This paper was presented at the XXXVI ISPIM Innovation Conference, held in Bergen, Norway on 15 June to 18 June 2025. ISBN 978-952-65069-9-9.

Unleashing the Power of Generative AI-Tools in SPDS – Smart Platform Design Sprint

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Abstract:

Digital platform business models are reshaping the market through new forms of value creation and require robust methodologies like the SPDS – Smart Platform Design Sprint for design and validation. Generative AI can support innovation processes by accelerating ideation, yet the SPDS lacks a framework to incorporate it. To address this gap, this study investigates how generative AI tools can be embedded into the SPDS to enhance creativity and decision-making. Building on a case study, several AI tools were implemented and evaluated. The findings reveal that generative AI can optimize SPDS processes by assisting with problem analysis, text generation, and visualization. While ChatGPT excelled at analysis and text generation, Napkin AI produced concise visualizations. This study advocates a hybrid approach combining the strengths of both tools, providing a guide for teams and innovation coaches to reduce effort, foster creativity, and improve time efficiency.

Keywords: Platform business models, Smart Platform Design Sprint, Artificial Intelligence, Generative Artificial Intelligence, Generative AI Tools.

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1 Introduction

The continuous advancement of digital technologies in today's business landscape, along with the resulting growing significance of platform-based business models, has highlighted the need for methodologies that can guide organizations through complex ideation processes in a structured and time-efficient manner (Arnold et al., 2016, Brecht et al., 2023a). Building upon the principles and methodology of the Google Design Sprint by Knapp (Knapp et al., 2016), the SPDS – Smart Platform Design Sprint was developed as a methodology that has been adapted to meet the unique requirements of digital platform economy. Designed to support the rapid and efficient conceptualization and validation of digital platform business models, teams follow a structured process, over five days, that spans situational analysis, ideation, prototyping, and testing (Brecht et al., 2023b).

Simultaneously, the rise of generative AI has opened new opportunities for accelerating creativity and strategic processes in various fields (Epstein et al., 2023, Ooi et al., 2023). Generative AI tools can not only support existing processes but also enable entirely new creative approaches. Artificial intelligence can be described as a subfield of computer science that seeks to replicate human problem-solving strategies to achieve more efficient solutions (Lämmel and Cleve, 2012). In this context, humans remain central, supported rather than replaced by the technology (Felden, 2018). Generative AI includes large-scale language models (e.g., ChatGPT) and visualization tools (e.g., Napkin AI) that use machine learning algorithms to generate outputs such as human-like text, graphics, and other media (Cao et al., 2023). Although these generative AI tools can potentially optimize the application of innovation processes, their targeted and practical application within the SPDS – Smart Platform Design Sprint methodology remains underexplored. To address this gap, the present study draws on a case study to examine how generative AI tools can be effectively integrated into the methodology. The focus herein lies on the “Problem Space” and “Ecosystem View” phases of the Sprint, due to their significant role in situational analyses and strategic orientation, which form the foundation for all succeeding Sprint-phases.

Considering these objectives, the following research questions will be addressed:

1. **RQ1:** How can generative AI tools be utilized during the “Problem Space” and “Ecosystem View” phases of SPDS – Smart Platform Design Sprint, and which tasks benefit most from their implementation?
2. **RQ2:** How does the suitability of different generative AI tools for text generation and visualization in SPDS – Smart Platform Design Sprint relate to their functional properties and performance characteristics?
3. **RQ3:** What impact does combining generative AI tools have on the efficiency and quality of SPDS – Smart Platform Design Sprint outcomes, compared to using them in isolation?

These questions guide the study’s investigation into the targeted implementation of generative AI tools, demonstrating how human capabilities and generative AI can be combined to optimize innovation processes for platform-based business models.

2 Theoretical Framework

Digital platform business models generate value through interactions among various ecosystem participants, such as consumers, producers, and other stakeholders (Cusumano et al., 2019). Due to their special characteristics, digital platform business models offer considerable potential. They simplify the integration of different players, optimize the value chain and enable new services, often leveraging network effects (Albers et al., 2023).

By contrast to platform business models, traditional firms operate as linear value chains, also defined as pipeline businesses, where value is created and transferred sequentially from producers to consumers (Parker et al., 2016). Traditional product-centric approaches often fail to address the unique needs of digital platform business models, leading to the development of specialized methodologies tailored to platform innovation (Brecht et al., 2023a).

The SPDS – Smart Platform Design Sprint offers a structured, five-day methodology (Monday through Friday) for systematically developing, analyzing, and validating digital platform business models (Brecht et al., 2023b). Each day targets a specific set of activities:

- **Monday**: Situational analysis, including expert input, defining sprint goals, and analyzing the platform ecosystem using tools like the Ecosystem Canvas and Motivation Matrix.
- **Tuesday**: Ideation and solution exploration, where existing approaches are evaluated, and team-generated concepts are sketched and refined.
- **Wednesday**: Development of a platform concept, consolidating insights into a concrete design and visualizing interactions via a storyboard.
- **Thursday**: Prototyping, including mockups that simulate the platform's interface and functionality.
- **Friday**: User testing, where real users validate the prototype, providing feedback for future refinement and decision-making.

