FRAMEWORK FOR DESIGNING IDEA MANAGEMENT SOFTWARE SYSTEMS

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Abstract: This paper presents a comprehensive framework for designing Idea Management Software Systems (IMSS), addressing the evolving needs of organizations in managing innovation in the digital age. The framework integrates five key elements: strategic alignment, sources of ideas, ideators, idea processing, and infrastructure. By synthesizing insights from existing literature and incorporating emerging technologies, the framework offers a holistic approach for development od idea management systems that spans from inception to implementation. It emphasizes the importance of aligning innovation efforts with organizational strategy, leveraging diverse internal and external idea sources, and engaging participants through well-defined roles and gamification techniques. The framework incorporates AI-enhanced tools for idea evaluation and processing, ensuring efficient workflows and continuous feedback loops. It also addresses the critical role of scalable and secure infrastructure in supporting the entire idea management ecosystem. This integrated approach fills gaps in existing models by offering an end-to-end approach that is both comprehensive and adaptable to various organizational contexts. The paper discusses practical implications, potential implementation challenges, and directions for future research. By providing a structured yet flexible idea management, this framework enables organizations to foster innovation, engage stakeholders effectively, and transform ideas into tangible value in an increasingly competitive business landscape.
Keywords: Idea Management Systems, Idea Management Software, Innovation Management, AI-enhanced Ideation

1.INTRODUCTION

Innovation is crucial for sustained competitive advantage, particularly in an environment with a rapid technological advancements and shifting consumer expectations. Idea Management Systems (IMS) play a pivotal role in this landscape, offering organizations a structured approach to capture, develop, evaluate, and implement product ideas. Effective idea management bridges the gap between sporadic creativity and strategic innovation, enabling organizations to align internal and external inputs towards transformative outcomes (Brem& Voigt, 2007; Sandstrom & Bjork, 2010).

The importance of IMS extends beyond individual companies. They are critical in fostering open innovation ecosystems (Chesbrough, 2003; Aslam et al. 2020), which thrive on the exchange of ideas across organizational boundaries. Modern IMS platforms cater to a wide range of needs, from facilitating collaborative ideation in startups to enhancing decision-making in large organizations (Gerlach & Brem, 2017; Valdati et al., 2020). The growing prominence of AI-enhanced IMS tools has further expanded their capabilities (Krejci & Missonier, 2021; Haefner, 2021 Zhu et al., 2023).

This paper presents a comprehensive framework for designing IMS systems, targeting companies and developers seeking to build or refine such platforms. Whether intended for internal use, open innovation initiatives, or as part of a competitive offering in the technology market, the framework ensures that the essential elements of IMS—strategic alignment, idea generation, processing, user engagement, and infrastructure—are adequately addressed.

The development of IMS has evolved in response to challenges in managing the innovation processes (Zhu et al., 2023). Traditional IMS systems often struggled to scale effectively, particularly when applied across multiple stakeholders or when required to handle large volumes of data and ideas (Miķelsone et al., 2019). To address these limitations, the proposed framework integrates emerging technologies, best practices in user engagement, and strategic alignment principles, ensuring that IMS platforms remain relevant and adaptable in today's dynamic business environment (Krejci & Missonier, 2021; Aslam et al. 2020).

The framework is agnostic to organizational type, meaning it can be used by startups, established enterprises, or collaborative innovation networks. This flexibility is essential in light of the shift towards open innovation models, which rely on external contributors such as customers, partners, and academic institutions for idea generation (Valdati et al., 2020). The framework also considers AI-enhanced functionalities, which offer predictive insights into idea potential, automate repetitive tasks, and personalize user engagement through gamification and recommendation systems (Krejci & Missonier, 2021; Zhu et al., 2023).

The objective of this paper is twofold: 1. To provide a comprehensive framework for organizations and developers to design robust, scalable, and effective IMS platforms. 2, To bridge the gap between theory and practice by integrating insights from academic research, industry best practices, and the latest technological trends in idea management.

