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The Implementation Of Agile Methodologies In Developing A Back Office Application For Internal Operations: A Case Study Of Sukhakala Photobooth (Pt. Smrta Amerta Adiwarna)

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ABSTRACT

This study aims to explore the application of Agile methodologies in the planning and development of a back-office application tailored for PT. SMRTA AMERTA ADIWARNA's Sukhakala photobooth operations. By addressing the company's challenges in operational efficiency, data accuracy, and real-time decision-making, this research outlines a strategic approach that integrates user-centered design principles with iterative development processes. The proposed back-office application is expected to enhance internal operations, improve financial management, and support strategic growth, ultimately contributing to the company's long-term success in a competitive market.

INTRODUCTION

The global photo booth industry has experienced significant transformation and growth over the past decade. As of 2023, the market was valued at approximately USD 593.45 million and is expected to reach USD 1,234.23 million by 2032, growing at a compound annual growth rate (CAGR) of 9.6% (Straits Research, 2023). This robust expansion is particularly evident in the Asia Pacific region, where countries such as Japan have shown a strong cultural affinity for personalized photo experiences, including the widely popular Purikura booths, which continue to drive market growth (Straits Research, 2023). The global increase in demand for unique and interactive customer experiences has been a key factor in propelling this industry forward (Pine & Gilmore, 1999). In Indonesia, the photo booth industry mirrors these global trends, especially in urban centers like Jakarta and Bandung. The rise of experiential marketing, coupled with the growing culture of social media sharing, has significantly fueled demand for photo booths across various venues, including events, retail spaces, cafes, and entertainment centers (Jin, 2020).

Bandung, renowned for its vibrant creative scene, has emerged as a hub for numerous photo booth brands, offering a variety of services that cater to the city's diverse consumer base. This alignment with global trends towards experiential consumption, where customers increasingly seek out interactive and memorable experiences, has further solidified Bandung's position as a key player in the industry (Pine & Gilmore, 1999).

Despite the industry's promising growth trajectory, the Indonesian photo booth market faces several challenges. The market's low entry barriers have led to fierce competition, with new players frequently entering the scene (Barney, 1991). Additionally, many operators continue to rely on manual processes and basic software, which hampers their operational efficiency and scalability—a critical issue as the market becomes more saturated (Brynjolfsson & McAfee, 2014). In such a competitive environment, the ability to differentiate through technological advancements, such as integrated back office applications, is crucial for sustaining a competitive edge (Porter, 2008; Teece, 2010).

In Bandung, the adoption of advanced technologies presents both opportunities and threats. Companies that effectively integrate these technologies to enhance operational efficiency, improve customer service, and gain insights for better decision-making are more likely to succeed in this dynamic market (Prahalad & Hamel, 1990). However, the intense competition and the continuous need for innovation remain significant challenges that companies must navigate to maintain their market positions (Christensen, 1997).

LITERATURE REVIEW

Design Thinking is a user-centered approach to innovation that emphasizes understanding users' needs and experiences to develop creative and effective solutions. This methodology is structured around five stages: empathize, define, ideate, prototype, and test, each designed to ensure that the solutions developed are closely aligned with users' real-world challenges (Brown, 2009). The Empathize stage involves immersing oneself in the user's environment to gain a deep understanding of their needs, motivations, and challenges. Techniques such as interviews and observations are employed to uncover insights into the user's experiences, fostering empathy, which is crucial for driving innovation (Plattner, Meinel, & Leifer, 2010). Prototyping follows, allowing these ideas to be transformed into tangible forms that can be tested and refined. Prototyping is not about achieving perfection but about creating something that can be improved upon through feedback (Plattner et al., 2010). The final stage, Testing, involves evaluating these prototypes with real users, gathering feedback, and making iterative improvements, ensuring that the final product meets user expectations (Brown, 2009). The Lean Startup methodology, popularized by Eric Ries, provides a framework for developing new products efficiently by focusing on early and continuous validation from users. This approach emphasizes the creation of a Minimum Viable Product (MVP), which includes just enough features to allow early adopters to provide feedback, thereby guiding further development (Ries, 2011).