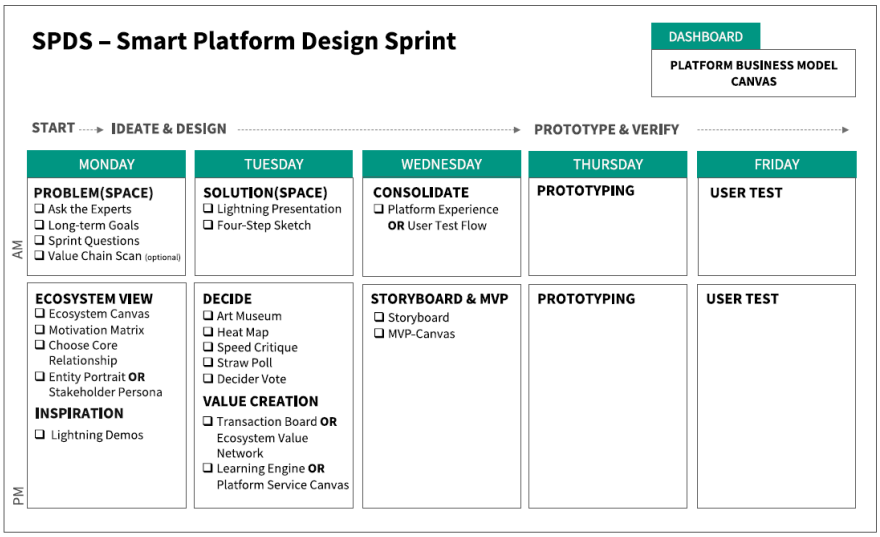

Fig. 1. Evaluated SPDS – Smart Platform Design Sprint according to Brecht et al. (2023b)

A key feature of the SPDS – Smart Platform Design Sprint is its emphasis on early user feedback, reducing risks and enabling resource-efficient development by incorporating iterative processes within its structured step-by-step methodology (Brecht et al., 2023b). As part of the SPDS methodology, innovation coaches accompany teams throughout the sprint, offering methodological guidance and fostering effective collaboration and team motivation (Brecht et al., 2023c).

While the SPDS – Smart Platform Design Sprint provides a robust methodology for the rapid development and validation of platform business models, its effectiveness can be further enhanced. In this context, generative AI emerges as a powerful tool that can complement and accelerate the Sprint process (Brecht et al., 2023c, Kanbach et al., 2023). By utilizing machine learning algorithms, generative AI tools can generate novel output, be it textual, visual, or otherwise (Epstein et al., 2023, Gozalo-Brizuela and Garrido-Merchan, 2023), potentially streamlining and optimizing decision-making within the Sprint.

However, integrating generative AI into structured methodologies like SPDS – Smart Platform Design Sprint requires careful prompt engineering, iterative refinement and human oversight to ensure accuracy and relevance (Korzynski et al., 2023). Accordingly, this study evaluated several AI tools based on their potential to address both creative and analytical tasks. These include ChatGPT, DALL-E and Business Model Canvas Strategist AI from OpenAI (text and image generation), Midjourney AI for artistic visuals and Canva AI and Napkin AI for simple visualizations. By covering a broad spectrum of applications, these tools reflect the diverse requirements of the Sprint, from identifying and solving problems in the “Problem Space” phase to ecosystem development in the “Ecosystem View” phase.

Within B2B markets, where purchasing decisions may involve multiple decision-makers and formal processes, rapid iteration and targeted visualization are particularly valuable for the development of platform business models (Brecht et al., 2023a).

Ultimately, combining the SPDS – Smart Platform Design Sprint with strategically integrated generative AI tools opens new avenues to shorten iteration cycles, foster dynamic idea exploration and minimize manual workload. All of whom are critical factors for platform-oriented solution design, particularly in B2B domains. The next section outlines the empirical methodology used to test this integration and introduces the selected AI tools in greater detail.

3 Methodology

The research adopts the Design Research Methodology (DRM) while utilizing a single case study to systematically investigate how generative AI tools can be integrated into the Smart Platform Design Sprint. During the Research Clarification (RC) phase, a comprehensive literature review established the theoretical basis for digital platform business models, the SPDS – Smart Platform Design Sprint, and generative AI. In the Descriptive Study I (DS-I), the existing SPDS – Smart Platform Design Sprint methodology was analysed to identify specific phases and processes suitable for AI implementation. Building on these findings, the Prescriptive Study (PS) aligned various AI tools with distinct Sprint tasks, pairing them with carefully crafted prompts to optimize their performance. Finally, Descriptive Study II (DS-II) involved a hands-on evaluation of these generative AI tools within the Vorwerk Thermomix case study, focusing on the "Problem Space" and "Ecosystem View" phases of Sprint Monday (Blessing and Chakrabarti, 2009).

