

Project Management Knowledge in Online Communities: What Practitioner Posts Reveal About How Project Managers Solve Real- World Challenges ¹

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Abstract

Project management increasingly takes place in complex, uncertain, and interaction-driven environments, extending beyond the application of formal methodologies. While existing research relies primarily on surveys and interviews, the development of professional knowledge through online peer discourse remains underexplored.

This study examines how project management knowledge is constructed in digital professional communities. A corpus of approximately 15,000 posts from Reddit and Stack Overflow was analyzed using a combination of natural language processing (NLP), large language models (LLMs), and sampled expert validation.

Findings indicate that online discourse is predominantly centered on challenges, with most posts focused on sharing challenges and seeking context-specific solutions. The most prevalent challenges relate to planning, team dynamics, and stakeholder management. A statistically significant alignment was found between types of challenges and corresponding solutions. Notably, even without explicit methodological terminology, solutions tend to align with structures resembling formal frameworks such as PMBOK. Sectoral variation further highlights the role of context in shaping discourse patterns.

The study contributes to Project-as-Practice research by conceptualizing online discourse as a mechanism for practice-based knowledge construction. Methodologically, it demonstrates how large-scale professional discourse can be systematically analyzed using hybrid NLP approaches. Practically, the findings emphasize the centrality of interpersonal and coordination skills in project management.

Keywords: project management; online communities; professional discourse; PMBOK; Project-as-Practice; natural language processing

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1. Introduction

Every day, thousands of project managers turn to online communities to ask the questions that no methodology handbook fully answers: how to handle a sponsor who keeps changing scope, how to rebuild a schedule after a key resource leaves, or how to manage a team that resists a new way of working. Platforms such as Reddit and Stack Overflow have quietly become one of the profession's most active sources of practical knowledge, where insights, dilemmas, and solutions are shared based on direct, hard-won experience. Yet despite the growing importance of these communities, remarkably few empirical studies have systematically examined the professional discourse taking place within them.

This gap matters because most of what we formally know about how project managers cope with challenges comes from formal frameworks and from studies relying on surveys and interviews. Previous work within the Project-as-Practice (PAP) research tradition has emphasized that project management is not limited to the application of formal methodologies, but is enacted through everyday interactions, coordination among actors, and sensemaking processes in practice (Blomquist et al., 2010; Kalogeropoulos et al., 2020; Klitgaard & Gottlieb, 2024). However, how project managers actually cope with real-world challenges, and how they develop solutions through professional interaction with peers, has received sparse empirical attention. Online communities function as informal spaces where practice-based knowledge is created through accumulated experience and trial and error, offering a rare window into how project complexity is addressed beyond formal methodological frameworks.

The aim of this study is to examine how professional knowledge in project management develops in practice within digital peer-to-peer discourse. To this end, we analyzed approximately 15,000 posts from project management communities using text mining and large language models (LLMs), in order to identify the common challenges raised by project managers, characterize the solutions proposed by the community, and examine the relationships between types of challenges and coping strategies. In addition, the study examines the extent to which knowledge generated in online professional communities relates to established methodological frameworks such as the PMBOK Guide (Project Management Body of Knowledge), thereby enabling an examination of the relationship between formal frameworks and the way professional knowledge is shaped in everyday practice.

The study is situated within the Project-as-Practice (PAP) research tradition and conceptualizes online professional discourse as a structured mechanism of knowledge construction in project management. As the findings will show, this discourse is inherently challenge-driven: project managers articulate context-specific challenges and co-construct solutions with peers. Strikingly, even in the absence of explicit methodological terminology, these solutions tend to organize around patterns resembling formal frameworks such as PMBOK. Beyond its theoretical interest, this has direct practical relevance: the challenges that dominate the discourse relate primarily to

coordination among people, expectation management, and stakeholder communication, underscoring the importance of these skills in project management training and professional development.

2. Literature Review

In this study, professional discourse refers to the exchange of experiences, challenges, and solutions among practitioners within a professional community. In online professional communities, such discourse develops through peer-to-peer interactions in which practitioners describe practical situations, interpret challenges, and propose solutions based on their accumulated experience. Through these interactions, practice-based knowledge emerges: knowledge that develops from professional experience and challenge-solving in real work contexts rather than from formal theoretical instruction alone (Wenger, 1998).

Prior research has begun to examine why practitioners turn to such communities. Kenworthy (2024) examines the information-seeking behaviors of project managers in professional virtual communities and finds that they participate primarily to obtain practical assistance with concrete challenges rather than for formal theoretical learning. That study establishes the motivation for participation, but it does not analyze the content of the discourse itself: which challenges practitioners actually raise, what solutions the community offers in return, and whether the two are systematically related. The present study addresses this gap by analyzing that discourse at scale.

2.1 Project management in the current era

In recent years, project management has become a central strategic component of organizational activity, particularly in the context of digitalization and accelerated technological development (Jensen, Thuesen & Gerald, 2016; Marnewick & Marnewick, 2022). These trends are associated with shorter product life cycles, increased levels of uncertainty, and rising market expectations, which require project managers to operate in complex and dynamic environments (Daemi, Chugh & Kanagarajoo, 2020).

In such contexts, project management extends beyond the mechanical application of predefined methods and procedures, and increasingly involves adaptive decision-making, continuous learning, and coordination among multiple stakeholders. The PMBOK framework provides a shared language and a conceptual foundation for managing projects, while emphasizing the need for contextual adaptation according to project characteristics, stakeholder needs, and the organizational environment (PMI, 2021). As project complexity increases, effective project management depends on the integration of methodological knowledge with adaptive and context-sensitive capabilities throughout the project life cycle.

Challenges and solutions in project management also vary significantly across fields of activity. Sectoral context generates distinct relationships, power structures, regulatory requirements, and unique work practices, within which project managers interpret situations, redefine their roles, and develop appropriate action strategies (Ahern, Leavy & Byrne, 2014). In the construction and infrastructure sector, for example, projects are characterized by multiple stakeholders, exposure to corruption and complex regulation, and institutional control mechanisms that shape coping practices (Lehtinen et al., 2022). Ninan, Mahalingam and Clegg (2022) show that in infrastructure and urban transport projects, media organizations and local communities influence how the project is presented in public discourse, thereby affecting its legitimacy and the conditions under which project managers operate.

These examples illustrate that project management is not based on universal solutions, but rather on adaptive practices that emerge from an understanding of the specific environment and the interactions among stakeholders. Success in complex projects therefore depends on the ability to develop evolving solutions grounded in decentralized knowledge, continuous learning, and dynamic adaptation to context and to challenges that change throughout the project life cycle (Ahern, Leavy & Byrne, 2014). Once we recognize that project management takes place within complex and dynamic contexts, the need arises for a shared framework that enables project managers to address this variability in an accessible manner. The PMBOK Guide seeks to fulfill this role.

2.2 PMBOK: a shared language and its application in a complex world

The PMBOK framework, developed by the Project Management Institute (PMI), provides a shared language and a conceptual foundation for project management, while emphasizing the need for adaptation to the project context, stakeholder needs, and the organizational environment (PMI, 2021). It serves as a common reference point across a wide range of sectors, including technology, education, and construction.

Beyond providing a structured framework, PMBOK can also be viewed as a repository of accumulated professional knowledge, reflecting practices, principles, and lessons learned from project management experience. However, learning in project management is not limited to formal frameworks: it also occurs through practice, interaction, and experience. Prior research has emphasized that knowledge is constructed through social interaction (Wenger, 1998), while learning in project environments develops through experiential engagement and reflection in practice (Sense, 2011). This perspective aligns with the Project-as-Practice (PAP) research tradition, which conceptualizes project management as a socially embedded and practice-based activity, where knowledge is continuously constructed through ongoing interactions and situated action (Blomquist et al., 2010; Kalogeropoulos et al., 2020; Klitgaard & Gottlieb, 2024). From this viewpoint, formal frameworks such as PMBOK represent only one dimension of project

knowledge, complemented by informal, practice-based knowledge emerging from real-world interactions.

The seventh edition of the PMBOK Guide defines eight interrelated Performance Domains: Stakeholders, Team, Development Approach and Life Cycle, Planning, Project Work, Delivery, Measurement, and Uncertainty. These domains complement one another, and project challenges may span several of them simultaneously, even when one domain is more dominant. Together, they provide systematic terminology and flexible tools for addressing evolving project environments throughout the project life cycle (PMI, 2021). Accordingly, project challenges are examined in relation to management principles and these domains as a guide for the selection of appropriate tools and techniques. For example, coordination challenges or conflicts among stakeholders are addressed through strengthening communication, collaboration, and control mechanisms. Empirical evidence shows that systematic monitoring reduces cost overruns in infrastructure projects (Shah, Bhatti & Ahmed, 2023), that integrating PMBOK principles with technological systems improves transparency and change management (Mutoni, 2025), and that implementing the framework requires sector-specific adaptation rather than uniform application (Faraji et al., 2022).