The methodology is rooted in the principles of lean manufacturing, focusing on minimizing waste and maximizing learning through iterative cycles of build, measure, and learn. The Build phase involves creating the MVP, which is then tested with users to gather feedback. The Measure phase collects data on how the MVP performs, providing insights into what works and what needs adjustment. Finally, the Learn phase involves analyzing this data to decide whether to pivot or persevere, ensuring that the product evolves in alignment with user needs and market realities (Ries, 2011).You have to carefully read the most recent available literature to identify specific gaps, inconsistencies and/or controversies that may form the basis of your own research.

Always show that you have considered an issue from several angles and that you are aware of the arguments for and against a specific point of view. Many researchers in services

marketing, for example, use the SERVQUAL measurement scale without considering existing criticisms against it. To compile a proper literature review, one has to overcome three specific challenges, namely: finding appropriate literature on a specific topic, managing the information, and presenting a logical, synthesized, and reader-friendly review of the current knowledge relating to a specific topic.

Agile methodologies, particularly Scrum, have become central to managing complex software development projects due to their emphasis on iterative development and continuous delivery of value. Unlike traditional linear project management approaches, Agile promotes flexibility and responsiveness, allowing teams to adapt quickly to changes and deliver continuous value to users (Schwaber & Sutherland, 2017). Scrum, one of the most widely adopted Agile frameworks, structures development into short cycles called sprints. Each sprint involves planning, executing, reviewing, and reflecting, which enables teams to deliver shippable increments of the product regularly.

The Product Backlog serves as a dynamic list of tasks, ensuring that the team always focuses on the most critical features. Sprint Planning sets clear goals for each cycle, while Sprint Execution focuses on delivering functional increments. After each sprint, a Sprint Review gathers feedback, and a Sprint Retrospective reflects on the process, fostering continuous improvement (Schwaber & Sutherland, 2017).

By following this integrated approach, the development process begins with a strong foundation in user needs (empathy), progresses through iterative development and testing (Lean Startup), and continuously adapts and improves through Agile practices. This combination ensures that the final product is not only functional but also aligns closely with the operational needs of internal stakeholders, thus enhancing overall efficiency and effectiveness.

METHODS

The research design employed in this study serves as a systematic blueprint for improving the internal operations of PT. SMRTA AMERTA ADIWARNA's Sukhakala photobooth through the development and implementation of a back-office application. This design ensures that the evidence gathered effectively addresses the research questions logically and comprehensively, as emphasized by Creswell (2014), who notes the importance of a well-structured research design in yielding reliable and valid results. This study employs a qualitative research approach, which is instrumental in deeply exploring the operational challenges faced by PT. SMRTA AMERTA ADIWARNA's internal teams.

The research integrates multiple frameworks—Design Thinking, Lean Startup, and Agile Methodologies—to explore the perspectives of key stakeholders, including the Finance, Business Development, and Operations teams, as well as branch owners. These frameworks guide the study in identifying operational problems, generating potential solutions, and evaluating these solutions through iterative processes, ensuring they meet the stakeholders' needs (Brown, 2009; Ries, 2011; Schwaber & Sutherland, 2017). Given the qualitative nature of the data collected, this study employs content and thematic analysis to extract insights that directly inform the development of the back-office application.

RESULTS

The development of the back office application for PT. SMRTA AMERTA ADIWARNA was guided by a structured approach that integrated the Design Thinking process, Lean Startup methodology, and Agile development principles. These frameworks were crucial in ensuring that the final solution was user-centered, adaptable, and responsive to the company’s evolving needs.