3.1 Data Collection and Evaluation Criteria

Primary data were collected through the direct application and iterative testing of generative AI tools on specific Sprint tasks within the Vorwerk Thermomix case study. The tasks focused on the "Problem Space" and "Ecosystem View" phases of Sprint Monday. Observational notes, self-assessment logs, and iterative feedback cycles provided qualitative insights, while metrics such as generation time, error rates, and percentage of time saved offered quantitative perspectives. Additional secondary data from academic literature and reports on previous Sprints were used to contextualize these findings.

The selected generative AI tools were evaluated against four principal criteria, usability, effectiveness, efficiency, and alignment with the objectives of the sprint, which allowed for a systematic evaluation of each tool's strengths and limitations within the SPDS – Smart Platform Design Sprint context (Abbasian et al., 2024, Bandi et al., 2023, Joosten et al., 2024).

All AI-supported tasks were conducted by the author of this paper, who holds prior experience in both the SPDS methodology and the use of generative AI tools. To evaluate the impact of generative AI integration, the results were systematically compared to benchmark data from a previous SPDS Sprint conducted without AI (Brecht et al., 2023b). While the study does not include a broader participant group, the structured comparison provides valid insights into the practical advantages and challenges of AI integration in early SPDS phases.

3.2 Overview of Monday Tasks and AI Tools

After identifying the most critical activities for Sprint Monday, each task was aligned with relevant literature, primary objectives, and one or more generative AI tools, in accordance with their specific capabilities (Table 1).

Table 1. Tasks for Monday's "Problem Space" and "Ecosystem View," with literature references, objectives, and assigned AI tools.

Day	Task	Literature	Objective	Generative AI Tool
Monday	**Problem Space**			
	Ask the Experts	(Knapp et al., 2016)	Simulate expert knowledge and analyze relevant problems.	ChatGPT
	Long-Term Goals	(Knapp et al., 2016)	Generate specific sprint questions and long-term goals. These should enable a clear strategic direction.	ChatGPT
	Sprint Questions			
	Value Chain Scan	Brecht et al., 2023b	Analyze Vorwerk's value chain to identify potential for optimization along the entire chain.	ChatGPT
Monday	**Ecosystem View Phase**			
	Ecosystem Canvas	Brecht et al., 2023b	Create a comprehensive overview of Vorwerk's ecosystem.	ChatGPT, Canva AI, DALL·E 3
	Motivation Matrix	Brecht et al., 2023b	Identify and visualize the incentives and goals of the various actors within the	ChatGPT, Canva AI, DALL·E 3

			Vorwerk ecosystem.	
	Choose Core Relationship	Brecht et al., 2023b	Identify and explain the core relationships that are critical for the Thermomix's success in the digital environment.	ChatGPT, Business Model Canva Strategy AI
	Entity Portrait	Brecht et al., 2023b	Create an entity portrait (in this case: Customer Entity Profile) to gain deeper understanding of key actors or partners in the Vorwerk ecosystem.	ChatGPT, Midjourney AI, Napkin AI

Building on the mapping of SPDS-tasks to their respective AI applications, the following section introduces the specific generative AI tools selected for this study:

ChatGPT is a powerful generative language model for text generation and problem structuring, capable of producing contextually relevant answers (Haleem et al., 2022). Out of the available models at the time, ChatGPT-4.0 (release date: May 2024) was chosen due to its significantly improved coherence, nuance, and prompt responsiveness (Sharma and Sharma, 2024). Thus, the model was particularly suitable for the strategic and analytical demands of the SPDS. Despite its strengths, it remains prone to occasional inaccuracies that necessitate human supervision (Hariri, 2023).

DALL-E translates text prompts into unique visual content with rapid creative output, whereas Canva AI automates and optimizes design tasks through text-to-image generation and interactive editing, though excessive dependence on template-based features may limit originality. Midjourney AI specializes in text-to-image generation for swift conceptual imagery, demanding precise and short prompts (Brisco et al., 2023). The Business Model Canvas Strategist AI is meant to integrate generative AI in a traditional Business Model Canvas to accelerate strategic planning (OpenAI, 2024). Finally, Napkin AI supports text-to-visual transformations, facilitating the rapid visualization of various concepts (Napkin AI, 2024).

4 Results

4.1 Problem Space Phase

The “Problem Space” phase marks the beginning of the SPDS methodology and serves as the foundation for all subsequent phases and tasks. This critical phase focuses on uncovering the fundamental problems, challenges, and opportunities within Vorwerk’s Thermomix business model. OpenAI's ChatGPT was utilized as a generative AI tool to support the development of these insights through carefully crafted prompts. By employing ChatGPT, valuable insights were not only generated, but specific questions for the remainder of the sprint were formulated, and key actors within the company’s ecosystem were identified.

