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RESEARCH PAPER

Integrating Value Stream Map and Business Capability Model: A Unified Business Architecture Perspective

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Abstract

In modern technology-driven enterprises, Value Stream Map (VSM) has emerged as a critical mechanism for visualizing how organizations deliver value to customers. Yet, many enterprises overlook a vital dimension: the relationship between Value Streams and the underlying Business Capabilities from the Enterprise Business Capability Model (BCM). This paper highlights the persistent disconnect between VSM and BCM and introduces a structured framework to link them. The proposed approach demonstrates that aligning each stage of the value stream with enabling business capabilities enhances transparency, exposes capability gaps, and improves decision-making. By establishing bidirectional traceability, enterprises can achieve greater operational excellence, agility, and strategic alignment.

Keywords: Value Stream Map, Business Capability Model, Value Streams, Business Capabilities, Business Architecture

Introduction

Value Stream Map has become a cornerstone of enterprise transformation efforts, enabling enterprises to analyze the sequential flow of activities that generate customer value. By breaking down a Value Stream into Value Stream Stages, VSM helps detect inefficiencies, reduce waste, and optimize workflows.

However, despite its broad adoption, a critical gap remains, organizations rarely establish a clear connection between value-stream stages and the business capabilities that support and empower those stages [1].

A Business Capability Model provides a stable, high-level view of what an enterprise can do independently of roles, processes, or technology. Capabilities represent enduring competencies that deliver business outcomes. Without linking these business capabilities to value stream stages, organizations risk fragmentary insights, poor visibility into performance, and misaligned transformation roadmaps.

As enterprises adopt agile operating models and digital strategies, the alignment of operational tools (VSM) with strategic constructs (BCM) is no longer optional but essential. This integration provides a lens through which organizations can evaluate maturity, identify gaps, and prioritize investments.

This effort proposes a structured framework to bridge the divide between VSM and BCM. The goal is to institutionalize traceability, allowing enterprises to strengthen operational effectiveness, align business and IT, and enable continuous transformation through feedback-driven business capability refinement [2].

Literature Review

VSM, introduced as part of Lean methodology (Rother & Shook, 1998), was initially focused on manufacturing but has since expanded into IT services, healthcare, and numerous other sectors. Contemporary applications of VSM extend to business-critical information flows, making VSM a strategic tool in digital transformation initiatives.

In parallel, BCM has been established in enterprise architecture as a technology-agnostic blueprint of organizational potential [3]. Unlike processes, capabilities remain stable over time and thus are widely used for IT portfolio planning, governance, and transformation design.

Despite individual maturity, the integration of VSM and BCM is rare. While frameworks such as TOGAF [4] and the BIZBOK® Guide [5] emphasize the importance of aligning capabilities with value streams, most organizations treat the relationship conceptually rather than operationally.

Recent scholarship addresses this gap. [6] argue that while VSM detects inefficiencies, sustainable change requires strengthening underlying capabilities [7] suggest digitally enhanced VSM techniques that incorporate capability perspectives. Still, barriers remain, such as tool fragmentation (e.g., VSM in Miro/Excel vs. BCM in LeanIX/Bizzdesign) and the absence of shared vocabulary between the process team and the business architecture team.

[8] highlight the challenge of making business capability models actionable due to inconsistent implementation and lack of stakeholder engagement [9] propose embedding capabilities into interorganizational ecosystems, reflecting the need for structured integration methods to break down enterprise silos [11].

In practice, leading companies have begun using capability-driven planning alongside value streams. Yet, outside some examples, enterprises still lack systematic methods. Thus, the literature reveals a clear research gap: the absence of an operationalized framework that ensures traceability between VSM and BCM [12].

Methodology

This study adopts a conceptual modeling methodology rooted in enterprise and business architecture principles. The approach is structured into five steps:

Identify and Decompose the Value Stream - Select a representative value stream and break it into sequential stages from initiation to delivery, covering customer-facing and internal steps.

Define Business Capabilities - Construct a hierarchical BCM with Level 1 (broad areas) and Level 2 (sub-capabilities) to capture enterprise competencies [13].