2.LITERATURE REVIEW

Idea management has evolved into a critical component of innovation management, addressing the need to systematically capture, develop, evaluate, and implement ideas (Brem & Voigt, 2007). Early research into IMS systems focused on improving internal suggestion schemes, but modern IMS tools now integrate external inputs through open innovation platforms (Chesbrough, 2003). The field has witnessed the growing application of AI, machine learning, gamification and user engagement (Krejci & Missonier, 2021; Aslam et al. 2020).

The literature on IMS covers multiple dimensions: the role of digitalization in shaping new idea management paradigms, open innovation ecosystems as facilitators of collaborative ideation, and the technical and structural features required to ensure scalability and effectiveness (Valdati et al., 2020; Miķelsone et al., 2019). However, despite the advancements, gaps remain in integrating these diverse components into a cohesive framework that addresses both theoretical and practical concerns, which this paper aims to address.

Several models and frameworks underpin the development of modern IMS systems. Gerlach and Brem (2017) provide a six-phase model that begins with preparation and flows through idea generation, improvement, evaluation, implementation, and deployment. Their work emphasizes the importance of clear stages and the role of structured processes in turning ideas into innovative products or services. However, this model assumes a linear process, which may not align with the more fluid, iterative nature of innovation in a digital world (Krejci & Missonier, 2021).

Valdati et al. (2020) propose a systemic framework that integrates knowledge management practices with IMS, particularly with in open innovation. Their work highlights the significance of aligning internal and external sources, emphasizing that collaborative networks and co-creation are critical for success. This systemic approach forms a vital foundation for our proposed framework, ensuring that organizational strategy is aligned with the innovation processes.

Brem and Voigt (2007) introduce the concept of integrated idea management, focusing on early-stage innovation for startups and technology ventures. They stress that early implementation of idea management increases the probability of innovative success, particularly in environments where internal and external networks are still forming. Their insights are particularly relevant for organizations that seek to implement open innovation models and need frameworks adaptable to varying organizational contexts.

The digitalization of innovation processes has reshaped how organizations approach IMS. Krejci and Missonier (2021) argue that the pervasive use of digital technologies makes traditional models obsolete. They highlight two major shifts: (1) the overlap between idea development phases, and (2) the involvement of dynamic, emergent through digital platforms. This shift requires IMS to facilitate seamless interactions between intra- and inter-organizational stakeholders (Aslam et al. 2020), making it essential for IMS to adopt modular and scalable designs.

Zhu et al. (2023) expand on this by introducing a taxonomy of digital tools used to support front-end innovation (FEI). Their research highlights that most IMS tools focus on isolated stages (e.g., capturing or generating ideas) without adequately managing the entire idea lifecycle. This fragmentation limits their effectiveness, emphasizing the need for integrated systems that track idea evolution from conception to implementation. Our framework builds on these insights by offering holistic coverage of the idea management process.

The open innovation model has shifted the focus from internal ideation to collaborative, networked innovation ecosystems (Chesbrough, 2003). As Valdati et al. (2020) suggest, IMS must act as integrating mechanisms between internal and external sources of knowledge, enabling organizations to engage with partners, customers, and suppliers. This approach not only broadens the scope of idea generation but also enhances the quality and relevance of ideas.

The integration of web-based IMS platforms plays a crucial role in open innovation ecosystems (Miķelsone et al., 2019). These platforms allow organizations to crowdsource ideas and tap into external talent pools while retaining control over the evaluation and selection processes. However, data security, intellectual property (IP), and user engagement remain key challenges that must be addressed through careful design and governance of IMS.Effective IMS platforms require more than just technical integration; they must also foster user engagement and motivation. Gamification has emerged as a popular tool to encourage participation and sustain engagement (Fairbank & Williams, 2001) and enhance intrinsic motivation among users. Recent studies also highlight the growing role of AI and machine learning in IMS. AI-powered algorithms can automate idea evaluation, identify trends, and predict innovation success (Krejci & Missonier, 2021). These technologies enable organizations to filter and prioritize ideas efficiently, ensuring that only the most promising concepts move forward in the innovation pipeline.