Employed to support three key tasks: *Ask the Experts*, *Sprint Questions & Long-Term Goals*, and *Value Chain Scan.* In *Ask the Experts*, ChatGPT effectively simulated expert insights by identifying strategic and technological challenges. Adjusting the prompts helped generate more tailored outputs, leading to a 53.92% time saving compared to manual methods. In *Sprint Questions & Long-Term Goals*, ChatGPT rapidly created structured questions and objectives, achieving a 69.09% time saving. However, some replies lacked relevance, and a few technical errors occurred, underscoring the need for precise prompts and monitoring.

Finally, the *Value Chain Scan* benefited from ChatGPT’s ability to provide an initial overview of Vorwerk’s Thermomix key actors. By refining the prompts, the tool produced more detailed insights while significantly accelerating the process, achieving a 78.12% time saving. While prompt refinement and human oversight remain critical across all tasks for maximizing the quality of AI-generated outputs and to ensure relevance and creativity of the generated content, the speed and consistency of ChatGPT's textual output was consistently useful and the overall efficiency gains were significant.

Table 2 below summarizes the numerical comparisons for the “Problem Space” tasks (Ask the Experts, Sprint Questions & Long-Term Goals, Value Chain Scan) based on the average times from conventional SPDS sprints, contrasted with the times recorded when ChatGPT was employed. It also lists the percentage of time saved and the corresponding error rates.

Table 2: Quantitative Results Problem Space

Task	*Manual Time (min)*	*AI Time (min)*	*Time Saved (%)*	*Error Rate (%)*
Ask the Experts	60	27.65	53.92	0
Sprint Questions & Long-Term Goals	45	13.92	69.09	75
Value Chain Scan	45	9.82	78.12	0
Total (Problem Space)	150	51.39	65.74	*Mixed*

It is worth noting the discrepancy in error rates. While "Ask the Experts" and "Value Chain Scan" showed zero output errors, "Sprint Questions & Long-Term Goals" had a 75% error rate. Most of these errors were minor irrelevancies or inaccurate references. In practice, they required monitoring and prompt refinement but did not negate the time savings.

These metrics highlight how combining AI with systematic prompt engineering can shorten iteration cycles while also producing a higher number of initial ideas. At the same time, an elevated error rate in certain tasks underscores the necessity of dedicated oversight and iterative refinement to ensure outputs remain correct and relevant.

4.2 Ecosystem View Phase

Building on the insights gained in the "Problem Space," the "Ecosystem View" phase of Sprint Monday focuses on thoroughly analyzing and visualizing Vorwerk's Thermomix business ecosystem. To meet these objectives, various generative AI tools were introduced alongside ChatGPT, namely DALL-E 3, Canva AI, Business Model Canva Strategist AI, Napkin AI, and Midjourney AI.

The Ecosystem Canvas task required visualizing Vorwerk's Thermomix key actors, resources, and interactions. ChatGPT offered comprehensive text outputs with strategic depth but performed poorly in generating graphics. DALL-E and Canva AI, despite being geared toward visuals, also failed to produce clear or useful diagrams. The best approach involved using ChatGPT's textual insights, then manually creating diagrams via PowerPoint. The results clearly show that the time needed to map out key actors decreased by nearly 40% when ChatGPT pre-structured the roles and relationships compared to a manually curated approach (average of 30 minutes manually vs. 18 minutes with ChatGPT).

For the Motivation Matrix, ChatGPT excelled yet again by providing structured text that captured stakeholder goals and motivations. However, DALL-E and Canva AI produced illegible or chaotic images, rendering them unsuitable for sprint purposes. In particular, the error rate for DALL-E visuals was more than 50%, since more than half of its outputs

featured cluttered shapes or irrelevant icons. Comparatively, Canva AI had an even higher error rate, due to unaligned text boxes and random thematic elements.

During the Choose Core Relationship task, Business Model Canva Strategist AI attempted to illustrate the most critical relationships in Vorwerk's Thermomix ecosystem but delivered cluttered and hard-to-read graphics. ChatGPT's text, by contrast, was well-organized and succinct, reaffirming its utility in generating strategic content. Any necessary visuals were better done manually or through an alternative tool.

Time measurements for this step showed an approximate 25-minute manual mapping reduced to 15 minutes when ChatGPT provided a structured listing of relationships first. However, Business Model Canva Strategist AI introduced a 45% higher revision workload due to its unclear visuals.

Lastly, the Entity Portrait task centered on profiling customers. ChatGPT generated focused and coherent text analyses, while Napkin AI offered simple yet visually appealing diagrams. Midjourney AI produced creative visuals but did not meet the task's requirement for structured, informative graphics. Consequently, ChatGPT and Napkin AI emerged as a recommended pairing for future sprints, combining detailed textual output with efficient, user-friendly visualizations.

The time savings for the Entity Portrait ranged from 20% (manual research: approx. 35 minutes vs. 28 minutes with ChatGPT) to 60% (manually: approx. 25 minutes vs. 10 minutes with Napkin AI). Midjourney AI's error rate was 70%, due to delivering thematically irrelevant content.