Map Stages to Capabilities - Link each value stream stage with the capabilities that enable execution, establishing clear traceability.

Evaluate Traceability - Use a traceability matrix to assess coverage, gaps, and overlaps. This diagnostic analysis reveals underperformance or redundancies [14].

Visualize and Interpret - Present results through mapping diagrams, matrices, and flow charts for accessible, decision-oriented communication.

This structured methodology not only conceptualizes VSM-to-BCM alignment but also provides practical adoption guidelines through visualization and repeatability.

In addition, stakeholder feedback loops were used to iteratively refine stage–capability mapping. Workshops and review cycles were conducted to validate alignment and identify ambiguities or maturity gaps.

Assumptions, constraints, and governance considerations were explicitly documented to support replicability. These activities ensured methodological rigor and enabled consistent application across the Value Stream Map [15].

Table 1. Reference example of mapping of value stream stages to business capabilities

Value Stream Stage	**Business Capability L1**	**Business Capability L2**
Onboard Customer	Customer Management	Account Management
Process Order	Order Management	Order Fulfillment
Run Billing	Financial Management	Billing Management
Generate Invoice	Financial Management	Invoice Management
Receive Payment	Financial Management	Payment Management

Conceptual Framework

Building on the gaps identified in the literature, this study proposes a conceptual framework to systematically link Value Stream Stages with the underlying Business Capabilities. While both VSM and BCM are widely accepted tools in lean operations and enterprise architecture respectively, their integration remains largely underutilized in practice. This framework aims to bridge that gap by establishing a structured, bidirectional relationship between the flow of value and the abilities that enable value creation.

The central premise of the framework is that each stage in a value stream is enabled by one or more business capabilities. By visualizing this relationship, organizations can more effectively trace operational inefficiencies to capability gaps, and conversely, assess how improvements in specific capabilities can impact value delivery.

This integration serves multiple purposes:

- It provides strategic traceability, aligning operational activities with enterprise capabilities.
- It offers a diagnostic tool, helping practitioners identify root causes of inefficiencies beyond the value streams.
- It enables value-driven investment planning, where capability enhancements are prioritized based on their impact on critical value streams.

The proposed framework is illustrated in Figure 1. It presents a simplified conceptual model where key stages of a value stream (e.g., request, processing, output, delivery) are mapped directly to enabling business capabilities (e.g., customer engagement, order management, logistics). The horizontal arrows indicate the directional enablement while vertical mapping shows how capabilities support a value stream stage.

Figure 1. VSM to BCM Mapping

This conceptual view serves as the foundation for developing a more detailed and operationalized model in subsequent sections. It will guide the research methodology, data collection, and the validation of the proposed linkage through real-world application or expert feedback.

This integration transforms VSM from a process-improvement tool into a capability-driven decision framework, enabling organizations to align operations with strategy.

Case Illustration: Applying the Framework in a Mid-sized Enterprise

To illustrate the proposed methodology, this study examined its application within a mid-sized enterprise catering primarily to large enterprise customers. The enterprise experienced ongoing operational inefficiencies across customer-facing functions, reflected in delayed service activation, inconsistent complaint resolution timelines, and limited visibility into service request status. Leadership lacked clarity regarding whether these issues stemmed from process weaknesses, insufficient digital capabilities, or fragmented communication.

Organizational Context

The enterprise delivered services to its business customers across several functional areas, including sales, service provisioning, billing, and support. Although a Business Capability Model (BCM) had been developed earlier, it was substantially oversized, with numerous entries representing highly granular

business processes mislabeled as capabilities. This misclassification obscured the critical distinction between what the enterprise can do (capabilities) and how it executes those functions (processes).

Capability Rationalization

Through structured assessment and stakeholder workshops, the BCM was rationalized to a more concise and representative set of business capabilities. Capabilities were organized hierarchically to maintain clarity of scope and provide a stable foundation for further analysis. This rationalization exercise enabled leadership to distinguish structural competencies from operational activities, thereby improving decision-making in subsequent transformation planning.

