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Integrating Agile and Business Metrics into Backlog Prioritization: A Case Study at PT. XYZ

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Abstract

Backlog prioritization is an essential component of Agile development because it makes sure that resources are used in the best way possible and that business value is maximized. The Effort-influence Matrix gives you a way to prioritize items in your backlog based on how much effort they will take and how much influence they might have. However, just prioritizing them doesn't mean you'll be successful in the long term. Integrating Agile Metrics—such as velocity, cycle time, and lead time—with Business Metrics—such as customer satisfaction, retention, and market adoption—offers a more comprehensive approach to guiding decision-making. This study examines how Product Owners at PT. XYZ applies the Effort-Impact Matrix while incorporating Agile and Business Metrics to align development priorities with organizational objectives. This study employed qualitative research design, drawing on structured interviews, project documentation, and literature review. The findings show that combining prioritizing frameworks with performance indicators improves decision-making, increases alignment with company goals, and leads to more predictable delivery outcomes. This study contributes to the literature by being among the few to empirically demonstrate how Agile and Business Metrics can be systematically integrated into backlog prioritization using the Effort-Impact Matrix.

Keywords: *backlog prioritization, effort-impact matrix, agile metrics, business metrics, product success*

1 Introduction

Prioritizing the product backlog is a critical activity in Agile development, as it determines which features deliver the most value to both users and the business [1]. Various methods—such as the MoSCoW technique, the Kano Model, and Weighted Shortest Job First (WSJF)—provide structured ways to rank backlog items [2], [3]. While these frameworks help Product Owners organize conflicting requests, they usually focus solely on perceived importance or implementation complexity, rather than carefully tying outcome prioritization to long-term product performance.

The Effort-Impact Matrix has been widely adopted as a practical tool for balancing effort and prospective impact [4]. However, prior research has shown that using this matrix in isolation does not guarantee that prioritized items result in long-term value development. The missing link lies in integrating performance-based metrics. Agile Metrics, such as velocity, cycle time, and lead time, provide visibility into delivery capability and team efficiency. Business Metrics such as customer satisfaction, retention, and market adoption capture how backlog decisions influence strategic goals. Despite their importance, these metrics are rarely considered together in existing prioritization systems, creating a mismatch between technical execution and business outcomes [5], [6].

This research addresses that gap by identifying how Product Owners at PT. XYZ integrates Agile Metrics and Business Metrics into backlog prioritization using the Effort-Impact Matrix. We conducted interviews, project documentation, and literature reviews to identify best practices for aligning prioritization frameworks to fit with organizational objectives. The contribution of this work is two fold: demonstrating how combining prioritization tools with metrics strengthens decision-making, and offering practical guidance for Agile teams seeking to achieve sustainable success in product development.

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2 Literature Review

2.1 Product Backlog Prioritization

Backlog prioritization in Agile development determines which features are delivered first and, as a result, which business objectives are achieved sooner. Some standard methods often rely on customer perception or subjective judgments, such as the MoSCoW method, the Kano Model, and the Weighted Shortest Job First (WSJF). These standards will have less of a practical impact when many backlog items have the same level of importance [7]. For example, MoSCoW tends to classify too many items as "must-have," diluting its ability to differentiate priorities. Similarly, the Kano Model emphasizes user satisfaction but does not adequately consider implementation effort. WSJF adds rigor by combining the cost of delay with effort, yet it primarily addresses managing schedule efficiency rather than long-term business outcomes [8]. This limitation underscores the need for a prioritization approach that strikes a balance between implementation feasibility and measurable strategic impact.

2.2 Effort-Impact Matrix

The Effort-Impact Matrix is widely used to visualize trade-offs between required effort and expected benefit. By categorizing backlog items into Quick Wins, Major Projects, Fill-Ins, and Time Wasters, it offers clarity and simplicity for decision-making [9]. Its strength lies in helping teams quickly identify features that generate the highest return with the least effort. However, its simplicity can also be a weakness: the matrix does not account for team delivery capacity (an Agile concern) or market outcomes (a business concern). As such, while it is effective in structuring prioritization, it must be complemented by performance metrics that connect backlog choices to broader success measures. As illustrated in Figure 1, the matrix divides backlog items into four quadrants based on effort and impact, providing a straightforward visual aid for prioritization.