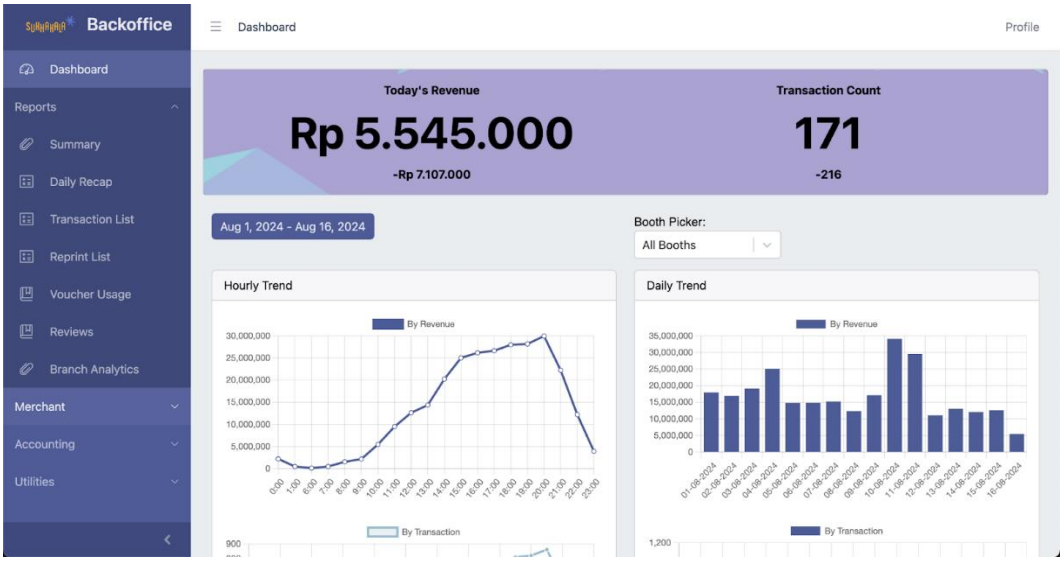
Design Thinking Phase

The project began with the Design Thinking phase, which involved a deep dive into understanding the problems faced by the company. This phase was critical in empathizing with the users—primarily the Finance, Business Development, and Operations teams, along with branch owners. Through interviews, focus group discussions, and user journey mapping, the team identified key pain points such as data inaccuracies, operational inefficiencies, and challenges in decision-making due to a lack of real-time data. The insights gathered during this phase were instrumental in defining the core problems that the back office application needed to address.

Lean Startup Phase

Building on the insights from the Design Thinking phase, the Lean Startup methodology was employed to develop a Minimum Viable Product (MVP). The MVP focused on the most critical features identified in the product backlog, ensuring that the development efforts were concentrated on high-impact areas. The MVP was designed to be a functional prototype that could be tested with real users, allowing the team to gather feedback and iterate on the design. This approach ensured that the development process remained aligned with user needs and provided an opportunity to validate assumptions before fully committing to the final product.

Figure 1 Dashboard Mockup



Agile Development Process

The Agile methodology was central to the development of the back office application, facilitating an iterative and flexible approach. The project was divided into several sprints, each focused on delivering specific features or improvements outlined in the product backlog. The Agile process allowed for continuous feedback and adaptation, ensuring that each sprint contributed to the overall progress of the project while remaining responsive to any new challenges or requirements that emerged.

Product Backlog

The product backlog was a dynamic list of features and tasks prioritized based on their importance and impact. The backlog was continuously updated as new insights were gained through user feedback and testing. The prioritization of tasks ensured that the most critical

functionalities, such as real-time data tracking, inventory management, and financial reporting, were developed first.