Value Stream Definition

The organization lacked a formal understanding of Value Streams. Using internal workshops and SME interviews, five enterprise value streams were developed to represent major value delivery motions:

- Customer Service Management
- Service Provisioning
- Service Change and Upgrade
- Billing and Invoicing
- Customer Relationship and Account Management

Although five streams were defined, the proposed methodology was applied in depth to Customer Service Management, given its strong customer impact and historically high volume of complaints.

Stage Decomposition and Mapping

The Customer Service Management value stream was decomposed into sequential stages, beginning with request initiation and triage, progressing through diagnosis and resolution, and concluding with closure and customer feedback. These stages were then mapped to enabling business capabilities using a structured traceability matrix. Internal workshops and interviews validated ownership boundaries, resolved interpretation inconsistencies, and confirmed relevancy of stage–capability linkages.

Key Findings

The mapping exercise showed that most value-stream stages were supported by one or more business capabilities. However, several issues became clear:

- Some stages did not have an identified owner, so it was unclear who was responsible for getting the work done.
- Key capabilities such as Service Diagnostics and Service Assurance existed largely on paper, with limited organizational ownership, supporting processes, or tooling.
- Work often bounced between ticket-triage and field-support teams, causing delays and confusion about who should act.
- Several steps were poorly defined, leading to broken hand-offs between teams and inconsistent execution.
- Multiple disconnected systems (CRM, ticketing, workflow) made it difficult to track work from start to finish and caused data gaps.

In addition, some important capabilities were rarely used in day-to-day work, showing a disconnect between how the company was structured and how work was being delivered.

Improvement Actions and Key Recommendations

Insights from the mapping exercise helped identify and prioritize several improvement actions. First, capability ownership was clarified so that each stage of work had a clear accountable group. Second, an initiative was launched to strengthen service-assurance and diagnostic capabilities to reduce repeat issues and improve resolution quality. Third, ticket-handling steps were streamlined to reduce back-and-forth movement between teams and to make escalation paths clearer.

In addition, several broken or unclear process steps were realigned with the corresponding business capabilities to improve flow and hand-offs. Finally, the review highlighted the need to simplify the tool landscape; therefore, consolidation under an enterprise-architecture-aligned roadmap was recommended.

Overall, these steps demonstrated how capability-linked value-stream analysis can drive more structured, focused, and sustainable improvement compared to ad-hoc fixes.

Results

The application of the VSM–BCM mapping led to three key findings.

- First, most value stream stages could be clearly linked to business capabilities.
- Second, some value stream stages did not map to any business capability, showing gaps in ownership and structure.

- Third, some of the business capabilities were not actively used in day-to-day work.

These findings show that the mapping works in practice and helps identify where alignment is strong and where improvement is needed.

Discussion

The results suggest that linking value-stream stages with business capabilities improves clarity and alignment. Where mapping existed, work was easier to understand and manage. Where mapping was missing, roles and responsibilities were unclear, which can slow down delivery and harm customer experience.

The exercise also showed how capability mapping can guide improvement. Once a weak stage is identified, its related capabilities can be examined and strengthened. This creates a cycle where daily learning improves the BCM, and a better BCM supports more effective value-stream performance.

Overall, the approach helps organizations make better decisions and focus their improvement efforts.

Table 2. Comparative analysis – with vs without VSM to BCM mapping

Aspect	**Without Capability Mapping**	**With Capability Mapping**
Visibility	Limited insight into strengths	Clear insight into strengths and gaps
Decision Making	Reactive and subjective	Data-driven and strategic
Resource Allocation	Redundant efforts	Targeted investments
Transformation Readiness	Hard to prioritize	Aligned with strategic goals

Conclusion

This study demonstrates a practical way to connect value-stream stages with business capabilities. This connection improves visibility, supports better decision-making, and helps organizations understand where to invest effort. By adopting this approach, enterprises can improve performance, reduce confusion, and better align strategy with operations.

Future Research

While Future work could explore how to automate VSM–BCM mapping using enterprise tools. More case studies from other industries would help validate these findings. Further research could also examine how this approach can help identify missing business capabilities from the BCM. Finally, the use of AI to assess capability maturity and guide value-stream improvement presents an interesting opportunity.

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Disclosure of Interest

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