2.3 NLP analysis and LLM performance evaluation: automation versus manual annotation

In recent years, growing interest has emerged in extracting knowledge from large text corpora through the integration of data mining and large language models (LLMs). These approaches typically follow a multi-stage workflow that combines noise reduction, targeted model application for classification, and structured information extraction. Polak and Morgan (2024), Dagdelen et al. (2024), and Gagiano and Tian (2023) demonstrate similar processes in which data are identified and organized, followed by prompting, structured outputs, and validation steps to improve accuracy. Common workflows include: (1) data mining to collect and structure raw data; (2) LLM prompting to extract insights, identify themes, or perform classification; and (3) quality control through external comparisons, source attribution, and sampled manual checks.

While LLMs enable rapid large-scale processing, they remain limited in capturing contextual nuances and producing well-grounded information, particularly without expert knowledge (Polak & Morgan, 2024; Huang et al., 2025). Manual analysis offers greater precision but limited scalability. Consequently, hybrid approaches that combine automated processing with sampled manual validation have emerged to enhance reliability (Zhang & Wallace, 2015; Polak & Morgan, 2024). Manual checks serve as a gold standard for evaluating model performance: Zhu et al. (2024) show that ChatGPT-generated labels vary by domain and are assessed using Precision, Recall, and F1, while Tufa, Markov and Vossen (2024) demonstrate the effectiveness of sampled human annotations as a baseline for large-scale content identification.

Recent studies further reduce annotation effort through informative sampling: Unell et al. (2025) propose Smarter Sampling to select high-uncertainty cases, and Feng et al. (2025) introduce the Maximum Discrepancy (MAD) framework to focus checks on divergent outputs. These approaches support the design adopted in the present study, which integrates automated analysis with sampled human oversight of professional project management forums.

3. Research Questions and Objectives

The main research question guiding this study is: How is project management knowledge constructed through online professional discourse?

Five sub-questions operationalize this question:

- What types of challenges are discussed in online professional project management communities, and how are they distributed across PMBOK performance domains?
- What types of solutions are proposed in response to these challenges, and how are they distributed across PMBOK performance domains?
- What is the relationship between types of challenges and the solutions proposed in response to them?
- How do types of challenges vary across different professional sectors, and to what extent can context-dependent versus general patterns be identified?
- To what extent do the empirical findings from online professional discourse reflect, extend, or diverge from formal project management frameworks such as PMBOK?

4. Methodology

In brief, the study proceeded in three stages: data mining methods were applied to social media data to generate a dataset of posts containing project management challenges; LLM-based methods were then used to process the raw dataset; and finally, statistical analysis was conducted to derive insights. Each stage is described below, together with the expert validation procedures used to assess the reliability of the automated classifications.

4.1 Definition of the research corpus

4.1.1 Data collection

Data were collected from project management forums on Reddit (<https://www.reddit.com/r/projectmanagement/>) and Stack Overflow (<https://pm.stackexchange.com>), forming the raw corpus. Data were retrieved through repeated API queries to each platform. From Reddit, 9,141 posts (8,400,000 words) were randomly sampled, primarily between 2018 and 2025. From Stack Overflow, all available posts were

collected, totaling 6,401 posts (1,100,009 words), mainly from 2011 to 2022. These platforms were selected due to their high activity in project management discourse and the availability of public APIs that enable systematic data extraction.

4.1.2 Algorithmic data preprocessing

The data underwent cleaning and initial preprocessing, including field validation (title, body, date, score, comments), text truncation (maximum 3,000 words per post and up to five initial comments to reduce runtime), and removal of duplicate posts.

4.2 Feature extraction using LLM

Feature extraction was performed through a combination of manual analysis by the researchers and automated processing using a large language model (LLM), following a three-stage approach:

4.2.1 Manual stage

In the first stage, the researchers conducted a sample-based review of posts to formulate the coding scheme by defining key features (e.g., challenge type and solution type). This stage established the classification rules and examples that guided subsequent linguistic pattern identification.

4.2.2 Automated stage

After formulating the coding scheme, automated coding was applied to the full dataset using the GPT-4.1-mini-2025-04-14 large language model. The model was selected for its suitability for structured text classification and its ability to consistently apply predefined coding rules to large-scale unstructured data. Using a dedicated prompt (see Appendix A) based on the manual-stage guidelines, the model extracted key features from each post. For every post the model returned a single JSON object whose keys correspond to the variables defined in the prompt. Each JSON object was parsed programmatically and flattened into one row of a tabular dataset, with the JSON keys mapped to fixed CSV columns in a constant order; records that failed schema validation (missing keys, or values outside the closed lists defined in the prompt) were re-queried once and, if still invalid, excluded. The resulting file therefore contains one row per post and one column per extracted feature. An illustrative excerpt of this file is provided in Appendix C. To reduce the risk of confirmation bias in the PMBOK classification, the prompt allowed the model to classify solutions as “Not aligned with PMBOK” when no meaningful correspondence was identified. In addition, when a PMBOK domain was selected, the model was required to provide a brief justification explaining the reasoning behind the classification.

4.2.3 Validation stage

Following coding, a sample-based manual review of model outputs was conducted for quality control and validation. Samples with identified inaccuracies were re-evaluated, and targeted adjustments were made to the classification rules or prompt wording. This validation process also

examined whether the PMBOK classifications were substantively justified rather than mechanically assigned by the model. This integration of human and automated analysis balanced interpretive depth with consistency and large-scale processing.

4.3 Data analysis

Data analysis involved segmentations and comparisons between key variables identified in the corpus, aligned with the research questions. Frequency tables and graphs were constructed to describe relationships between variable pairs (e.g., sector–challenge, sector–solution). Chi-square (χ^2) tests assessed statistical associations between variables, and when significant, standardized residual analyses were performed by calculating cell residuals as the difference between observed and expected frequencies, divided by the square root of the expected frequency:

$$\text{residual} = (x_{\text{observed}} - x_{\text{expected}}) / \sqrt{x_{\text{expected}}}$$

Positive residuals indicate higher-than-expected frequencies for a given variable combination, whereas negative residuals indicate lower-than-expected frequencies. Results were visualized using heatmaps of residual patterns and hierarchical clustering to identify groups of categories (e.g., sectors or platforms) with similar distributions. Statistical significance of the χ^2 tests was reported for each analysis, with $p < 0.05$ considered significant. Each χ^2 test is reported together with Cramér's V as a measure of effect size, calculated as $V = \sqrt{\chi^2 / (N \times \min(r-1, c-1))}$, where N is the number of classified posts and r and c are the numbers of rows and columns in the contingency table. Following conventional thresholds, $V \approx 0.1$ is interpreted as a small effect, $V \approx 0.3$ as moderate, and $V \geq 0.5$ as large.

4.4 Stratified sampling for manual validation

To assess LLM classification quality, disproportionate stratified sampling was applied (see Appendix B). This approach addresses the non-symmetric distribution of categories in the corpus, where some PMBOK performance domains and professional sectors are frequent while others are rare. The corpus was divided into strata based on performance domains and professional sector, and each stratum received a sample size proportional to its frequency and evaluation needs. Categories with negligible representation were excluded, as sparse strata do not allow stable evaluation and may introduce bias. This design enabled a representative manual sample without inflating rare categories while ensuring coverage of the central phenomena.

The annotation scope followed accepted practice that uses relatively small samples from large corpora as reliable evaluation baselines (Zhu et al., 2024). Informative sampling strategies that prioritize high-variability or error-prone items further support this approach (Feng et al., 2025; Unell et al., 2025). Accordingly, a combined manual sample of 190 posts from both networks was constructed to represent all strata and to compare manual classification with LLM outputs: 140

posts for the validation of PMBOK performance-domain classification and 50 posts for the validation of sector classification (see Table 1 and Appendix B).

4.5 Manual validation: calculation of evaluation metrics

Manual validation involved expert annotation and classification of the original post sample. LLM outputs were then compared with these expert labels, which served as the gold standard. Classification performance was evaluated using Accuracy, Precision, Recall, and F1-score metrics, following standard practice in NLP and LLM evaluation (Zhu et al., 2024; Tufa, Markov & Vossen, 2024). For multi-class tasks, metrics were calculated as weighted averages across categories to account for differences in class frequency. This approach aligns with prior studies combining automated labeling with sample-based manual validation to assess the reliability and accuracy of LLM-based classifications in complex, context-rich settings (Polak & Morgan, 2024; Dagdelen et al., 2024).

Manual annotation was carried out by a single expert annotator, an author of this study with academic training in information science and professional experience as a certified project manager; inter-rater reliability could therefore not be computed. To keep the coding consistent, the coding rules were fixed in advance during the manual stage (Section 4.2.1), and the annotator worked from the post text alone, without access to the model's output for that post; this limitation is noted in Section 8.

Sector classification was performed by the model for each post individually, based on the content of the post itself (see the sector variable in Appendix A). Both corpora were collected from dedicated project management communities - r/projectmanagement and pm.stackexchange.com - that are not associated with any particular industry, so the source of a post carries no sector information. No user profile data were collected in this study. Posts that did not contain sufficient context for an unambiguous assignment were classified as "Other".

5. Results

Some figures are presented on a logarithmic scale to improve readability and clarify the findings.