Overall, the "Ecosystem View" phase highlighted ChatGPT's consistent strength in text generation and revealed that most tested generative AI tools struggle to produce reliable, clear ecosystem visualizations. Napkin AI proved valuable for simple diagrams, while Midjourney AI and other specialized tools fell short in offering usable, context-specific graphics. A hybrid approach, leveraging ChatGPT for text-based tasks and Napkin AI for basic visuals, appeared most advantageous for refining and representing complex ecosystem data. Combined, ChatGPT and Napkin AI reduced the total time for ecosystem mapping by approximately 50%, compared to a fully manual process in previous sprints. The main trade-off was the learning curve in writing optimal prompts, which accounted for roughly 15% of the total time spent during "Ecosystem View."

4.3 Overarching Insights

Marked differences emerged among the tested AI tools. ChatGPT stood out for consistently strong text generation, delivering structured and relevant outputs, especially during the "Problem Space" phase. It also proved useful as a basis for prompt development.

Regarding visual outputs, Napkin AI performed notably better than the other image-focused tools, producing clear, easy-to-understand graphics, for instance, in the Entity Portrait task.

As summarized in ChatGPT reduced the average text-generation time by 55 - 70%, while Napkin AI decreased the time it took to visualize the entity profile by up to 60%. In contrast, tools like Canva AI, DALL-E, and Business Model Canva Strategist AI introduced higher error rates (50 - 65%) and frequently required manual revisions. They generated visuals that were thematically inconsistent, unclear, or included various errors. Therefore, they did not meet SPDS requirements. Midjourney AI produced aesthetical visuals but failed to provide the structured, context-specific information vital for the sprint tasks. As a result, ChatGPT and Napkin AI appear best suited for integration into the SPDS: ChatGPT for text generation, analysis, and strategic insights, and Napkin AI for generating straightforward, visually appealing representations.

These findings underscore the potential of a hybrid approach that draws on ChatGPT's robust text capabilities alongside Napkin AI's clarity in visualization, thereby combining the strengths of both tools to enhance innovation processes within the SPDS. From a quantitative perspective, the synergy of ChatGPT and Napkin AI resulted in total time savings of 45 - 65% across multiple tasks and phases, with an error rate under 20% once prompts were adequately refined. Although other AI tools introduced creative concepts, their high error or revision rates diluted any potential time savings.

4.4 Development of a practical guideline

Based on the results of this study a prototype guideline was created to integrate generative AI tools into the Smart Platform Design Sprint, specifically focusing on the first day "Sprint Monday", covering the "Problem Space" and "Ecosystem View" phases. This guideline represents a key practical output of the study and is based on insights from the Vorwerk Thermomix case. The primary aim is to offer innovation teams and coaches concrete instructions and best practices on how to effectively use generative AI tools such as ChatGPT and Napkin AI. By doing so, it intends to accelerate innovation processes, enhance outcome quality, and reduce manual workloads.

The guideline's development process was both theoretically grounded, by including the findings of Brecht's previous research (Brecht et al., 2023b), and practically oriented, anchored in the practical experiences of this research. Accordingly, the guideline was centered around the tasks and phases deemed most suitable for AI integration.

Initially, the "Problem Space" and "Ecosystem View" phases were identified as especially relevant for exploration based on their importance for situational analysis and strategic orientation. Specific prompts were then devised for each task within these phases to optimize AI-generated outputs. ChatGPT was used for textual analysis and ideation, while

Napkin AI produced clear, concise visuals. This hybrid approach demonstrates an effective synergy of combining text-focused and visualization-oriented AI tools. Other tested generative AI tools, including Canva AI, DALLE, Business Model Canva Strategist AI, and Midjourney AI, were deemed less suitable due to limitations in output quality and lack of relevance.

The guideline was created through an iterative approach. Outputs were continuously reviewed for accuracy, informational depth, and relevance, leading to refinements in prompts and user strategy. This process balanced theoretical considerations with practical applicability, resulting in a guideline with the purpose of enabling the integration of generative AI tools within the SPDS methodology. By underscoring the importance of structured, reflective implementation, the guideline advances the discussion on AI's role in innovation processes.

The guidelines' introduction presents the benefits of generative AI for creativity and planning, while subsequent sections focus on preparing the teams and innovation coaches for the usage of generative AI tools, designing prompts, and applying AI outputs in the "Problem Space" and "Ecosystem View" tasks. Detailed prompt templates and recommendations for combining AI-generated results with human expertise ensure that innovation teams can systematically adopt and adapt the AI-driven processes. Although initially presented as a prototype, the guideline can evolve in response to future developments in generative AI, thereby serving as a practical resource for driving platform-focused innovation within the SPDS methodology.