Table 1 Product Backlog

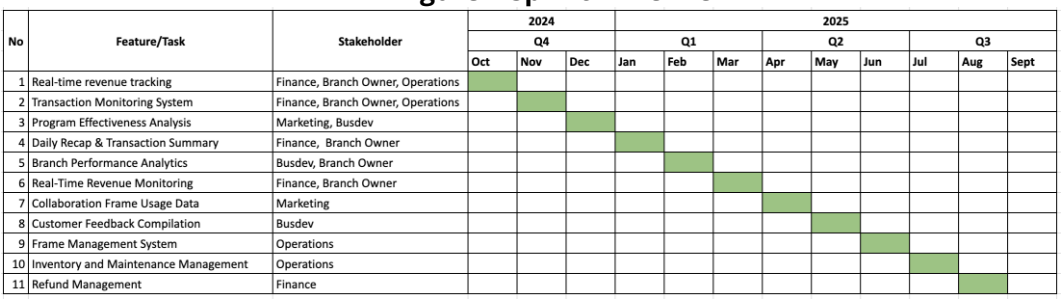
Team	Feature Requirement	Description
Finance, Branch Owner	Real-Time Revenue Tracking	A dashboard for monitoring revenue in real-time across all branches.
Finance, Branch Owner, Busdev	Daily Recap and Transaction Summary	System to track voucher issuance by user and branch for transparency and accountability.
Finance	Financial Reporting Dashboard	Customizable dashboard for detailed financial reporting and trend analysis.
Finance, Operational	Recent Photo Transaction List	Monitoring all photo transactions and filter them by date, hour, and branch
Finance, Operational	Recent Reprint Transaction List	Monitoring all reprint transactions and filter them by date, hour, and branch
Finance, Operational	Voucher Usage	Monitoring voucher usage and filter them by date, hour, and branch
Finance, Operational	Refund Management	Add, update, or delete refund
Business Development	Branch Performance Analytics	Tools for analyzing branch performance to identify trends and improvement areas.
Business Development	Customer Feedback Compilation	System for collecting and analyzing customer feedback from the soft file portal.
Business Development	Custom Report Generation	Feature to create custom reports supporting strategic planning.
Operations, Branch Owner	Transaction Monitoring System	Feature to monitor and filter transactions by time, hour, and branch name.
Operations	Frame Management System	Centralized control for uploading and updating photo frames across branches.
Operations	Inventory and Maintenance Management	Tools for efficient inventory monitoring, maintenance scheduling, and reminders.
Operations	Notification System	Real-time alerts for low inventory and maintenance needs.
Marketing, Business Development, Branch	Frame Usage Data	Analytics to track the popularity and usage of collaboration frames.

Team	Feature Requirement	Description
Owners		
Marketing, Business Development	Program Effectiveness Analysis	Tools to evaluate the success of promotional programs like happy hours.
Marketing, Business Development	Market Trends Analysis	Data access to understand customer preferences and market trends.

Sprint Timeline

The sprint timeline was carefully planned to allow for the incremental development of the application. Each sprint, lasting between two to four weeks, was focused on specific aspects of the application. This approach ensured that the development process was manageable and allowed for regular review and adjustment. The timeline also included key milestones, such as the completion of the MVP, user testing phases, and final deployment.

Figure 2 Sprint Timeline



Sprint Resource Allocation

Resource allocation was a critical component of the Agile process. By assigning the appropriate resources to each sprint, the project team was able to maintain steady progress and address any bottlenecks promptly. The resource plan included the distribution of tasks among developers, designers, testers, and project managers, ensuring that all aspects of the development process were adequately supported.

Table 2 Sprint Resource Allocation

Role	Man-Days	Cost per Man-Day(IDR)	Total Cost (IDR)
Product Manager	5	1.250.000	6.250.000
Backend Developer	10	1.250.000	12.500.000
Frontend Developer	10	1.250.000	12.500.000
UI/UX Designer	5	1.250.000	6.250.000
QA/Tester	5	1.250.000	6.250.000
Total Cost for Sprint 1	35		43.750.000

The budget for each sprint is calculated based on the estimated man-day costs for the involved roles, with an average rate of IDR 1,250,000 per man-day. For example, the first sprint, dedicated to Real-Time Revenue Tracking, is projected to cost IDR 43,750,000. This budget encompasses the contributions of backend developers, frontend developers, UI/UX designers, and QA/testing personnel. It is important to recognize that this estimate reflects the cost of a single sprint iteration, provided that the deliverables meet stakeholder approval. Should additional iterations be required to refine the output, these would incur lower costs due to their narrower scope. This iterative development process offers the necessary flexibility to adapt as needed while maintaining effective financial management, ensuring that the project remains on budget and aligned with its strategic goals.

DISCUSSION

The integration of Design Thinking, Lean Startup, and Agile methodologies in the development of the back office application provided a robust framework for addressing the complex challenges faced by PT. SMRTA AMERTA ADIWARNA. Each phase of the process contributes uniquely to the project's success, from problem identification and solution ideation to iterative development and refinement.