Despite the advancements, several challenges remain in IMS platforms. Miķelsone et al. (2019) identify fragmentation across idea management stages as a significant limitation, with most IMS tools focusing on a single stage rather than providing end-to-end coverage. Gerlach and Brem (2017) highlight organizational resistance to change and the complexity of aligning cross-functional teams as additional barriers. Moreover, the increasing reliance on AI tools raises concerns about data privacy and bias in idea evaluation processes (Krejci & Missonier,

2021). Organizations must balance the benefits of automation with the need for transparent, fair decision-making to build trust among users.

The literature emphasizes the need for integrated, scalable, and user-centric IMS platforms that align with both internal organizational goals and external collaborative opportunities. Our proposed framework draws on insights from Gerlach and Brem's (2017) structured model, Valdati et al.'s (2020) systemic framework, and Krejci & Missonier's (2021) focus on digital innovation. It addresses the gaps identified in the literature by offering a comprehensive approach that integrates strategic alignment, idea generation, processing, user engagement, and infrastructure.

This literature review provides the foundation for the framework discussed in the next section, ensuring that it is both theoretically sound and practically relevant. It highlights the importance of balancing technology, user engagement, and strategic objectives, making the framework adaptable to diverse organizational contexts.

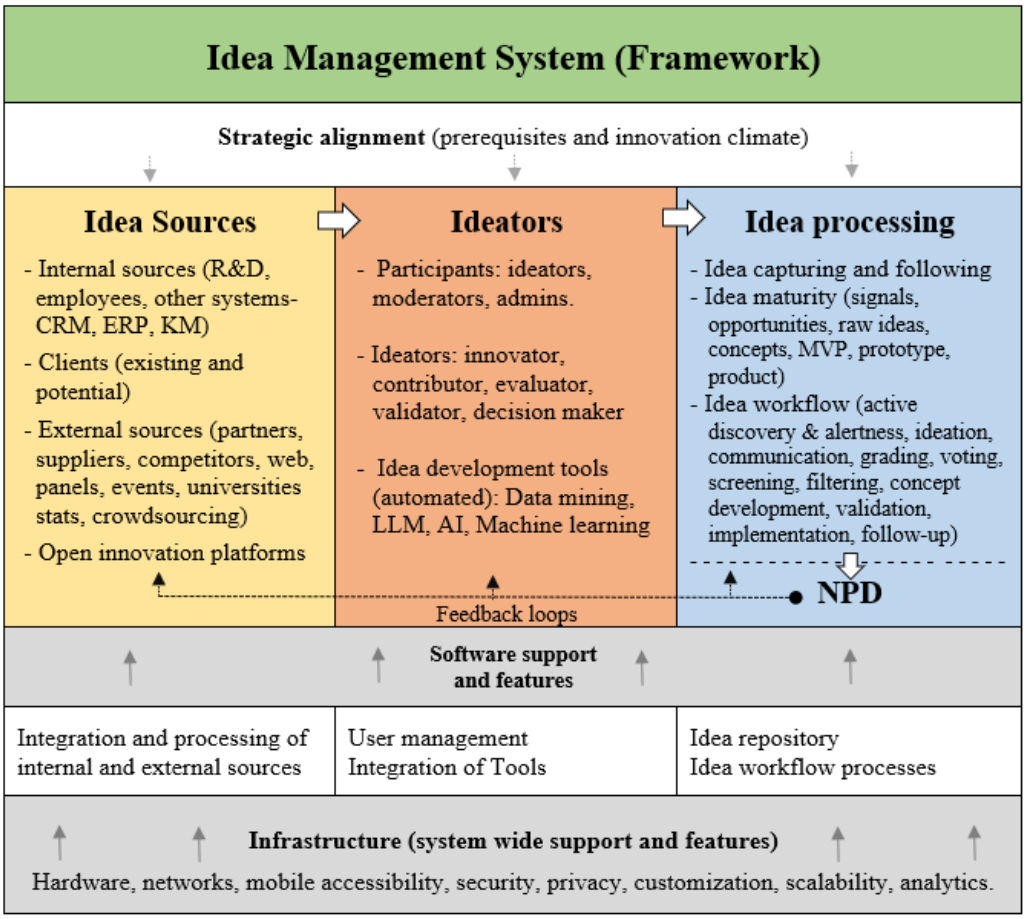
3.METHODOLOGY

This The methodology employed in this paper is based on a conceptual synthesis approach. Conceptual synthesis integrates ideas, concepts, and insights from various sources to develop a novel framework. This approach is widely used when the objective is to propose new models or frameworks by merging existing theories and empirical insights (Torraco, 2005). The research design follows these key stages: integrative literature review, framework development, and validation through comparative analysis.

4.RESULTS

Overview and Structure of the Framework

Figure 1: Framework Overview- Designing Idea Management Software System



Source: Author's conceptualization

The proposed Framework for Designing Idea Management Software Systems (IMS) provides a comprehensive approach to handling the design of software that supports ideation in innovative organizations. As shown in Figure 1, the framework ensures that critical elements are interconnected to promote seamless idea management. It consists of five core components—Strategic Alignment, Sources of Ideas, Ideators, Idea Processing, and Infrastructure—working together to foster innovation within and beyond the organization. The framework emphasizes the importance of aligning processes, tools, and participants to ensure that the generated ideas meet strategic goals and lead to actionable outcomes. Strategic alignment sits at the top of the framework, ensuring that the entire IMS is directed toward supporting the organization's innovation goals. By setting clear prerequisites and fostering an innovation climate, strategic alignment ensures that every idea generated and processed is meaningful to the company's objectives. This alignment flows throughout the framework, creating a foundation for consistent decision-making and ensuring that all participants and activities remain focused on long-term value creation.