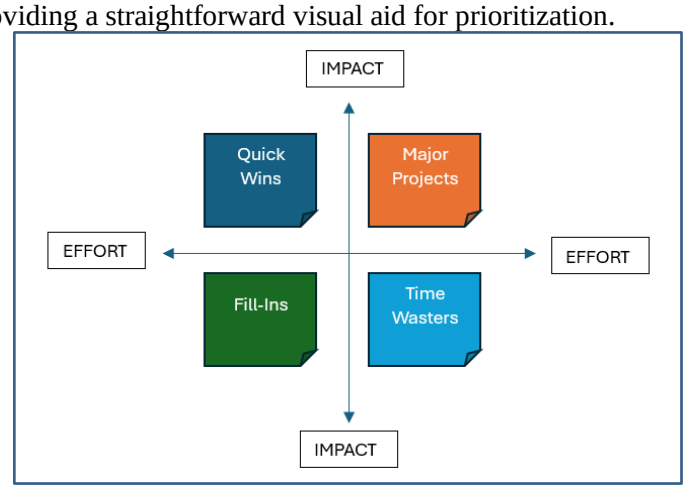

Figure 1 Effort-impact matrix framework for backlog prioritization

2.3 Agile Metrics

Agile metrics—such as velocity, cycle time, lead time, and burn-down charts—provide insights into productivity and delivery predictability [10]. They allow teams to monitor efficiency, forecast future sprints, and detect bottlenecks [11], [12], [13], [14]. However, Agile metrics are inherently inward-looking: they measure development performance but say little about whether the delivered features create actual business value. This creates a potential misalignment: teams may optimize for speed while neglecting the impact on customers or the market.

2.4 Business Metrics

Business metrics—such as market adoption, customer satisfaction, retention, and brand perception—capture how products perform in the market and how well they support organizational strategy [15], [16]. Unlike Agile metrics, they are outward-looking, providing evidence of user and stakeholder value. However, when used in isolation, business metrics do not guide daily development choices. They reflect outcomes but lack direct mechanisms for informing backlog prioritization at the sprint level.

2.5 Toward Product Success: An Integrated View

Product success is not solely determined by how efficiently backlog items are executed (as reflected in Agile metrics) or how well a product performs in the market (as reflected in business

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metrics). Instead, it emerges from the integration of prioritization frameworks with both Agile and Business Metrics.

Existing studies highlight strong tools for backlog prioritization, such as the Effort-Impact Matrix, and valuable measures of performance, such as Agile and Business Metrics [17], [18]. However, these approaches are often applied separately. Prioritization frameworks typically focus on balancing effort and impact, but usually overlook delivery feasibility and market alignment. Conversely, metrics provide functional evaluation after development but do not always inform backlog decisions during planning.

This separation has left a gap in how Agile teams connect prioritization with long-term business success. Teams may deliver features efficiently, but without ensuring that these features generate sustainable value. To address this limitation, the present study investigates how Product Owners at PT. XYZ utilizes the Effort-Impact Matrix when integrating Agile and Business Metrics into backlog prioritization, providing a more holistic approach to aligning development choices with organizational objectives.

The literature shows strong tools for backlog prioritization (MoSCoW, Kano, WSJF, Effort-Impact Matrix) and strong indicators of performance (Agile metrics, business metrics). Yet, little research has explored how these can be **combined** to ensure that prioritization decisions are both technically feasible and strategically impact [19], [20]. This study addresses that gap by examining how Product Owners at PT. XYZ integrates Agile and Business Metrics into backlog prioritization using the Effort-Impact Matrix.

3 Research Method

This study adopts a qualitative descriptive approach to explore how Agile and Business Metrics can be integrated into backlog prioritization through the Effort-Impact Matrix. A qualitative design was chosen because it enables a deeper understanding of decision-making practices and the reasoning behind prioritization strategies, which quantitative measures cannot adequately capture.

3.1 Research Design

The study employs a single-case study design, focusing on PT. XYZ, a technology company that applies Agile methods in its product development workflow. A case study approach is suitable because it enables an in-depth examination of complex, context-specific practices such as backlog prioritization. To enrich the analysis and reduce potential bias from studying a single organization, insights were also collected from Product Owners in other technology companies. This comparative perspective helps identify broader best practices while keeping PT. XYZ is the focal case.

3.2 Research Scope and Object

The research scope and object are limited to backlog prioritization practices in Agile-based digital product development. Specifically, it investigates how Product Owners at PT. XYZ applies the Effort-Impact Matrix and integrates Agile and Business Metrics into decision-making. The study also draws supporting evidence from external organizations to strengthen the transfer ability of the findings.

3.3 Materials and Tools

The materials used in this study comprise project documentation, including backlog lists, product roadmaps, and sprint retrospective reports, as well as relevant literature on backlog prioritization, Agile metrics, and business metrics. To support the research process, Google Forms was employed to conduct structured written interviews with participants. At the same time, Microsoft Excel was used as a qualitative data management tool to organize responses and code emerging themes.