Design Thinking Insights

The Design Thinking phase was crucial in ensuring that the back office application was deeply rooted in the real-world challenges faced by its users. By focusing on empathy and user-centered design, the project team was able to gain a comprehensive understanding of the pain points and unmet needs within the company. This understanding informed the subsequent development stages, ensuring that the final application was not just a technical solution but a tool that genuinely improved the daily operations of its users.

Lean Startup Validation

The Lean Startup methodology allowed the project team to test and validate the core features of the back office application before committing to full-scale development. By creating an MVP, the team was able to gather valuable feedback from users early in the process, reducing the risk of developing features that did not align with user needs. The iterative nature of the Lean Startup approach ensures that the development is guided by real-world data and user experiences, leading to a more effective and user-friendly final product.

Agile Development Efficiency

The Agile development process was instrumental in maintaining flexibility and responsiveness throughout the project. By breaking down the development into manageable sprints, the team can focus on delivering specific features in a timely manner, while also allowing for continuous feedback and adaptation. The Agile approach ensures that the project remains on track and can quickly respond to any new requirements or challenges that arise. The structured yet flexible nature of Agile allowed the project to progress efficiently, ensuring that the final application was both comprehensive and well-aligned with the company's strategic goals.

Overall Impact

The results of the project demonstrate the effectiveness of combining Design Thinking, Lean Startup, and Agile methodologies in software development. The back office application, once fully deployed, is expected to significantly enhance the company's operational efficiency, data accuracy, and decision-making capabilities. The iterative and user-centered approach taken during the development process has ensured that the final product is not only technically sound but also highly relevant to the needs of its users. The successful implementation of this project

serves as a strong case study for the application of these methodologies in complex, real-world business environments.

CONCLUSION

The research underscores the value of a structured, iterative approach to software development, particularly in addressing complex operational challenges. By integrating Design Thinking, Lean Startup, and Agile methodologies, PT. SMRTA AMERTA ADIWARNA was able to develop a back-office application that not only meets the immediate needs of its users but also supports the company's long-term strategic objectives. As the organization continues to grow and evolve, this approach will remain crucial in ensuring that its technological solutions are aligned with its business goals and capable of driving sustained success.

LIMITATION

1. Continuous Improvement and Iteration
   Given the dynamic nature of the photo booth industry and the company's expansion plans, it is crucial to maintain a culture of continuous improvement. Regularly revisiting and iterating on the features of the back-office application, based on user feedback and emerging business needs, will ensure that the system remains aligned with the company's operational goals and market demands. It is recommended that the organization continue to apply Agile methodologies in future development phases to allow for flexibility and responsiveness to changes.
2. Scalability and Integration
   As PT. SMRTA AMERTA ADIWARNA expands to new markets, such as Bali and Makassar, the scalability of the back-office application will become increasingly important. The company should prioritize the development of scalable solutions that can handle increased data volume, more complex operations, and integration with other systems. Investing in robust infrastructure and exploring cloud-based solutions could provide the necessary scalability and reliability as the business grows.
3. Comprehensive Training and Stakeholder Engagement
   To maximize the effectiveness of the back-office application, it is essential to provide comprehensive training for all users across different departments and branches. This will ensure that employees are fully equipped to utilize the new system's features and contribute to the continuous improvement process. Additionally, maintaining strong engagement with stakeholders, including regular updates and opportunities for feedback, will help in identifying potential issues early and fostering a sense of ownership among users.
4. Enhanced Data Security and Compliance
   As the back-office application begins to manage more sensitive and critical business data, the importance of data security cannot be overstated. The company should implement stringent data security measures to protect against potential breaches and ensure compliance with relevant data protection regulations. This includes encryption, regular security audits, and user access controls to safeguard the integrity and confidentiality of business data.
5. Expansion of Analytical Capabilities
   The initial implementation focused on solving immediate operational challenges, but as the company continues to evolve, expanding the analytical capabilities of the back-office application will be beneficial. Adding advanced analytics features, such as predictive modeling and machine learning, can provide deeper insights into customer behavior, market trends, and operational efficiency. This will enable the company to make more informed strategic decisions and stay ahead of competitors in the industry.