Explanation of the Framework for Designing IMSS

To ensure comprehensive functionality, the framework organizes hte elements into (1) strategic alignment, (2) sources of ideas, (3) ideators, (4) idea processing, and (5)infrastructure. These components collectively cover the spectrum from defining strategic objectives to developing actionable ideas, with each element contributing essential inputs and processes. The interconnected nature of these components ensures that ideas are not only generated but also nurtured, evaluated, and implemented in alignment with the organization's goals. At the heart of this framework is the need to balance structure and flexibility. This duality allows organizations to respond dynamically to emerging opportunities while maintaining the rigor needed to process ideas effectively. Each element builds on insights from both organizational theory and technology-enabled innovation practices (Brem & Voigt, 2009). For example, the use of large language models and data analytics is integrated within idea generation and evaluation to improve efficiency and reduce cognitive load for participants. The combination of these components creates a holistic environment that supports continuous innovation, encourages cross-functional participation, and ensures that the IMS operates at an optimal level.

Strategic Alignment: Strategic alignment serves as the foundation of the Idea Management System (IMS), ensuring that all activities within the process are directed toward achieving the organization's innovation goals and business strategy. The strategic alignment element focuses on creating an innovation-friendly environment, defining prerequisites for success, and ensuring that organizational goals remain the guiding force throughout the entire idea management process (Aslam et al. 2020).

The role of strategic alignment in IMS involves translating high-level strategies into actionable innovation initiatives. This process includes setting priorities for idea generation, clarifying the types of innovations desired (e.g., incremental vs. radical), and ensuring that the generated ideas align with market opportunities and technological capabilities. A clear innovation strategy provides structure while empowering participants to explore and propose ideas that support these priorities. Effective idea management requires the strategic identification of search fields to guide ideators towards areas with the most potential impact. Vandenbosch et al. (2006) emphasize the importance of taking a systemic view in idea management, which aligns with our framework's. Strategic alignment also plays a role in fostering collaboration across departments and enabling cross-functional innovation. Companies must embed a culture of innovation within their strategic objectives to encourage the engagement of employees and external stakeholders. This cultural alignment is not only about setting goals but also about ensuring that the innovation climate supports risk-taking, creativity, and collaboration (Brem & Voigt, 2009).