3.4 Research Site

The primary research site is PT. XYZ. Data were collected online, enabling access to Product Owners across multiple companies. This digital approach ensured a broader range of perspectives while maintaining feasibility.

3.5 Data Collection Techniques

This study employed both primary and secondary data sources to provide a comprehensive view of backlog prioritization practices. Primary data were obtained through structured written interviews conducted via Google Forms. The participants consisted of ten experienced Product Owners drawn from PT. XYZ and several other organizations. To ensure the reliability of insights, participants were selected based on clear criteria: a minimum of three years of experience as a Product Owner, successful management of at least three Agile projects involving backlog prioritization, and demonstrable experience with the Effort-Impact Matrix alongside Agile and Business Metrics. These

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criteria ensured that the study captured perspectives from professionals with substantial expertise in Agile methodologies and product management.

Secondary data included a diverse set of project documents, such as detailed backlog lists, product roadmaps outlining strategic plans, and sprint retrospective reports that evaluated team performance and project outcomes. Additionally, an extensive review of academic and industry literature was conducted to provide theoretical grounding and contextualize the empirical findings. The use of both primary and secondary sources allowed triangulation, strengthening the validity of the study and ensuring that the analysis was grounded in both practice and theory.

3.6 Data Analysis Techniques

The collected data were examined using a combination of qualitative analysis techniques designed to capture both recurring patterns and contextual nuances in backlog prioritization practices. Thematic analysis was employed to identify and categorize recurring themes emerging from interview responses, particularly regarding how Product Owners applied the Effort-Impact Matrix and integrated Agile and Business Metrics in their decision-making. Content analysis was then employed to interpret the project documentation and relevant literature, enabling the study to validate participants' accounts against documented practices and established theories. Finally, a comparative analysis was applied across cases from PT. XYZ and external organizations, highlighting similarities and differences in the use of prioritization frameworks and metrics. This triangulated approach ensured that the findings were both grounded in practice and reinforced by multiple forms of evidence, thereby enhancing the credibility and depth of the analysis.

3.7 Operational Definitions of Key Concepts

To ensure clarity and consistency in this study, several key concepts are defined operationally. These definitions serve as the analytical foundation for interpreting interviews and project documentation. The summarized definitions are presented in **Table 1**.

Table 1 Operational definitions of key concepts

Research Variable	Operational Definition
Backlog Prioritization	The process of determining the order of backlog items based on business value and implementation effort using the Effort-Impact Matrix
Agile Metrics	Performance indicators of Agile teams, such as velocity, lead time, and cycle time, are used to evaluate development effectiveness
Business Metrics	Indicators of product success from a business perspective include user satisfaction, retention rate, and market adoption.

4 Results and Analysis

This chapter presents findings from interviews with Product Owners at PT. XYZ and other organizations, supported by project documentation. Data were analyzed thematically to identify recurring patterns in backlog prioritization practices. Three major themes emerged: (1) the application of the Effort-Impact Matrix, (2) balancing business goals with technical feasibility, and (3) the integration of Agile and Business Metrics. Each theme is discussed below, with evidence from participants, followed by an interpretive analysis.

4.1 Application of the Effort-Impact Matrix

Most Product Owners identified the Effort-Impact Matrix as their primary tool for backlog prioritization. It was consistently used to classify items into four quadrants: Quick Wins, Major Projects, Fill-Ins, and Time Wasters. For example, one Product Owner from PT. XYZ explained:

"In sprint planning, we always try to put features into the matrix. If something is a quick win, we prioritize it immediately. But sometimes it's hard to agree on what counts as 'low effort' or 'high impact"

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This indicates that the matrix is valued for its **simplicity and speed**, but its subjective nature leads to inconsistent assessments across team members. Despite this limitation, the matrix helped streamline decision-making and maintain workflow rhythm, particularly during sprint planning.

Interpretation: The Effort-Impact Matrix offers practical clarity in prioritization, but its effectiveness depends on shared assessment standards. Without guidelines, misalignment may occur between team members' judgments. This supports the objective by showing how Product Owners operationalize backlog prioritization using the matrix.

4.2 Balancing Business Goals and Technical Feasibility

Participants emphasized that backlog prioritization must consider both business outcomes and technical constraints. Commonly cited business drivers included market adoption, customer satisfaction, retention, and brand perception. A Product Owner from an external company noted:

"Sometimes we choose a feature not because it is easy to build, but because it has a big impact on customer satisfaction. For high-effort features, we break them into stages so that value is delivered faster."

This reflects the use of **incremental delivery** to handle high-effort, high-impact features. Several teams also reported supplementing the Effort-Impact Matrix with frameworks like RICE (Reach, Impact, Confidence, Effort) to make decisions more data-driven.