5 Discussion

This study investigated the implementation and evaluation of generative AI tools in the Smart Platform Design Sprint, specifically examining how they can optimize tasks during Sprint Monday's "Problem Space" and "Ecosystem View" phases. The Vorwerk Thermomix case study revealed that ChatGPT and Napkin AI excelled in text-based analysis and structured visualizations, respectively. Other tools, including Canva AI, DALL-E, Business Model Canva Strategist AI, and Midjourney AI, did not meet expectations, predominantly due to errors, thematic inconsistencies, or limited thematic relevance.

A combined approach leveraging ChatGPT for text and Napkin AI for visual elements yielded a streamlined workflow, reduced the manual workload, and improved the clarity and coherence of the final outputs. Despite these advantages, the role of human experts remains essential. Prompts must be carefully devised and outputs critically evaluated to ensure alignment with business context, creativity, and ethical considerations. This insight underscores how pairing AI's computational power with human insight can result in more robust and relevant outcomes.

5.1 Answering the Research Questions

Several research questions framed this investigation. First, the data showed that generative AI tools can be successfully integrated into "Problem Space" and "Ecosystem View" tasks, including the generation of strategic questions, long-term goals, and value-chain analyses, as well as high-level ecosystem mapping. Second, the analysis demonstrated that tool suitability is closely tied to functional strengths. ChatGPT and Napkin AI excelled in text generation and visualization, respectively, whereas Canva AI, DALL-E, and Business Model Canva Strategist AI struggled to produce clear, contextually valid outputs. Third, evidence suggests that combining AI tools can not only save time but also elevate the quality of final deliverables, as human experts direct the process, refine prompts, and validate outputs against strategic objectives.

5.2 Implications for Research and Practice

From a research perspective, these findings enrich the literature on platform-oriented solution design by highlighting how specific AI tools can be operationalized within SPDS workflows. Researchers could extend this analysis beyond Sprint Monday to investigate AI's potential in prototyping, testing, or launch phases. A longitudinal approach may also offer deeper insights into how repeated AI integration affects team dynamics, creativity, and organizational adaptation over multiple sprints.

From a practical standpoint, the Vorwerk Thermomix case study illustrates the value of a carefully curated suite of AI tools. Adopting ChatGPT and Napkin AI for text generation and visualization, respectively, can accelerate innovation processes while improving the coherence of results. Nevertheless, practical implementation should remain mindful of data protection and ethical usage, along with the ongoing need for user feedback. Clear guidelines or methodologies, such as the prototype guideline introduced here, can help practitioners navigate AI deployment responsibly, especially when dealing with sensitive corporate data or proprietary strategies.

5.3 Significance of the Guideline

The prototype guideline that emerged from this research outlines a structured, repeatable method for integrating generative AI tools into SPDS. By providing best practices, prompt templates, and process recommendations, it reduces the guesswork that teams often encounter when attempting to adopt new technologies. Grounded in empirical observations from the Vorwerk Thermomix case study, the guideline demonstrates how ChatGPT and Napkin AI can be combined most effectively to address the tasks outlined.

In doing so, the guideline stands as a bridge between theoretical approaches to innovation management and the practical considerations of day-to-day sprint execution. Its replicability in other organizations remains an open question, subject to factors such as domain

complexity and available resources. Nevertheless, the documented strategies and workflows offer a robust starting point for further adaptation.

5.4 Critical Evaluation

Although the case study provides in-depth insights, the focus on Vorwerk's Thermomix environment may limit the generalizability of the findings. Evaluations of tool outputs, particularly for visualization tasks, were partly subjective, relying on user impressions of clarity, relevance, and aesthetic appeal. Expanding the participant pool or applying standardized metrics could mitigate these biases. Additionally, the AI tools tested here represent only a subset of an ever-evolving market. Future advancements may yield more specialized or powerful solutions that differ from the tools examined in this study.

Confining the scope to Sprint Monday ensures depth of analysis but does not illuminate AI's impact on subsequent SPDS stages. A longer timeline or broader case selection could illuminate how AI-driven enhancements in the initial sprint phases carry through to prototyping, user testing, and final outcomes.

6. Conclusion

6.1 Final Remarks

This research examined the possibilities and limitations of implementing generative AI tools in the Smart Platform Design Sprint, using the Vorwerk Thermomix as an illustrative case. Several AI solutions were applied during the "Problem Space" and "Ecosystem View" phases of Sprint Monday, assessing their suitability for specific tasks. The findings suggest that a hybrid approach, combining ChatGPT for text generation and Napkin AI for visualization, was particularly effective, whereas Canva AI, DALL-E, Business Model Canva Strategist AI, and Midjourney AI proved less suitable for SPDS requirements.

These outcomes underscore the importance of carefully selecting and combining AI tools to increase team creativity and efficiency. While ChatGPT produced structured, strategic text outputs, Napkin AI provided clear, well-organized visualizations. Nonetheless, human input remained essential for prompt creation, output validation, and the incorporation of original ideas. A key practical contribution of this study is a guideline prototype focused on Sprint Monday's "Problem Space" and "Ecosystem View" phases. By offering step-by-step instructions tailored to these stages, the guideline aids teams and innovation coaches in more systematically and effectively integrating generative AI.