5.1 Distribution of post types across social networks

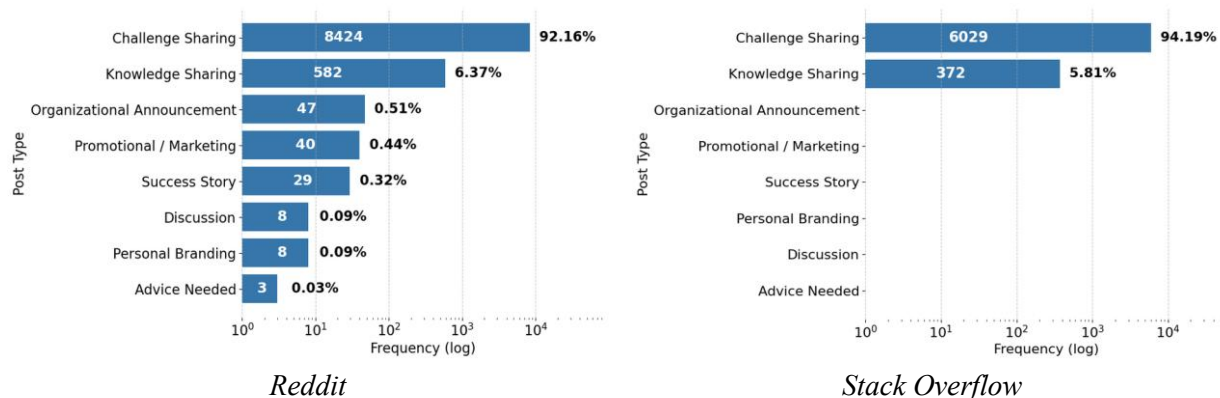


Figure 1. Distribution of post types in the challenge dataset (log scale)

Figure 1 presents the distribution of post types in online discourse. On both platforms, most posts are classified as Challenge Sharing. On Stack Overflow, approximately 94% ($n=6,029$) of the posts are classified as Challenge Sharing, while on Reddit this category accounts for approximately 92% ($n=8,424$). The Knowledge Sharing category appears at a substantially lower rate on both platforms. Additional categories appear at very low frequencies, accounting for less than one percent of the total posts. In plain terms: project managers come to these communities above all to raise problems and seek help, not to broadcast successes or share formal knowledge.

5.2 Types and distribution of challenges across PMBOK domains

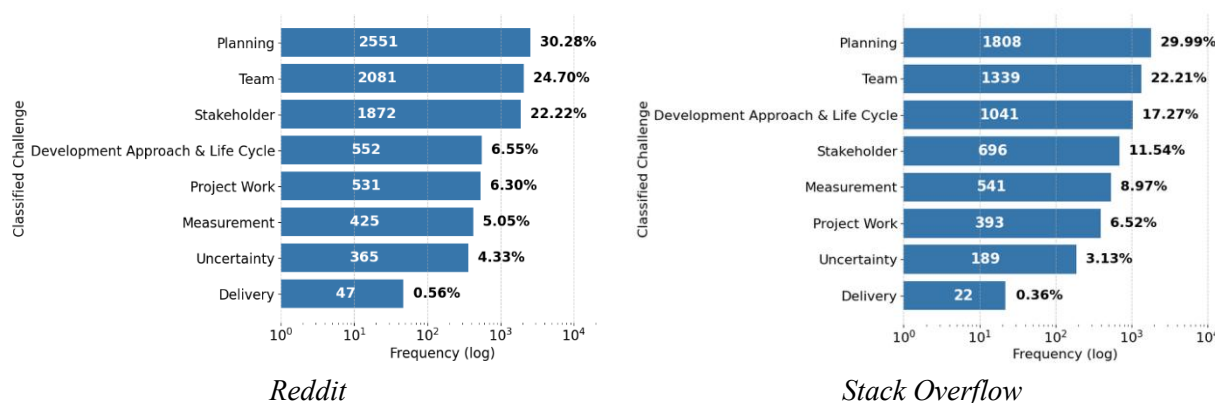


Figure 2. Classified challenge distribution in the challenge dataset (log scale)

Figure 2 presents the distribution of challenges as classified according to the PMBOK performance domains. On both platforms, a concentration is observed in two central domains: Planning and Team. Planning accounts for approximately 29% of all classified instances on Stack Overflow and 30% on Reddit. Team accounts for approximately 22% on Stack Overflow and 24% on Reddit. The Stakeholder domain appears twice as frequently on Reddit (22%) compared to

Stack Overflow (11%). The remaining domains appear at lower frequencies, ranging from less than 1% to only a few percentage points.

5.3 Types and distribution of solutions across PMBOK domains

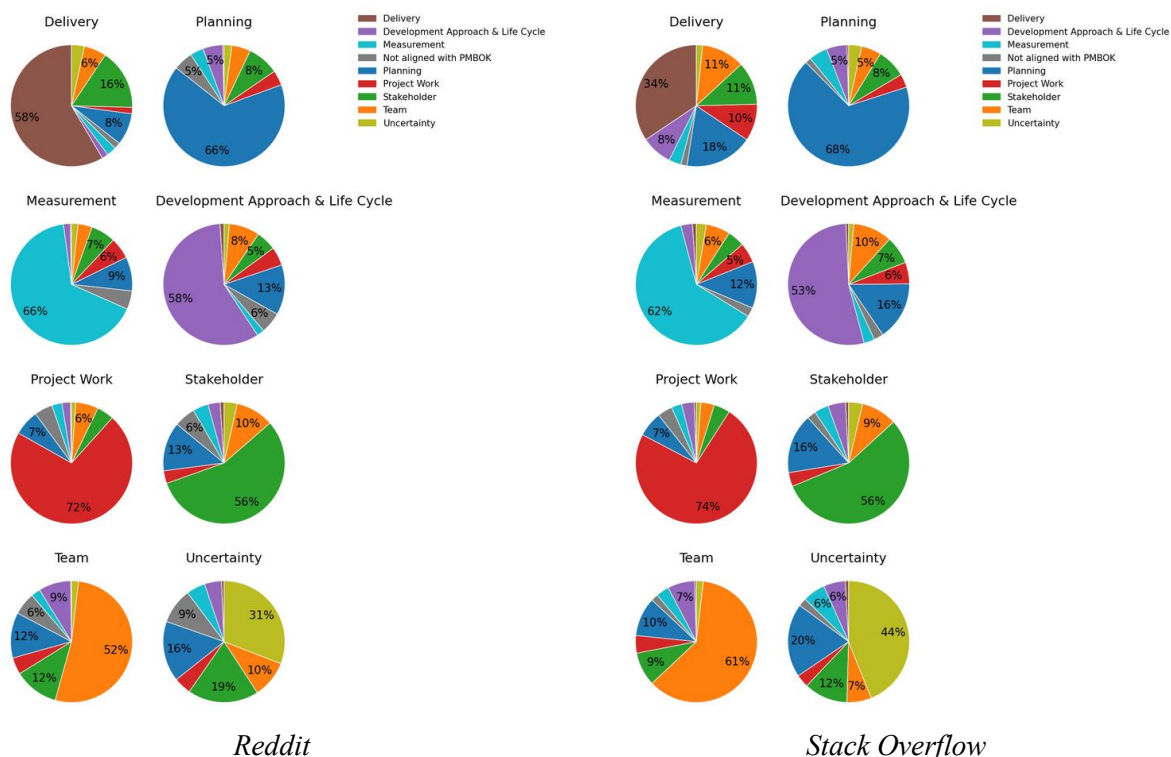


Figure 3. PMBOK-based solution distribution

Figure 3 presents the distribution of solution types offered in online discourse across PMBOK performance domains. The findings show that solutions are distributed across multiple domains, with higher frequencies observed in domains such as Planning, Project Work, and Team.

5.4 Relationship between challenge types and solution types

The statistical analysis indicates a strong and statistically significant relationship between challenge domains and the types of solutions proposed ($\chi^2(77)=35,633.01$, $p<.001$; Cramér's $V = 0.50$). This finding demonstrates that the distribution of solutions is not random, but reflects systematic patterns of alignment between challenge types and solution types.

5.5 Sectoral variation in challenges

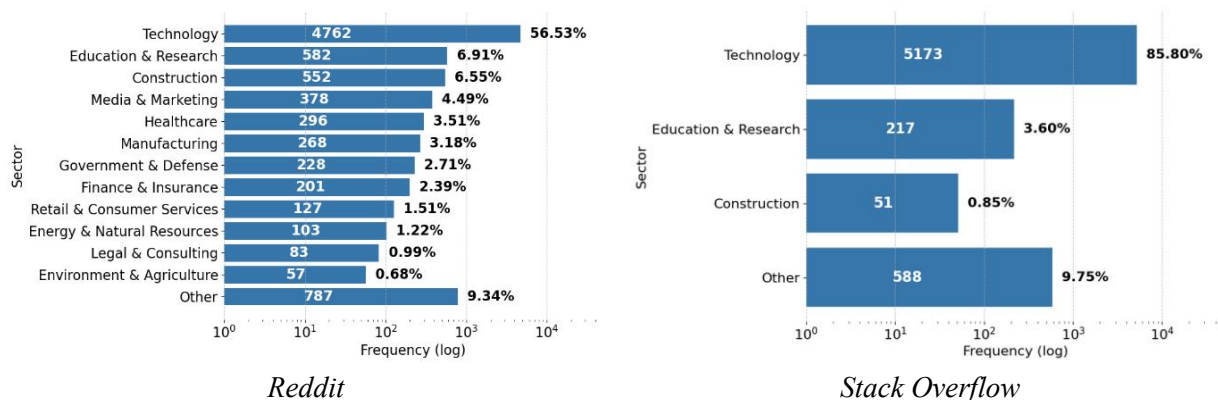


Figure 4. Sector distribution in the challenge dataset (log scale)

Figure 4 presents the distribution of challenges by sector of activity. On Stack Overflow, most challenges appear in the technology sector, accounting for approximately 86% (n=5,173). On Reddit, the technology sector is also dominant, accounting for approximately 56% (n=4,762), while the remaining sectors appear at substantially lower frequencies in comparison.