In environments that rely on open innovation—where external partners and stakeholders play a role in idea generation—strategic alignment ensures that external contributions align with the company's overarching goals (Chesbrough, 2003). IMS platforms used in such contexts must define partnership frameworks to manage the inflow of ideas and protect intellectual property while fostering collaboration. Furthermore, these platforms benefit from integration with existing corporate systems, such as CRM and ERP, to ensure that external insights and data are processed consistently with internal objectives.

In addition to guiding idea generation, strategic alignment serves as the anchor for decision-making throughout the IMS workflow. During the idea evaluation and selection stages, alignment with strategic priorities ensures that the most relevant ideas receive attention and resources. Decision-makers rely on criteria-based evaluation processes, supported by AI tools, to screen ideas against predefined strategic goals. This alignment ensures that limited resources are invested in ideas with the greatest potential (Westerski et al., 2011).

Ultimately, strategic alignment enhances organizational coherence, ensuring that all components of the IMS—from idea sources to infrastructure—work in harmony toward common objectives. The integration of strategic alignment within the framework supports long-term value creation by ensuring that innovation efforts are not siloed but rather integrated into the company's broader strategic outlook. This alignment also provides a foundation for feedback

loops, allowing the organization to continuously refine its innovation goals based on insights gained from the idea management process.

Sources of Ideas: The quality and diversity of ideas captured within an IMS depend significantly on the breadth and accessibility of its sources of ideas. A well-designed IMS must be capable of harnessing internal and external sources to generate a pool of ideas that align with organizational goals. The role of idea sources is to provide the inputs that fuel the innovation process, with contributions from employees, customers, partners, competitors, (Aslam et al. 2020) and even automated systems. This diversity ensures that the IMS captures both incremental and breakthrough innovations. Björk and Magnusson (2009) highlight the influence of network connectivity on innovation idea quality, supporting our framework's emphasis on diverse idea sources and collaborative ideation.

Internally, idea sources include contributions from employees across all levels of the organization, supported by systems such as Customer Relationship Management (CRM), Enterprise Resource Planning (ERP), and Knowledge Management (KM) platforms (Valdati et al., 2020). These systems integrate customer feedback, operational data, and insights from ongoing projects, facilitating idea generation across departments. Encouraging employees to contribute ideas beyond their functional roles fosters a culture of innovation and ensures that front-line workers—who often have deep operational insights—can actively participate (Gerlach & Brem, 2017).

Externally, the framework leverages open innovation platforms, big data and crowdsourcing mechanisms, where customers, suppliers, and partners can participate in idea generation (Chesbrough, 2003). Companies such as P&G and Intuit have successfully used open innovation to engage with external stakeholders and solve complex challenges by inviting diverse inputs (Miķelsone et al., 2019). These platforms enable companies to extend their search beyond organizational boundaries, tapping into the creativity of external communities, academic institutions, and market trends. Competitors and industry panels can also serve as indirect sources of ideas by revealing gaps or opportunities within the market.

The framework ensures that ideas from internal and external sources are seamlessly integrated through API-based system and automated data flows (Miķelsone et al., 2019). For instance, insights gathered from external customer reviews or competitor analysis can be integrated into the IMS to generate opportunities for product or service improvement. AI and machine learning algorithms can mine data from public sources—such as social media, forums, or academic publications—to identify emerging opportunities (Aslam et al. 2020; Leka, 2024).

By adopting a mixed sourcing strategy, the IMS ensures that ideas emerge from multiple perspectives, increasing the chances of discovering innovative solutions. Internally, this might involve idea campaigns and hackathons, where employees across departments are invited to propose solutions to specific challenges. Externally, open calls and crowdsourced competitions can invite customers, startups, and partners to contribute ideas aligned with the organization's strategic focus. This combination of internal expertise and external insight ensures that the IMS is positioned to capture a wide spectrum of ideas, from incremental improvements to radical innovations.