Overall, the research shows that merging human creativity with targeted AI support can result in efficient, high-quality outcome. This hybrid approach offers valuable insights for shaping future Smart Platform Design Sprints and promotes a forward-thinking culture of innovation.

6.2 Outlook

As generative AI solutions continue to emerge and rapidly develop, particularly for generating complex textual output and structured visualizations, they may further reduce the manual effort required to design platform-based business models. Alongside these developments, industry-specific AI applications will likely emerge, allowing more nuanced analyses and targeted problem-solving, thus enabling more agile responses, thereby broadening the applicability of generative AI tools within SPDS. At the same time, ethical and regulatory considerations, such as data security, privacy, and transparency, will become increasingly important. Future research could explore AI integration in later SPDS phases or examine specialized AI solutions for industry-specific challenges. Ultimately, balancing the capabilities of generative AI with human expertise and creativity remains pivotal to fostering a sustainable and forward-looking innovation culture.

References

Abbasian, Mahyar/Elahe Khatibi/Iman Azimi/David Oniani/Zahra Shakeri Hossein Abad/Alexander Thieme/Ram Sriram/Zhongqi Yang/Yanshan Wang/Bryant Lin/Olivier Gevaert/Li-Jia Li/Ramesh Jain/Amir M. Rahmani (2024): Foundation metrics for evaluating effectiveness of healthcare conversations powered by generative AI, in: *Npj Digital Medicine*, vol. 7, no. 1, p. 5, [online] doi:10.1038/s41746-024-01074-z.

Albers, Albert/Carsten H. Hahn/Patrick Brecht/Ümüs Cetinkaya/Felix Pfaff/Michael Schlegel/Maximilian Fischer (2023): Digital Platform Business model within the model of SGE - System Generation Engineering: Definition and Classification in Cyber-Physical Systems, [online] doi:10.46254/au02.20230078.

Arnold, René/Johanna Bott/Christian Hildebrandt/Saskja Schäfer/Sebastian Tenbrock/WIK Wissenschaftliches Institut für Infrastruktur und Kommunikationsdienste GmbH (2016): *Internet-basierte Plattformen und ihre Bedeutung in Deutschland*, [online] https://www.wik.org/fileadmin/Studien/2016/Studie_IBP.pdf [Accessed: 06.06.2024].

Bandi, Ajay/Pydi Venkata Satya Ramesh Adapa/Yudu Eswar Vinay Pratap Kumar Kuchi (2023): The power of Generative AI: a review of requirements, models, Input–Output formats, evaluation metrics, and challenges, in: *Future Internet*, vol. 15, no. 8, p. 260, [online] doi:10.3390/fi15080260.

Blessing, Lucienne T.M./Amaresh Chakrabarti (2009): *DRM, a design Research Methodology*, Springer eBooks, London, England, United Kingdom of Great Britain and Northern Ireland: Springer London, [online] doi:10.1007/978-1-84882-587-1.

Brecht, Patrick/Daniel Hendriks/Manuel Niever/Carsten Hahn/Felix Pfaff/Simon Rapp/Albert Albers (2023a): Linking digital B2B platform business models and product development: A bibliometric analysis and literature review, in:

Proceedings of the Design Society, vol. 3, pp. 2465–2474, [online] doi:10.1017/pds.2023.247.

Brecht, Patrick/Sandra Keller/Manuel Nievera/Carsten Hahn/Felix Pfaff/Albert Albers (2023b): Product Digital-Platform-Business Co-Design: A Systematic Sprint approach, in: *Procedia CIRP*, vol. 119, pp. 495–500, [online] doi:10.1016/j.procir.2023.03.111.

Brecht, Patrick/Jacqueline Reinbold/Manuel Niever/Carsten H. Hahn/Felix Pfaff/Albert Albers (2023c): KaPIL – Karlsruher Platform Innovation Lab: A Validation Environment to Design Digital Platform Business Models and Test Related Tools and Methods, in: *Athens Journal of Business & Economics*, vol. 9, no. 4, pp. 381–400, [online] doi:10.30958/ajbe.9-4-1.

Brisco, Ross/Laura Hay/Sam Dhami (2023): EXPLORING THE ROLE OF TEXT-TO-IMAGE AI IN CONCEPT GENERATION, in: *Proceedings of the Design Society*, vol. 3, pp. 1835–1844, [online] doi:10.1017/pds.2023.184.

Cao, Yihan/Siyu Li/Yixin Liu/Zhiling Yan/Yutong Dai/Philip S. Yu/Lichao Sun (2023): A Comprehensive Survey of AI-Generated Content (AIGC): A History of Generative AI from GAN to ChatGPT, in: *arXiv (Cornell University)*, [online] doi:10.48550/arxiv.2303.04226.