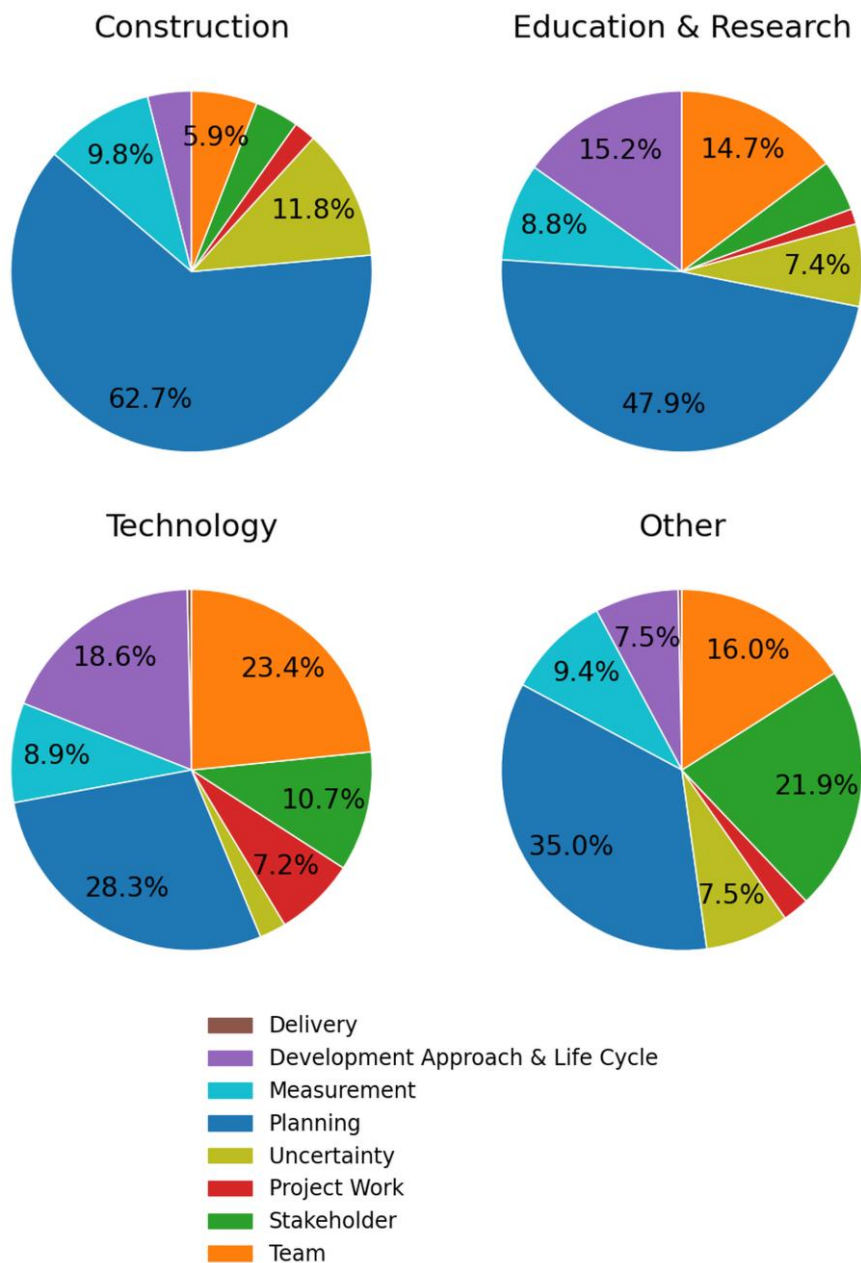


Figure 5. Distribution of challenges by sector and PMBOK performance domains – Stack Overflow

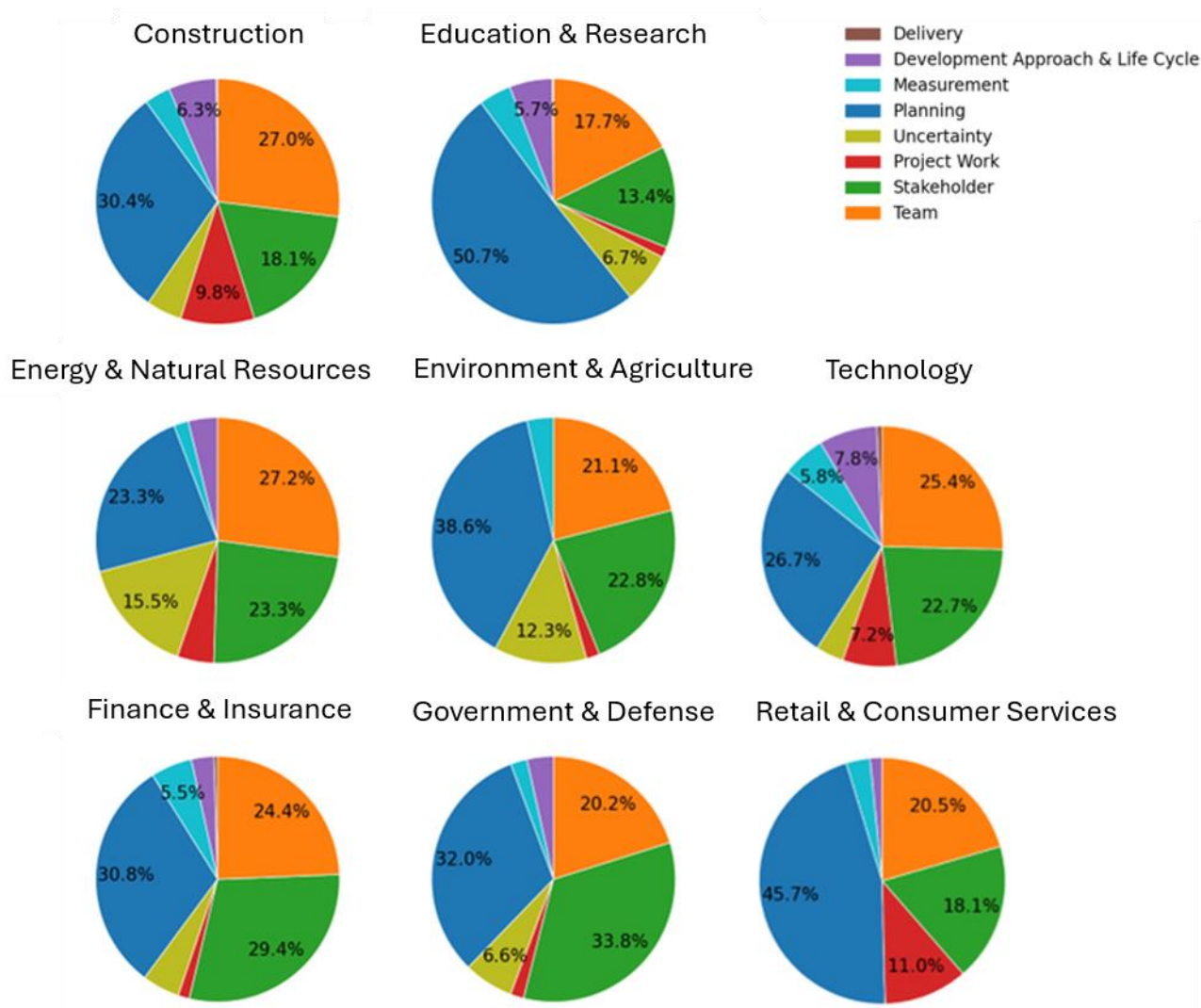


Figure 6a. Distribution of challenges by sector and PMBOK performance domains – Reddit (1 of 2)