Furthermore, the framework emphasizes the importance of continuous monitoring and feedback. AI-driven tools can help identify recurring patterns or gaps in the ideas submitted, directing future campaigns toward unexplored areas. The ability to integrate both structured data (e.g., CRM reports) and unstructured data (e.g., social media sentiment analysis) allows the IMS to maintain a dynamic and responsive idea pool (Bothos et al., 2012).

The integration of data mining, trend analysis, and external sources with internal idea flows ensures that the IMS remains relevant and proactive. By drawing from multiple sources and combining automated insights with human creativity, the system creates a fertile ground for innovation.

Ideators: Ideators are at the heart of the idea management process, as they are the individuals and groups responsible for generating, refining, and evaluating ideas within the IMS. The ideator component encompasses all participants involved in the idea lifecycle, including innovators, contributors, moderators, validators, and decision-makers. By engaging diverse ideators with different roles and expertise, the system ensures that ideas are approached from multiple perspectives, increasing the likelihood of creative and high-value solutions.

Participants within the IMS assume specific roles that help structure the flow of ideas. Innovators and contributors generate initial ideas and insights, while moderators and administrators manage the idea process, ensuring compliance with the organization's strategy and timelines (Gerlach & Brem, 2017).

Idea champions are responsible for promoting, supporting, and driving the implementation of specific ideas within an organization. They acts as a catalyst who ensures that promising ideas are not lost in bureaucracy, but instead receive attention, resources, and momentum to move from ideation to execution (Howell and Boies, 2004). Validators and decision-makers are responsible for assessing ideas at various stages, ensuring that only the most promising ones advance. This division of roles ensures that the innovation process is participative and structured while remaining open to creativity and feedback. Ideators can come from both internal teams and external communities. Internally, ideators include employees from various departments, fostering cross-functional

collaboration. Externally, customers, partners, and freelance innovators participate through open innovation platforms and crowdsourcing initiatives, enriching the idea pool with diverse viewpoints (Chesbrough, 2003).

Modern IMS platforms also incorporate AI-powered tools to assist ideators in the idea development process. For example, data mining and machine learning algorithms can suggest relevant market insights or trends, helping ideators refine their ideas (Leka, 2024). Large language models (LLMs) assist ideators by providing automated brainstorming or concept refinement support, reducing cognitive load and encouraging deeper exploration of ideas. This combination of human creativity and AI-driven insights accelerates the ideation process, ensuring that ideas remain relevant and innovative. Additionally, AI agents may play the role of independent, active ideators and contributors powered by big data and machine learning features. AI-powered systems, as discussed by Haefner et al. (2021), enhance innovation management by acting as automated ideation agents, capable of generating and refining ideas autonomously, thereby expanding the ideator pool and supporting continuous innovation.

Motivating ideators is critical to maintaining engagement throughout the idea lifecycle. Gamification techniques, such as leaderboards, points systems, and badges, create friendly competition among participants, boosting participation rates (Fairbank & Williams, 2001). Additionally, incentive systems—ranging from public recognition to monetary rewards—foster a culture of innovation by reinforcing positive behaviors. Organizations that successfully engage their ideators are better positioned to tap into latent creativity and capture valuable ideas. Elerud-Tryde and Hooge (2014) explore the use of virtual idea campaigns to spur creativity and innovation, aligning with our framework's emphasis on engaging ideators through digital platforms and campaigns.

Feedback loops are essential in maintaining ideator engagement and ensuring continuous improvement. Moderators, idea champions and decision-makers provide real-time feedback to ideators, informing them about the status and progress of their ideas. This creates a two-way communication channel where ideators can refine their concepts based on input from evaluators and stakeholders. Continuous feedback not only motivates ideators to remain engaged but also ensures that ideas evolve in alignment with strategic priorities (Westerski et al., 2011).

Effective management of ideators also requires robust user management tools, ensuring that each participant's role is clear and aligned with the organization’s goals. The IMS must provide personalized dashboards and communication tools, enabling ideators to monitor their ideas' progress and collaborate with others. This level of transparency and engagement fosters a sense of ownership, encouraging ideators to contribute meaningfully.