6. Customer-Centric Innovations
   While the current project has primarily focused on internal operations, it is important not to lose sight of the customer experience. As the back-office application stabilizes, the company should explore opportunities to leverage the system to enhance customer-facing services. This could include integrating customer feedback mechanisms directly into the application, offering more personalized services based on data insights, and continuously innovating to meet changing customer expectations.
7. Monitoring and Evaluation Framework
   Finally, to ensure that the back-office application continues to meet its intended goals, the company should establish a robust monitoring and evaluation framework. This framework should include key performance indicators (KPIs) that measure the effectiveness, efficiency, and user satisfaction of the application. Regular reviews of these KPIs will help the company identify areas for improvement and ensure that the system continues to support the organization's strategic objectives.

REFERENCES

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.

Beck, K., Beedle, M., van Bennekum, A., Cockburn, A., Cunningham, W., Fowler, M., ... & Thomas, D. (2001). *Manifesto for Agile Software Development*. Agile Alliance.

Blank, S. (2013). *The Four Steps to the Epiphany: Successful Strategies for Products that Win*. K & S Ranch.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.

Brown, T. (2009). *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation*. Harper Business.

Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. W.W. Norton & Company.

Christensen, C. M. (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business Review Press.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). Thousand Oaks, California: SAGE Publications.

Davenport, T. H. (1993). Process innovation: Reengineering work through information technology. Harvard Business School Press.

Hammer, M., & Champy, J. (1993). Reengineering the Corporation: A Manifesto for Business Revolution. HarperBusiness.

Jin, B. E. (2020). The Impact of Social Media on Consumer Behavior in the Fashion Industry. *Journal of Business Research*, 113, 283-296.

Kelley, T., & Littman, J. (2001). The art of innovation: Lessons in creativity from IDEO, America's leading design firm. Currency/Doubleday.

Kim, L. (2016). *The Role of Technology in Competitive Strategy*. Academy of Management Review, 11(3), 595-602.

Knapp, J., Zeratsky, J., & Kowitz, B. (2016). *Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days*. Simon & Schuster.

Kniberg, H., & Ivarsson, A. (2012). *Scaling Agile @ Spotify with Tribes, Squads, Chapters & Guilds*. Spotify Labs.

Krippendorff, K. (2018). *Content Analysis: An Introduction to Its Methodology* (4th ed.). Thousand Oaks, California: SAGE Publications.

Krueger, R. A., & Casey, M. A. (2014). *Focus Groups: A Practical Guide for Applied Research* (5th ed.). Thousand Oaks, California: Sage Publications.

Kujala, S. (2003). User involvement: A review of the benefits and challenges. Behaviour & Information Technology, 22(1), 1-16.

Liedtka, J. (2011). Learning to use design thinking tools for successful innovation. *Strategy & Leadership, 39*(5), 13-19.

Morgan, D. L. (1997). *Focus Groups as Qualitative Research* (2nd ed.). Thousand Oaks, California: Sage Publications.

Patton, M. Q. (2002). Qualitative research and evaluation methods (3rd ed.). SAGE Publications.

Pine, B. J., & Gilmore, J. H. (1999). *The Experience Economy: Work is Theatre & Every Business a Stage*. Harvard Business Review Press.

Plattner, H., Meinel, C., & Leifer, L. (2010). *Design Thinking: Understand – Improve – Apply*. Springer.

Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. Free Press.

Porter, M. E. (1996). What is Strategy? Harvard Business Review, 74(6), 61-78.

Porter, M. E. (2008). *The Five Competitive Forces That Shape Strategy*. Harvard Business Review, 86(1), 78-93.

Prahalad, C. K., & Hamel, G. (1990). The Core Competence of the Corporation. *Harvard Business Review*, 68(3), 79-91.

Ries, E. (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. Crown Business.

Schwaber, K., & Sutherland, J. (2017). *The Scrum Guide: The Definitive Guide to Scrum: The Rules of the Game*. Scrum Alliance.

Teece, D. J. (2010). Business Models, Business Strategy, and Innovation. *Long Range Planning*, 43(2-3), 172-194.