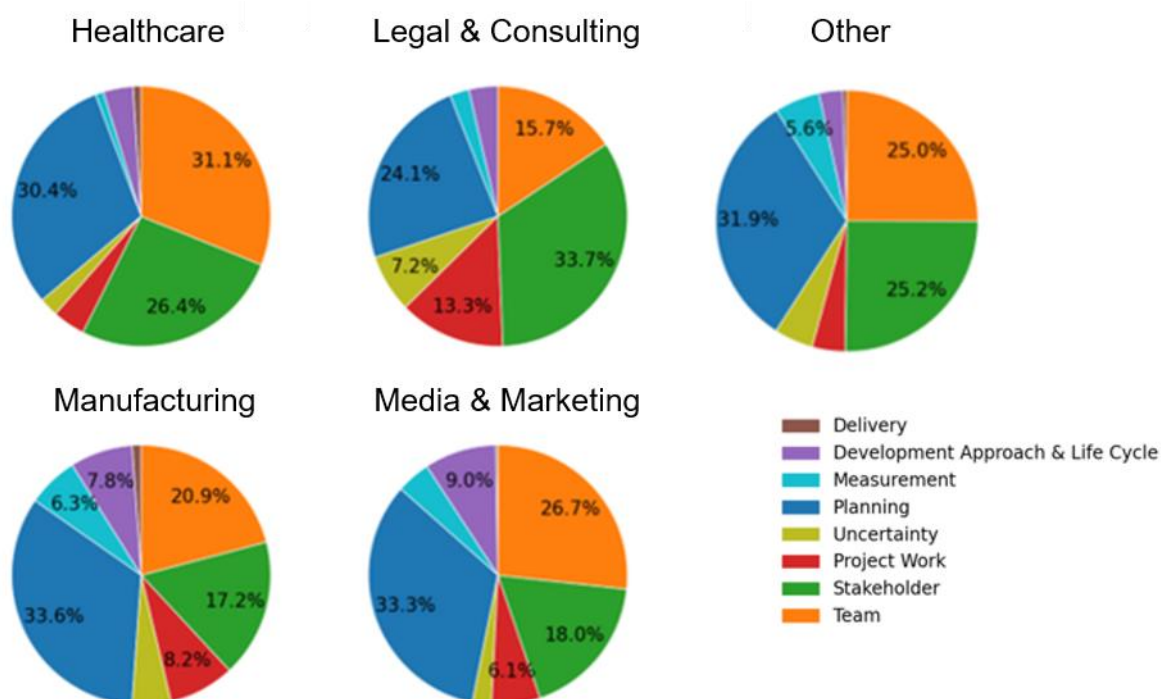


Figure 6b. Distribution of challenges by sector and PMBOK performance domains – Reddit (2 of 2)

To examine the relationship between professional sectors and the types of challenges documented in social media, the distribution of challenge domains was analyzed for each sector. Figures 5, 6a and 6b present the occurrence rates of challenges across seven PMBOK performance domains. Although the PMBOK framework includes eight domains, the empirical analysis identified only seven, as domains such as Cost and Integration did not appear with sufficient frequency or were subsumed under other categories. The findings indicate representation of all domains across sectors, albeit with different distributions: the Planning domain is particularly prominent in the Technology, Education & Research, and Construction sectors (approximately 27%–63%), whereas the Legal & Consulting, Finance & Insurance, and Media & Marketing sectors exhibit higher prevalence of the Stakeholder and Team domains (approximately 20%–33%).

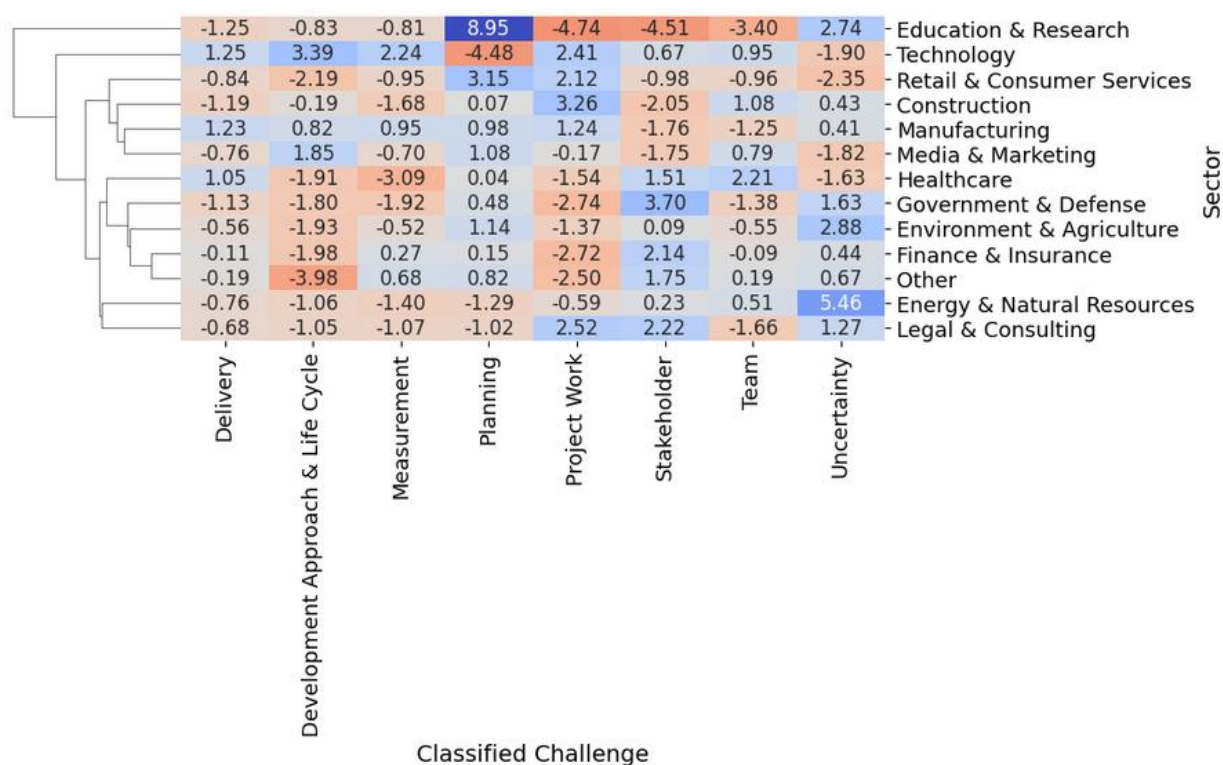


Figure 7. Relationship between sector and challenge domain (standardized residuals) – Reddit

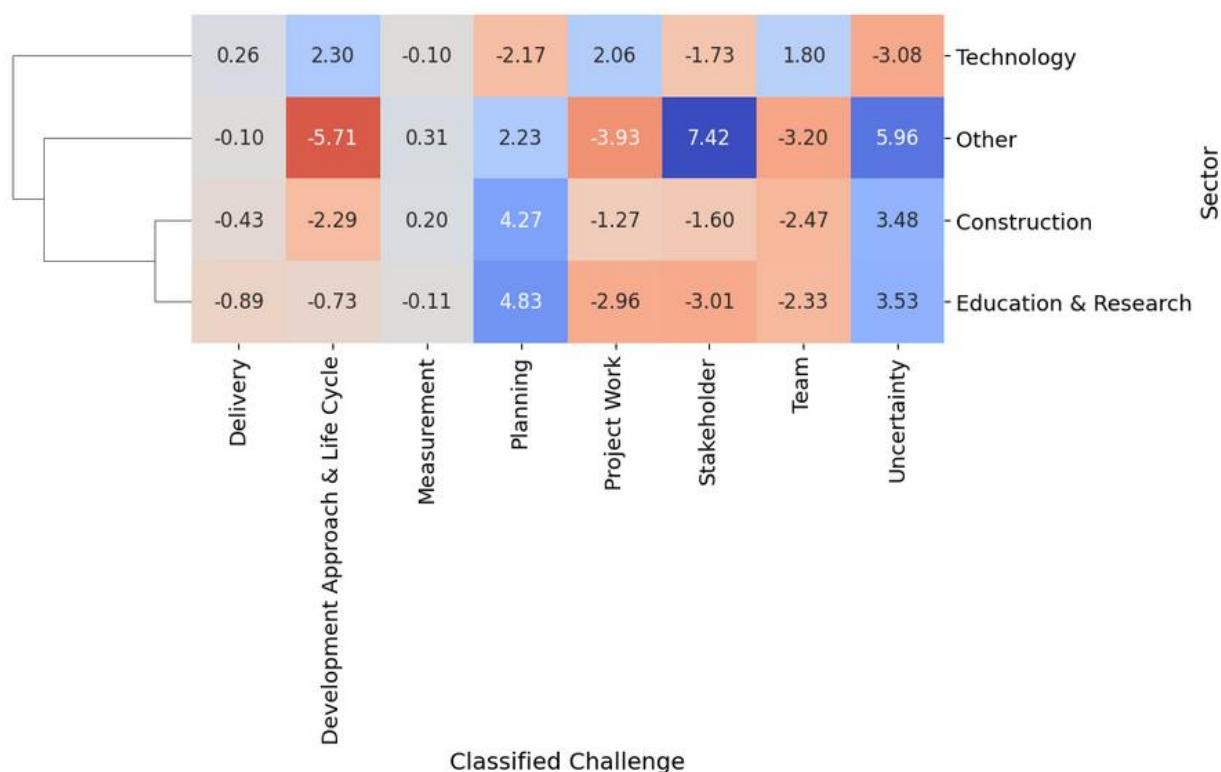


Figure 8. Relationship between sector and challenge domain (standardized residuals) – Stack Overflow

A chi-square test indicated a statistically significant association between professional sector and challenge domain ($\chi^2 = 440.377$, $df = 84$, $p < 0.001$; Cramér's $V = 0.086$). Figures 7 and 8 present heatmaps of standardized residuals for each sector–challenge pair, where positive values indicate higher-than-expected frequencies and negative values indicate lower-than-expected frequencies. In the Reddit data, notable positive residuals were observed for Planning in the Education & Research sector and for Uncertainty in the Energy & Natural Resources sector, alongside negative residuals for Stakeholder in the Construction sector. In Stack Overflow, positive residuals were evident for Planning and Development Approach & Life Cycle in the technology sector, and negative residuals for Planning in the Education & Research sector. In addition, hierarchical clustering analysis indicates structural similarity among sectors characterized by comparable challenge distributions.