By integrating AI tools, gamification strategies, and personalized feedback, the IMS ensures that ideators remain motivated and productive throughout the idea lifecycle. This dynamic environment encourages collaboration, creativity, and continuous improvement, ensuring that the organization benefits from the diverse contributions.

Idea Processing: Idea processing is the core operational component of the IMS, responsible for capturing, refining, evaluating, and advancing ideas from inception to implementation. This element ensures that ideas progress through structured workflows, where they are continuously assessed for their feasibility, alignment with strategic goals, and innovation potential.

The process begins with capturing ideas through multiple channels, including idea campaigns, brainstorming sessions, open innovation platforms, and automated systems. Ideas are collected in various stages as signals, opportunities, raw concepts, or prototypes—and are logged within the IMS repository for tracking. A well-structured capture mechanism ensures that ideas are accessible to relevant stakeholders throughout the organization (Gerlach & Brem, 2017). Automated tools, including chatbots or LLMs, assist in idea collection by encouraging user participation and providing guided prompts, making it easier to gather high-quality submissions. This multi-channel approach aligns with Haefner et al. (2021), who highlight how AI applications can support different phases of innovation by not only facilitating idea generation but also enhancing development through continuous analysis, pattern recognition, and the refinement of raw inputs into actionable concepts.

Once captured, ideas enter a workflow designed to assess maturity and potential value. At early stages, ideas may remain conceptual, identified only as signals or emerging opportunities. As they progress, these ideas mature into concepts, Minimum Viable Products (MVPs), prototypes, and eventually market-ready innovations. This structured idea maturity framework ensures that each idea is evaluated according to the appropriate stage of development, reducing the risk of prematurely dismissing high-potential innovations (Westerski et al., 2011).

Screening and filtering play a critical role in idea processing, ensuring that only the most promising ideas advance through the system. Beretta (2019) examines idea selection in web ideation systems, providing insights that support our framework's approach to idea evaluation and filtering. Tools such as AI-based algorithms help automate the filtering process by analyzing idea relevance, feasibility, and alignment with strategic objectives (Leka, 2024). Voting systems and multi-criteria evaluation frameworks allow stakeholders to participate in the decision-making process, providing additional insights into the value of submitted ideas (Bothos et al., 2012).

Feedback loops enable continuous refinement and iteration. Evaluators, moderators, and ideators collaborate to adjust, enhance, or pivot ideas, ensuring that concepts evolve in response to new information or circumstances.

These feedback loops provide a dynamic environment for idea improvement, allowing teams to experiment with different approaches and address challenges early in the development process (Gerlach & Brem, 2017).

In the later stages of idea processing, concept development becomes more structured, leading to formal validation, prototyping, and implementation. Ideas that survive the evaluation phase are developed into MVPs or working prototypes, where they are tested for functionality and market fit. During these stages, close collaboration between R&D, marketing, and production teams ensures that the ideas are practical and scalable, reducing the likelihood of failure in the final product development phase (Brem & Voigt, 2009).

Idea processing also involves systematic follow-up and monitoring, ensuring that implemented ideas are tracked for outcomes and performance. This step is critical in creating a continuous innovation culture, as it provides insights into what works, what doesn't, and what can be improved. Post-implementation reviews, customer feedback, and performance analytics help organizations measure the impact of innovations, ensuring that lessons learned are incorporated into future projects. A robust idea processing system depends heavily on workflow automation and integration with other enterprise tools, such as project management and product development platforms. This seamless integration ensures that ideas can transition smoothly from concept to commercialization. Additionally, data analytics and reporting tools provide real-time insights into the status of ideas across various stages, helping organizations monitor progress and make informed decisions.