Interpretation: Effective backlog prioritization is not a trade-off between business goals and feasibility, but a balanced act. Incremental delivery and secondary frameworks (e.g., RICE) allow teams to pursue strategic business priorities without overwhelming resources. This finding contributes to the research objective by demonstrating how Product Owners integrate business considerations into backlog decisions, thereby balancing technical feasibility and directly addressing the misalignment gap identified in the literature.

4.3 Integration of Agile Metrics

Agile metrics such as velocity, cycle time, and lead time were consistently applied to validate whether prioritized items could realistically be delivered within sprint cycles. Burn-down charts were also used to monitor sprint progress. As one PT. XYZ Product Owner explained:

"Velocity tells us how much we can deliver, but business metrics tell us whether those features matter. We try to use both before finalizing the backlog order."

This highlights the role of Agile metrics as **feasibility checks** ensuring that prioritized features are deliverable given the team's capacity. When combined with business metrics, backlog prioritization became both practical and strategically aligned.

Interpretation: Agile metrics ensure realistic execution, while business metrics keep prioritization tied to customer and market impact. Integration of both prevents the common misalignment where teams deliver efficiently but without achieving long-term success. This supports the research objective by highlighting the role of Agile Metrics in ensuring that prioritized features are not only strategically valuable but also feasible to deliver within sprint cycles.

4.4 Cross-Case Synthesis and Discussion

A comparative synthesis of findings from PT. XYZ and external organizations emphasize that backlog prioritization becomes more effective when frameworks, such as the Effort-Impact Matrix, are combined with both Agile and Business Metrics. Product Owners who relied solely on prioritization tools often struggled with consistency in assessing effort and impact, leading to misalignment between planned features and actual delivery capacity. Conversely, those who complemented the matrix with Agile metrics such as velocity and cycle time were able to validate whether prioritized features were feasible within sprint cycles. At the same time, integrating business-oriented measures—such as market adoption, customer satisfaction, and retention—ensured that prioritization was strategically aligned with long-term organizational goals.

This integration provided two main benefits. First, it reduced the risk of teams prioritizing features that were attractive on paper but infeasible to deliver within existing capacity. Second, it helped avoid the opposite pitfall of teams delivering efficiently but on features with limited strategic or market impact. By combining both perspectives, Product Owners achieved a balance between short-term execution and long-term product success.

Nonetheless, a recurring challenge was the **subjectivity of effort and impact assessments** in the Effort-Impact Matrix. Product Owners noted that team members often had different interpretations of "high effort" or "high impact," which sometimes slowed consensus. To address this, some teams

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supplemented the matrix with structured frameworks such as RICE, which introduced greater transparency and quantification into decision-making. Incremental delivery strategies were also frequently employed to manage significant, high-effort features, allowing early value delivery while deferring full implementation.

Overall, the findings suggest that successful backlog prioritization is not about selecting a single framework or metric, but about integrating multiple perspectives. This supports the central research objective of demonstrating how Agile Metrics and Business Metrics, when combined with the Effort-Impact Matrix, create a more comprehensive and practical approach to backlog prioritization.

5 Conclusion

This study investigated how Product Owners at PT. XYZ apply the Effort-Impact Matrix for backlog prioritization while integrating Agile and Business Metrics into their decision-making. The findings show that while the Effort-Impact Matrix provides a useful starting point for structuring and prioritizing backlog items, its value is significantly enhanced when complemented by Agile Metrics such as velocity, cycle time, and lead time, together with Business Metrics such as customer satisfaction, retention, and market adoption. This integration enables Product Owners to balance technical feasibility with strategic business value, resulting in more consistent and sustainable prioritization outcomes. The study contributes both practical and theoretical implications: for practitioners, it emphasizes that backlog prioritization should not be treated as an isolated exercise but as part of a broader evaluation framework that incorporates delivery capacity and business performance; for researchers, it highlights the importance of examining prioritization not only as ranking but also as a mechanism for aligning organizational strategy with Agile execution. Like all case study research, the work has limitations, particularly its focus on a single company with a limited number of participants and its reliance on written interviews, which restricts generalization and depth compared to longitudinal or observational methods. Future research should broaden the scope to multiple organizations, apply longitudinal designs to capture long-term effects, and explore decision-support technologies such as AI-driven backlog optimization to enhance prioritization practices. Overall, this study contributes to the literature by providing empirical evidence that Agile and Business Metrics can be systematically incorporated into backlog prioritization through the Effort-Impact Matrix, creating a more comprehensive framework for aligning technical execution with long-term product success.

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