5.6 Manual validation

Table 1 presents the results of the manual validation of the LLM-based classifications.

	Accuracy	Precision	Recall	F1-score	No. of samples	No. of classes
PMBOK	0.80	0.83	0.81	0.81	140	8
Sector	0.93	0.98	0.93	0.95	50	15
Average	0.84	0.88	0.84	0.86		

Table 1. Manual validation – summary of LLM classification performance against expert labels

The results of the manual validation presented in Table 1 indicate a high level of alignment between the classification outputs of the LLM model and the expert classifications, across all examined classification tasks. In the classification of PMBOK performance domains, Accuracy values of approximately 0.80 and an F1-score of approximately 0.81 were achieved, based on a sample of 140 posts. The highest performance was observed in sector classification, with an Accuracy of approximately 0.93 and an F1-score of approximately 0.95, based on a sample of 50 posts, giving a combined validation sample of 190 posts. In addition, Precision and Recall metrics were found to vary across categories and classification task types, depending on category prevalence and the level of distinction required between them, as reflected in the metric values reported in the table.

6. Discussion

This study examines how professional knowledge in project management is constructed and develops within online professional discourse. Previous studies within the Project-as-Practice (PAP) research tradition have emphasized that project management is not limited to the application of formal methodologies, but is enacted through everyday interactions, coordination among actors, and sensemaking processes that occur in practice (Blomquist et al., 2010; Kalogeropoulos et al., 2020; Klitgaard & Gottlieb, 2024). These studies, which are primarily based on qualitative analyses of specific projects, have shown that professional knowledge is shaped through practice itself. The findings of the present study support this understanding by demonstrating that, also in online professional discourse, knowledge develops through interaction among practitioners as they engage with challenges. At the same time, the findings extend this perspective by revealing systematic and recurring patterns in the relationship between challenges and solutions, as reflected in large-scale, real-time discourse.

6.1 Types of posts in social networks

The findings indicate that discourse in digital communities of project managers focuses primarily on presenting challenges and seeking practical solutions. Approximately 90%–94% of posts on both platforms were classified as Challenge Sharing (Figure 1). This pattern suggests that these

platforms function as spaces for addressing real-world challenges that arise in everyday project practice. One possible explanation is that online professional communities enable practitioners to share concrete dilemmas and receive feedback based on the accumulated experience of peers when dealing with situations of uncertainty in practice. Consequently, unlike formal knowledge sources that are structured around general principles and methodological frameworks, discourse in these communities tends to focus on presenting challenges from day-to-day work and seeking tailored, context-sensitive, experience-based solutions that emerge through interaction with peers. This interpretation is consistent with Kenworthy (2024), discussed in Section 2. While that study examined why project managers turn to these communities, the present findings show what actually takes place within them.

6.2 Distribution of challenges in social networks

Across both platforms, three domains – Planning, Team, and Stakeholder – emerged as the most prominent challenge focal points (Figure 2). This pattern is consistent with the literature, which describes the primary challenge of project management in digital environments not as the application of methodology alone, but as a process of coordinating among different actors, bridging expectation misalignments, and continuously adapting throughout the project lifecycle (Daemi, Chugh & Kanagarajoo, 2020). This finding strengthens the understanding that project management is to a large extent a social process of coordination among multiple actors, in which project success depends not only on formal tools and methodologies but also on the ability to manage relationships and communication among stakeholders. This interpretation is consistent with theoretical perspectives that view professional knowledge as emerging through social interaction and practice (Wenger, 1998). The findings reinforce the Project-as-Practice (PAP) perspective, which emphasizes that knowledge is constructed through interaction among practitioners, while also extending it by showing that knowledge construction is manifested in practice through the articulation of challenges and the exchange of solutions in professional discourse. The dominance of the Planning, Team, and Stakeholder domains may stem from the fact that issues of communication, expectation management, and coordination among teams and stakeholders are inherently complex and context-dependent. It is precisely for these problems that project managers turn to peers for advice grounded in experience.

6.3 Matching solutions to challenges (PMBOK)

The findings indicate a statistically significant alignment between challenge domains and the types of solutions classified according to the PMBOK performance domains ($\chi^2(77)=35,633.01$, $p<.001$; Cramér's $V = 0.50$). Thus, even when project managers do not explicitly use methodological terminology, the solutions proposed in the online discourse are organized around patterns that resemble the PMBOK framework.

This phenomenon may be interpreted in two complementary ways. On the one hand, methodological frameworks such as PMBOK may reflect practical patterns that exist in professional practice, and therefore the solutions proposed by practitioners naturally align with the performance domains of the framework. On the other hand, professional training within widely adopted standards may influence the way project managers interpret challenges and propose solutions, even when they do not consciously use the methodological terminology itself.

The association between challenges and solutions suggests that the relationship between methodological frameworks and professional practice is not unidirectional, but rather develops through an interaction between practical experience and methodological knowledge structured within professional standards. This also suggests that insights emerging from online professional discourse may serve as an additional source of practice-based knowledge, which could potentially inform the ongoing evolution of formal frameworks such as PMBOK.

6.4 Sectoral variability in project management challenges

The findings show that online discourse among project managers varies across different sectors. On Stack Overflow, most participants come from the technology sector, and therefore the discussions are concentrated mainly within a single professional context. In contrast, Reddit shows much broader sectoral diversity, with representation from twelve different sectors compared to three on Stack Overflow (Figure 4).

These differences are also reflected in the configuration of challenges. Although the Planning, Team, and Stakeholder domains appear across all sectors, their relative prominence varies between sectors (Figures 5–8). For example, in the construction sector on Reddit, the Project Work domain appears with high frequency (standardized residual = 3.26), while on Stack Overflow the Planning (4.27) and Uncertainty (3.48) domains are particularly prominent. These patterns are consistent with the nature of construction projects, where planning, coordination of work stages, and coping with operational uncertainty constitute central challenges.

Another notable finding appears in the Education & Research sector, where the Planning domain appears with particularly high frequency. On Reddit, a value of 8.95 is observed, and on Stack Overflow a strong relationship between the sector and this domain also appears (4.83). These high values indicate a particularly strong association between the types of projects in this sector and planning challenges, and may reflect the nature of academic and educational projects, in which defining objectives, organizing work stages, and coordinating among different partners constitute central components of project management.

These findings support previous studies that describe project management as a context-dependent field, in which the types of challenges and solutions are influenced by the characteristics of the professional and organizational environment in which projects take place (Ahern, Leavy & Byrne, 2014; Lehtinen et al., 2022; Ninan, Mahalingam & Clegg, 2022). At the same time, the small

effect size reported in Section 5.5 (Cramér's $V = 0.086$) indicates that this variation is modest: Planning, Team, and Stakeholder challenges recur across all sectors, and sectoral context shifts their relative weight rather than replacing them. Sectoral context therefore shapes the emphasis of the professional knowledge constructed in these communities rather than its underlying structure.

6.5 Limitations of automated classification

6.5.1 Limitations of automated classification and the need for human interpretation

In the analysis of posts classified by the LLM, we observed that automated identification relies primarily on terminology related to planning and process execution, yet it often fails to capture the true core of the challenge. The core issue that often emerges in the discourse is interpersonal relationships – how to manage resistance, how to handle expectation misalignments, or even how to plan a personal career and approach questions of professional certification. This phenomenon has also been documented in research on LLMs, which characterizes these models as capable of capturing semantic patterns while lacking a deeper understanding of contextual meaning (Huang et al., 2025).

Therefore, the use of NLP as a basis for understanding professional challenges necessitates an additional layer of human interpretation. While the model was able to outline the discourse in standardized terminology, only human experts were able to identify when formal language is used to describe an interpersonal issue rather than a planning-related issue. Table 2 provides representative examples and illustrates the differences between the model's (LLM) classification and human expert classification.

#	Post summary	LLM classification	Expert classification	Explanation
173	Non-tech PM wants to switch into tech/product roles; unsure of the path.	Development Approach & Life Cycle	Stakeholder	The post describes working with clients, coordination with multiple actors, coping with expectations and rivalries between interests, as well as work on sensitive proposals or tenders. These issues are directly related to stakeholder management; the Development Approach & Life Cycle domain is addressed only indirectly.
135	Studying for updated APM PMQ exam but official guide incomplete; syllabus changed.	Planning	Stakeholder	The post concerns an individual attempting to understand how to study for the PMQ exam and prepare effectively. The challenge does not reflect a project planning issue, but rather personal needs, knowledge insufficiency, and individual deliberation. Here the individual is the primary

#	Post summary	LLM classification	Expert classification	Explanation
				stakeholder seeking to determine what will help them develop professionally as a project manager.