Infrastructure: Infrastructure serves as the foundation for the effective operation of the Idea Management System by providing the technical, organizational, and security frameworks necessary to support all stages of the idea management. It ensures that ideas, participants, and workflows are seamlessly integrated across the organization, creating an environment where innovation can thrive. A well-designed infrastructure offers scalability, security, connectivity, and customization. At the core of IMS infrastructure is the integration of hardware, software, and networks that enables participants to collaborate and share ideas efficiently. The system must offer mobile accessibility, ensuring that users can engage with the platform from any device or location. This accessibility is crucial in fostering a culture of continuous ideation, allowing employees, customers, and partners to participate whenever and wherever inspiration strikes. Additionally, cloud-based solutions often form the backbone of IMS platforms, providing flexibility, reducing costs, and enhancing scalability.

The infrastructure must ensure seamless integration with enterprise systems such as Customer Relationship Management, Enterprise Resource Planning, and Knowledge Management platforms (Valdati et al., 2020). This integration enables the system to draw on existing data and insights, enriching the idea generation process with information from operational systems. Furthermore, API-based connectivity allows the IMS to interact with external innovation platforms, facilitating open innovation and crowdsourcing initiatives (Miķelsone et al., 2019). The ability to connect with external tools ensures that ideas can flow freely between systems improving efficiency.

Security and data privacy are critical components of the infrastructure, particularly as organizations rely more heavily on cloud-based IMS platforms and open innovation ecosystems. Compliance with regulations is essential for protecting user data and intellectual property (Westerski et al., 2011). The infrastructure must include data encryption, secure authentication protocols, and access control mechanisms.

Customization is another key feature of IMS infrastructure, allowing organizations to tailor the system to their specific needs and workflows. Custom dashboards, user interfaces, and workflow configurations ensure that the platform aligns with the organization’s structure and strategic objectives.

Infrastructure also plays a crucial role in analytics and reporting, providing tools to monitor the progress of ideas, measure engagement, and assess the impact of implemented innovations. Real-time data visualization and reporting tools give decision-makers insights into the performance of the idea management process, helping them identify trends and areas for improvement (Bothos et al., 2012). These analytics enable continuous learning and improvement, ensuring that the system remains aligned with strategic objectives over time. In addition to technical capabilities, infrastructure supports user management and engagement tools that enhance collaboration within the IMS. Features such as role-based access control, notification systems, and communication platforms ensure that participants remain connected and engaged throughout the idea lifecycle. These tools facilitate collaboration between ideators, moderators, and evaluators, ensuring that ideas are processed efficiently and transparently.

Finally, a well-designed infrastructure ensures the scalability of the IMS, allowing the system to grow alongside the organization’s needs. Whether a small startup or a large enterprise, the infrastructure must support an increasing number of users, ideas, and processes without compromising performance. Scalable infrastructure ensures that the IMS remains effective as the organization expands or as its innovation efforts intensify.

5.CONCLUSIONS

The framework for designing Idea Management Software Systems (IMSS) presented in this paper offers a comprehensive, integrated approach to idea management software development from idea sourcing, idea capturing,

generation to implementation. By aligning the core elements—strategic alignment, sources of ideas, ideators, idea processing, and infrastructure—the framework ensures that all components of the IMS function cohesively toward achieving the organization's innovation goals.

Strategic alignment serves as the guiding force, ensuring that the engaged resources, ideas generated and developed align with business objectives. The inclusion of diverse sources of ideas, supported by tools such as AI-powered data mining and open innovation, broadens the scope of ideation and ensures adaptability in dynamic markets. The focus on participant engagement through well-defined roles and gamification fosters a continuous flow of contributions from ideators, ensuring meaningful participation throughout the idea lifecycle.

The structured workflows of idea processing, enhanced by feedback loops and AI tools, ensure that ideas are assessed efficiently and developed into actionable outcomes. The infrastructure provides the technical foundation for seamless integration, scalability, and security, enabling the IMS to evolve alongside the organization's needs.

This framework fills gaps identified in previous models by offering an end-to-end software development approach, addressing challenges such as fragmented workflows, external collaboration, and engagement. It provides practical guidance for organizations seeking to build or enhance IMS platforms while remaining flexible enough to accommodate future technological advancements. The framework lays the groundwork for continuous innovation, enabling organizations to turn ideas into sustainable value efficiently and effectively.

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