Cusumano, Michael A./Annabelle Gawer/David B. Yoffie (2019): *The business of platforms: Strategy in the Age of Digital Competition, Innovation, and Power*, HarperBusiness.

Epstein, Ziv/Aaron Hertzmann/Memo Akten/Hany Farid/Jessica Fjeld/Morgan R. Frank/Matthew Groh/Laura Herman/Neil Leach/Robert Mahari/Alex “Sandy” Pentland/Olga Russakovsky/Hope Schroeder/Amy Smith (2023): Art and the science of generative AI, in: *Science*, vol. 380, no. 6650, pp. 1110–1111, [online] doi:10.1126/science.adh4451.

Felden, Carsten (2018): *Artificial intelligence: Zusammenspiel des Maschinellen Lernens mit Künstlicher Intelligenz*, SIGS DATACOM GmbH, [E-Book] https://www.tdwi.eu/fileadmin/tdwi/1.0_Wissen/eBook/TDWI_E-Book_Artificial_Intelligence.pdf.

Gozalo-Brizuela, Roberto/Eduardo C. Garrido-Merchan (2023): ChatGPT is not all you need. A State of the Art Review of large Generative AI models, in: *arXiv (Cornell University)*, [online] doi:10.48550/arxiv.2301.04655.

Haleem, Abid/Mohd Javaid/Ravi Pratap Singh (2022): An era of ChatGPT as a significant futuristic support tool: A study on features, abilities, and challenges, in: *BenchCouncil Transactions on Benchmarks Standards and Evaluations*, vol. 2, no. 4, p. 100089, [online] doi:10.1016/j.tbench.2023.100089.

Hariri, Walid (2023): Unlocking the Potential of ChatGPT: A Comprehensive Exploration of its Applications, Advantages, Limitations, and Future Directions in Natural Language Processing, in: *arXiv (Cornell University)*, [online] doi:10.48550/arxiv.2304.02017.

Joosten, Jan/Volker Bilgram/Alexander Hahn/Dirk Totzek (2024): Comparing the ideation quality of humans with generative artificial intelligence, in: *IEEE*

Engineering Management Review, vol. 52, no. 2, pp. 153–164, [online] doi:10.1109/emr.2024.3353338.

Kanbach, Dominik K./Louisa Heiduk/Georg Blueher/Maximilian Schreiter/Alexander Lahmann (2023): The GenAI is out of the bottle: generative artificial intelligence from a business model innovation perspective, in: *Review of Managerial Science*, vol. 18, no. 4, pp. 1189–1220, [online] doi:10.1007/s11846-023-00696-z.

Knapp, Jake/John Zeratsky/Braden Kowitz (2016): *Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days*, Simon and Schuster.

Korzynski, Pawel/Grzegorz Mazurek/Pamela Krzypkowska/Artur Kurasinski (2023): Artificial intelligence prompt engineering as a new digital competence: Analysis of generative AI technologies such as ChatGPT, in: *Entrepreneurial Business and Economics Review*, vol. 11, no. 3, pp. 25–37, [online] doi:10.15678/eber.2023.110302.

Lämmel, Uwe/Jürgen Cleve (2012): *Künstliche Intelligenz : mit 51 Tabellen, 43 Beispielen, 118 Aufgaben, 89 Kontrollfragen und Referatsthemen*, Altusried, Bayern, Germany: Carl Hanser Verlag München.

Napkin AI - The visual AI for business storytelling (2024): Napkin AI, [online] https://www.napkin.ai/ [Accessed: 15.09.2024].

Ooi, Keng-Boon/Garry Wei-Han Tan/Mostafa Al-Emran/Mohammed A. Al-Sharafi/Alexandru Capatina/Amrita Chakraborty/Yogesh K. Dwivedi/Tzu-Ling Huang/Arpan Kumar Kar/Voon-Hsien Lee/Xiu-Ming Loh/Adrian Micu/Patrick Mikalef/Emmanuel Mogaji/Neeraj Pandey/Ramakrishnan Raman/Nripendra P. Rana/Prianka Sarker/Anshuman Sharma/Ching-I Teng/Samuel Fosso Wamba/Lai-Wan Wong (2023): The potential of generative artificial intelligence across disciplines: perspectives and future directions, in: *Journal of Computer Information Systems*, pp. 1–32, [online] doi:10.1080/08874417.2023.2261010.

OpenAI API – Overview (2024): [online] https://platform.openai.com/docs/overview [Accessed: 10.07.2024].

Parker, Geoffrey G./Marshall W. Van Alstyne/Sangeet Paul Choudary (2016): *Platform Revolution: How Networked Markets are Transforming the Economy - and How to Make Them Work For You*, W. W. Norton & Company.

Sharma, Krishma/Sharma Poojah (2024): Advancements in ChatGPT: A comparative analysis of accuracy and performance between versions 3.5 and 4.0, in: *World Journal of Advanced Engineering Technology and Sciences*, vol. 13, no. 2, pp. 360–371, [online] doi:10.30574/wjaets.2024.13.2.0580.