Table 2. LLM classification versus human interpretation across PMBOK performance domains

6.5.2 Overlap and dominance among PMBOK performance domains

The examples presented in this section illustrate that overlap across multiple PMBOK performance domains can occur in the analyzed cases. These examples highlight that project management challenges are not confined to a single domain, but rather reflect interconnected aspects of project practice. Nevertheless, in most cases it was possible to identify a single dominant domain representing the core of the challenge, alongside additional domains that may be secondary and enrich the contextual understanding. For example, posts that were automatically classified as planning-related challenges often included aspects of stakeholder management, teamwork, or uncertainty; however, these appeared as ancillary components rather than as the core of the challenge.

Such overlap reflects the PMI perspective, where performance domains are complementary and interrelated. In any given situation, a dominant domain can be identified alongside adjacent domains that contribute to a comprehensive understanding of the overall context (PMI, 2021). As illustrated in Table 3, many posts include one primary classification alongside additional secondary classifications, reinforcing the findings regarding overlap among PMBOK performance domains.

#	Post summary	Primary classification	Additional classifications
166	Construction director overwhelmed by firefighting; outdated plan; need better tooling.	Project Work	Uncertainty; Team
190	Finance manager struggles with unintegrated scheduling and cost tools.	Planning	Delivery
196	PM offered £200/hr. consulting call; unsure if scam or legitimate.	Stakeholder	Uncertainty

Table 3. Overlap across PMBOK performance domains

6.6 Contributions of the study

This study makes three main contributions: theoretical, methodological, and practical. From a theoretical perspective, the study shows that discourse in online professional communities of project managers focuses primarily on the presentation of challenges, as project managers turn to these communities to obtain solutions tailored to the specific context of the projects in which they operate. This finding highlights that professional knowledge is acquired through ongoing engagement with challenges within peer interaction, consistent with perspectives that view knowledge as emerging through participation and practice (Wenger, 1998). Building on Project-as-Practice research (Blomquist et al., 2010; Kalogeropoulos et al., 2020; Klitgaard & Gottlieb, 2024), the findings demonstrate that, also in online professional discourse, knowledge develops as practitioners share challenges, interpret situations, and propose solutions to one another – and that this process is reflected in a consistent, systematically identifiable relationship between types of challenges and types of solutions. Moreover, even when participants do not explicitly use methodological terminology, the solutions proposed tend to organize around patterns similar to formal frameworks such as PMBOK, indicating an interaction between professional practice and methodological frameworks. The findings also indicate that professional discourse varies across sectors, highlighting the role of sectoral context in shaping the professional knowledge that emerges in these communities.

From a methodological perspective, the study contributes in two complementary ways. First, it demonstrates how systematic analysis of professional discourse at scale can be conducted on a corpus of approximately 15,000 posts from online professional communities, through the integration of text mining, large language models, and statistical analysis, alongside sample-based manual validation by experts – consistent with recent studies that combine LLM-based analysis with structured prompting and validation procedures (Polak & Morgan, 2024; Dagdelen et al., 2024). Second, the study is based on the analysis of authentic professional discourse occurring on social networks, reflecting real-world interactions among project managers. In this way, it offers an alternative to studies based on surveys or interviews, where data are collected through researcher mediation and may therefore be influenced by reporting biases or retrospective interpretations by participants. The practical contribution is elaborated in the following section.

7. What the Findings Mean for Practitioners

Although this is a research paper, its findings carry direct messages for practicing project managers, PMO leaders, educators, and professional bodies:

- **For project managers:** the problems your peers struggle with most are not scheduling algorithms or earned-value formulas – they are planning under changing conditions, team dynamics, and stakeholder expectations. Investing deliberately in communication, negotiation, and coordination skills addresses the challenges most likely to dominate your

day-to-day work. Online communities are a legitimate and valuable complement to formal training: the solutions exchanged there, while informal in language, tend to be structurally consistent with recognized good practice.

- **For PMO leaders and organizations:** the sectoral variation found in this study suggests that methodology tailoring should be driven by context. Construction-oriented teams wrestle disproportionately with project work and operational uncertainty; consulting, finance, and marketing environments face proportionally more stakeholder and team challenges. Internal communities of practice, modeled on the challenge-and-response dynamics observed here, can accelerate knowledge sharing within the organization.
- **For educators and trainers:** the centrality of interpersonal and coordination challenges in authentic practitioner discourse argues for integrating these skills more substantially into project management curricula and certification preparation, alongside formal tools and methodologies.
- **For professional bodies such as PMI:** the systematic alignment between community-generated solutions and PMBOK performance domains suggests that online professional discourse may offer a complementary source of practice-based evidence alongside established consultation processes.

8. Limitations of the Study

This study has several limitations that should be considered when interpreting the findings. First, the two platforms examined, Reddit and Stack Overflow, do not represent the full range of project management communities. Therefore, the generalizability of the findings beyond these online environments is limited. In particular, the strong representation of the technology sector in the dataset suggests that some of the observed patterns may reflect the characteristics of technology-oriented project environments. Consequently, the findings should be interpreted primarily in relation to discourse within digital professional communities rather than as a comprehensive representation of project management practice across all sectors. Second, the two corpora cover different time windows: the Reddit sample spans 2018-2025, whereas the Stack Overflow sample spans 2011-2022. Cross-platform comparisons should therefore be read with the understanding that part of the observed variation may reflect the period in which the discourse took place rather than the platform itself – in particular the diffusion of agile and hybrid approaches, the shift to remote and distributed work, and changes in the tooling available to project managers over this period. The two windows do overlap substantially (2018-2022), which limits but does not eliminate this concern. Third, the manual validation was performed by a single expert annotator, so inter-rater reliability could not be assessed and the possibility of individual interpretive bias in the reference labels cannot be ruled out; replication with two or more independent annotators would allow the agreement between them to be quantified. Fourth, although content classification

was conducted using a combination of automated NLP methods and manual validation, the analysis relies on categories and interpretive decisions defined by the researchers and is thus subject to the inherent limitations of human judgment.

9. Conclusions

This study examined how challenges and solutions in project management are reflected and develop within professional discourse in online communities of project managers. Through the analysis of approximately 15,000 posts from the Reddit and Stack Overflow platforms, it was found that professional discourse focuses mainly on presenting challenges arising from practice and on seeking solutions adapted to the specific context of the project. The main challenges identified were primarily related to planning, team management, and stakeholder management, and a significant relationship was found between the types of challenges and the types of solutions proposed. In addition, it was found that even when participants do not explicitly use methodological terminology, the solutions tend to organize around patterns similar to formal frameworks such as PMBOK, indicating an interaction between knowledge generated in practice and professional methodological frameworks.

These findings emphasize that online professional communities constitute an important space for the creation, sharing, and development of professional knowledge in project management. Understanding the discourse developing within them can contribute both to understanding the contemporary challenges faced by project managers and to the development of professional training that gives interpersonal skills, communication, and stakeholder coordination the weight they evidently carry in real-world practice.

10. Directions for Future Research

Future research should further examine how digital communities shape professional knowledge in project management by integrating semantic content analysis with Social Network Analysis. Such an approach can enable the identification of patterns of influence, knowledge diffusion, and the emergence of knowledge authority within professional communities. From a practice-oriented perspective, investigating the relationship between user characteristics (e.g., seniority, domain expertise, and organizational context) and the types of challenges and solutions discussed may deepen understanding of how experience and context shape professional interpretation processes and coping strategies. Additionally, comparative studies across platforms with different structures and levels of formality (e.g., LinkedIn, Slack, and Discord) could clarify how the design of a community and its objectives influence discourse and solution patterns.

Declarations

Use of Artificial Intelligence: In accordance with PMWJ policy on the use of AI, the authors declare that a large language model (GPT-4.1-mini) was employed as a research instrument for the classification of textual data, as fully described in the Methodology section (Sections 4.2 and 4.5); all model outputs were subject to expert human validation, and reliability metrics are reported in Table 1. AI-assisted tools were not used to create the intellectual content of this manuscript. The authors take full responsibility for the content of this work.

References

- Ahern, T., Leavy, B. & Byrne, P. J. (2014). Complex project management as complex problem solving: A distributed knowledge management perspective, *International Journal of Project Management*, 32(8), 1371–1381.
- Blomquist, T., Hällgren, M., Nilsson, A. & Söderholm, A. (2010). Project-as-practice: In search of project management research that matters, *Project Management Journal*, 41(1), 5–16.
- Daemi, A., Chugh, R. & Kanagarajoo, M. V. (2020). Social media in project management: A systematic narrative literature review, *International Journal of Information Systems and Project Management*, 8(4), 5–21.
- Dagdelen, J., Dunn, A., Lee, S., Walker, N., Rosen, A. S., Ceder, G. & Jain, A. (2024). Structured information extraction from scientific text with large language models, *Nature Communications*, 15(1), 1418. <https://doi.org/10.1038/s41467-024-45563-x>
- Faraji, A., Rashidi, M., Perera, S. & Samali, B. (2022). Applicability-compatibility analysis of PMBOK seventh edition from the perspective of the construction industry distinctive peculiarities, *Buildings*, 12(2), 210. <https://doi.org/10.3390/buildings12020210>
- Feng, K., Ding, K., Hongzhi, T., Ma, K., Wang, Z., Guo, S. & Chen, H. (2025). Sample-efficient human evaluation of large language models via maximum discrepancy competition, in: *Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*, July, pp. 10913–10947.
- Gagiano, R. & Tian, L. (2023). A prompt in the right direction: Prompt based classification of machine-generated text detection, in: *Proceedings of the 21st Annual Workshop of the Australasian Language Technology Association*, November, pp. 153–158.
- Huang, L., Yu, W., Ma, W., Zhong, W., Feng, Z., Wang, H., et al. & Liu, T. (2025). A survey on hallucination in large language models: Principles, taxonomy, challenges, and open questions, *ACM Transactions on Information Systems*, 43(2), 1–55. <https://doi.org/10.1145/3703155>
- Jensen, A., Thuesen, C. & Geraldi, J. (2016). The projectification of everything: Projects as a human condition, *Project Management Journal*, 47(3), 21–34.

