like wicked problems theory, creativity research, AI in innovation management, and product launch strategy. Another important reason is the fact that the application of explicit, reproducible search and screening criteria reduces the selection bias that opportunistic review of a rapidly growing field may introduce.

It is important to acknowledge that systematic reviews present certain challenges in this context. Typically, there is a gap of around two years between the inception of a study and its publication, which means that evidence relating to generative AI maybe somewhat behind the newest developments by the time it appears in academic literature. However, the present approach is designed to establish a solid conceptual foundation, with a focus on identifying the theoretical framework for subsequent empirical fieldwork. This research is not expected to provide a final synthesis of an established body of evidence.

Search strings combining three thematic blocks have been constructed and are being applied across Scopus, Web of Science, and Google Scholar: Block A addresses generative AI and large language models; Block B addresses problem framing, collective creativity, and sensemaking; Block C addresses wicked problems, deep uncertainty, and complex challenges. The search window covers 2018–2025 for empirical and applied work, with foundational theoretical works included regardless of date. Initial screening is underway, supported by Elicit AI for first-pass classification with all decisions reviewed manually.

Our early review of the expanding literature base reveals that while the interface between generative AI and collective creativity in innovation contexts is now well-established, further investigation into hybrid human-GAI workflows applied specifically to wicked or ill-structured problems remain limited. This identifiable gap is central to the motivation for the present research, and underpins the initial framework proposed in this paper. The precise parameters and implications of this gap for the conceptual model outlined in Section 4 will be progressively refined as the systematic screening and synthesis process advances.

4 Preliminary Conceptual Framework

Based on the theoretical foundations established above and on initial engagement with the emerging literature, the research proposes a three-phase hybrid workflow model for GAI-augmented problem framing in the innovative product launch context. This model is offered as a preliminary conceptual framework subject to peer scrutiny and empirical validation, not as an established finding.

The first phase is called human-led frame-challenging. In this phase collaborative participants map their current framings of the market opportunity, surface the assumptions embedded in those framings, and identify the stakeholder perspectives that are foregrounded or suppressed. This phase is mandatory to be human led because, as the context problem implies (Denning and Arquilla, 2022), introducing GAI before assumptions have been made explicit will cause the AI to elaborate rather than challenge the framing implicit in the initial prompts. As structured approach drawing on design thinking frameworks and deliberative methods is hypothesised as essential for surfacing the assumptions that participants typically do not make explicit without deliberate prompting.

In the second phase, AI-assisted frame generation, participants introduce AI tools to expand and elaborate the framing directions identified in the first phase. GAI's value in this phase lies in generating framings that a team anchored in its own product vision would not independently consider. For example, unexpected customer segments, non-obvious competitive positioning analogues, and alternative problem framings drawn from adjacent domains. These AI-generated framings are treated as provocations to human creativity rather than as proposals for evaluation. The purpose of AI – assisted frame generation is to disrupt cognitive fixation, not to represent superior framings.

In the third phase, the human-led frame evaluation, the collective evaluates the expanded framing set against strategic, commercial, and stakeholder criteria. This phase is essentially human led because the evaluation of competing market framings is a political and strategic act: it depends on judgements about which stakeholder perspectives are foregrounded, what solution spaces are opened or foreclosed, and what commercial commitments are implied. These judgements cannot be delegated to AI systems. Governance mechanisms to preserve framing diversity and participant engagement across the three phases. This is particularly the case given the motivational risks proposed by Wu et al. (2025), and supported by Amabile (1983) seminal work, represent the most significant open design challenge in the proposed model.

5 Anticipated Contributions

Continuing this work through subsequent fieldwork, this research contribution will be threefold. First, it will advance our understanding of why GAI-enhanced collective creativity may improve problem framing in wicked problem contexts, particularly in the case of innovative product launch. Second, it will clarify under what governance conditions this improvement is likely to occur. Lastly, this research focusses the analysis on problem framing as the universal element common to all wicked problems and grounding it in the concrete challenge of innovative product launch. That is a more practical contribution.

More on the theoretical contribution the hybrid reframing model of GAI and human collaboration offers a more precise account than the standard a complementary strengths narrative. It is focus on offsetting weaknesses. This reframing has direct implications for how organisations should design collaborative AI-augmented strategy processes as structured process in which GAI and humans actively disrupts the characteristic blind spots of the other.

From a practice standpoint, the three-phase workflow model provides a template for organisations running collaborative innovation workshops, design sprints, and product launch strategy sessions. The task of managing group work with people and generative artificial intelligence is demanding. It requires keeping many ways to look at problems and making sure that everyone is truly involved. These are important areas for practical research and testing in companies. The next step in research is to carry out studies in real places where new products are planned. This means watching how generative artificial intelligence is used in meetings to find solutions and following how the ways to look at problems change as the process of launching a product moves forward.

Areas for Feedback & Development

The research is in development, and the author invites reviewers and conference participants to share their views on key questions that remain open in the research design.

Is the innovative product launch an adequate wicked problem for this research?

The research frames launching an innovative product as a core wicked problem for innovation management. Is this focus adequate or areas like platform ecosystems, business models, or disruptive markets might be better options? It also questions whether product launch fits the definition of wicked problems, or not when comparing it to issues like climate change and urban inequality.

Is systematic literature review the right methodological approach?

Given that generative AI is a comparatively new and rapidly advancing field, it is not perfect clear whether a systematic literature review is an adequate research approach for this research. The pace of technological change may be too fast for the academic literature. The key question is the adequacy and timeliness of SLR as a foundation for investigating such an evolving area. One could consider ethnographic studies of collaborative framing sessions or action research with organisations deploying GAI tools for product launch strategy, for example. It may be also possible to complement the systematic literature with later empirical research.

Does the idea of offsetting weaknesses make sense?

The main proposition of this research addresses the weakness of GAI and human collaboration by claiming that AI addresses the weakness of human collaboration, and human collaboration help address the weakness of AI generated processes. Is this idea theoretically well-grounded sound? Are there competing theoretical frameworks that would challenge this proposition? From a practical standpoint, how would governance be? What would be needed to operationalise it in a real product launch context?

What empirical context would be most generalisable?

If the research proceeds to ethnographic studies, which contexts would generate the most relevant insights? Would a single in-depth case study of one product launch make sense? And how should we account for the rapidly evolving capabilities of GAI tools?

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