- Kalogeropoulos, T., Leopoulos, V., Kirytopoulos, K. & Ventoura, Z. (2020). Project-as-practice: Applying Bourdieu's theory of practice on project managers, *Project Management Journal*, 51(6), 599–616.
- Kenworthy, T. P. (2024). The information-seeking behaviors of project managers in professional virtual communities, *International Journal of Managing Projects in Business*, 17(1), 172–200.
- Klitgaard, A. & Gottlieb, S. C. (2024). A project-as-practice perspective on helping behavior and reciprocity in an inter-organizational project, *International Journal of Project Management*, 42(2), 102577.
- Lehtinen, J., Locatelli, G., Sainati, T., Artto, K. & Evans, B. (2022). The grand challenge: Effective anti-corruption measures in projects, *International Journal of Project Management*, 40(4), 347–361.
- Marnewick, C. & Marnewick, A. L. (2022). Digitalization of project management: Opportunities in research and practice, *Project Leadership and Society*, 3, 100061.
- Mutoni, U. (2025). Influence of digital transformation on project management efficiency in construction projects in Rwanda, *Journal of Entrepreneurship and Project Management*, 10(2), 47–57.
<https://doi.org/10.47941/jepm.2950>
- Ninan, J., Mahalingam, A. & Clegg, S. (2022). Power in news media: Framing strategies and effects in infrastructure projects, *International Journal of Project Management*, 40(1), 28–39.
- Polak, M. P. & Morgan, D. (2024). Extracting accurate materials data from research papers with conversational language models and prompt engineering, *Nature Communications*, 15, 1569.
<https://doi.org/10.1038/s41467-024-45914-8>
- Project Management Institute (2021). *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Seventh Edition and The Standard for Project Management*, Project Management Institute, Newtown Square, PA.
- Sense, A. J. (2011). The project workplace for organizational learning development, *International Journal of Project Management*, 29(8), 986–993.
- Shah, F. H., Bhatti, O. S. & Ahmed, S. (2023). A review of the effects of project management practices on cost overrun in construction projects, *Engineering Proceedings*, 44(1), 1.
<https://doi.org/10.3390/engproc2023044001>
- Tufa, W. T., Markov, I. & Vossen, P. (2024). The constant in HATE: Analyzing toxicity in Reddit across topics and languages, arXiv preprint arXiv:2404.18726. <https://arxiv.org/abs/2404.18726>
- Unell, A., Dullerud, N., Shah, N. & Koyejo, S. (2025). Smarter sampling for LLM judges: Reliable evaluation on a budget, in: *NeurIPS 2025 Workshop on Evaluating the Evolving LLM Lifecycle: Benchmarks, Emergent Abilities, and Scaling*.
- Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*, Cambridge University Press, Cambridge.
-

Zhang, Y. & Wallace, B. (2015). A sensitivity analysis of (and practitioners' guide to) convolutional neural networks for sentence classification, arXiv preprint arXiv:1510.03820.

<https://arxiv.org/abs/1510.03820>

Zhu, Y., Zhang, P., Haq, E. U., Hui, P. & Tyson, G. (2024). Exploring the capability of ChatGPT to reproduce human labels for social computing tasks (extended version), arXiv preprint arXiv:2407.06422. <https://arxiv.org/abs/2407.06422>

Appendix A. Prompt Formulation

NLP prompt for project management social media analysis

Objective: Analyze posts and discussions from forums and social media platforms (e.g., Facebook, LinkedIn, Reddit, Slack communities) in which project managers discuss professional topics. The objective is to identify and classify project management challenges, proposed solutions, and sectoral differences using PMBOK performance domains, supported by Natural Language Processing (NLP) techniques.

Instruction: Create a JSON file containing the variables listed below. Each variable must receive only values explicitly defined in the corresponding guidelines.

Challenge description: Provide a concise yet meaningful summary of the challenge faced by the project manager or team. The description should capture the core of the issue, including relevant context (environmental, organizational, or structural), and avoid vague or generic formulations. The description should be extracted from the post text.

Classified challenge PMBOK: Classify the challenge into one PMBOK (7th Edition) performance domain. Allowed values: Stakeholder; Team; Development Approach & Life Cycle; Planning; Project Work; Delivery; Measurement; Uncertainty.

Solution description: Extract solutions, advice, tools, or methods proposed in the comments. If multiple solutions are suggested, each solution should be documented separately, including an indication of how many commenters supported or mentioned it. The content should be extracted from the comments associated with the post.

Classified solution PMBOK: Determine whether the proposed solution aligns with a PMBOK (7th Edition) Performance Domain. Allowed values: Stakeholder; Team; Development Approach & Life Cycle; Planning; Project Work; Delivery; Measurement; Uncertainty; Not aligned with PMBOK.

Solution–challenge PMBOK justification: If the solution is classified as aligned with PMBOK, provide a concise justification explaining why the solution is appropriate for addressing the

challenge within the selected Performance Domain. The justification should reference relevant PMBOK principles or concepts. If the solution is classified as Not aligned with PMBOK, this field should be left blank.

Sector: Identify the sector relevant to the post or user context. Allowed values: Construction; Technology; Healthcare; Finance & Insurance; Manufacturing; Energy & Natural Resources; Telecommunications; Transportation & Logistics; Retail & Consumer Services; Media & Marketing; Education & Research; Government & Defense; Legal & Consulting; Hospitality & Events; Environment & Agriculture.

Post type: Classify the post according to its primary communicative intent. Allowed values: Success Story; Challenge Sharing; Knowledge Sharing; Personal Branding; Promotional / Marketing; Organizational Announcement.

Platform: Identify the platform on which the post was published. Allowed values: LinkedIn; Facebook; Twitter (X); Reddit / Forum; Other.

Appendix B. Disproportionate Stratified Sampling Table

Stratification dimension	Strata (categories)	Description / role in analysis	Sample size
PMBOK Performance Domains	Planning	High-frequency domain; central in PM discourse	35
	Team	Highly frequent; includes interpersonal & coordination challenges	30
	Stakeholder	Medium frequency; involves multi-party alignment	20
	Project Work	Medium; operational and delivery-oriented details	20
	Measurement	Lower frequency; evaluation & tracking concerns	15
	Development Approach & Life Cycle	Lower frequency; methodology-oriented posts	10
	Uncertainty	Low frequency; involves risk & ambiguity contexts	10
Subtotal – PMBOK domains			140
Sectors (industry classification)	Technology	Dominant sector in both networks	32
	Education & Research	Frequent in PM social discussions	10
	Construction	PM-heavy domain, distinct terminology	8
Subtotal – Sectors			50
Total sample size			190

Table B1. Stratified sampling

Note: the allocation above corresponds to the combined validation sample of 190 posts reported in Section 4.4 and Table 1 - 140 posts for the validation of PMBOK performance-domain classification and 50 posts for the validation of sector classification.

Appendix C. Illustrative Excerpt of the Structured Output File

Each post processed by the model produced one JSON object, which was parsed and written as a single row of the structured output file described in Section 4.2.2. The excerpt below illustrates the resulting record structure, using three posts that also appear in Tables 2 and 3. Free-text fields are abbreviated for readability, and post identifiers are internal to the corpus.

```
post_id,platform,post_type,sector,classified_challenge_pmbok,classified_solution_pmbok,challenge_description,s  
olution_description
```

```
166,Reddit/Forum,Challenge Sharing,Construction,Project Work,Planning,"Director spends the day firefighting;  
the baseline plan is out of date and no longer used for control.","Re-baseline the schedule; introduce a  
weekly look-ahead; adopt a single planning tool."
```

```
190,Reddit/Forum,Challenge Sharing,Finance & Insurance,Planning,Delivery,"Scheduling and cost tools are not  
integrated, so progress and spend cannot be reconciled.","Integrate cost and schedule in one system; align the  
WBS with the cost breakdown structure."
```

```
196,Reddit/Forum,Challenge Sharing,Legal & Consulting,Stakeholder,Uncertainty,"PM receives an unsolicited paid  
consulting offer and is unsure whether the counterparty is legitimate.","Verify the counterparty  
independently; contract through a recognized platform; require written terms."
```

Table C1. Illustrative excerpt of the structured output file, shown in its raw comma-separated form (one row per post; the justification field and remaining columns are omitted for space)

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