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Integration Mechanisms between Business Process Management and Performance Measurement Systems: A Systematic Review

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ABSTRACT

This review examines how organizations integrate Business Process Management (BPM) with Performance Measurement Systems (PMS). By analyzing 87 peer-reviewed articles published between 2010 and 2025, the study uncovers the key ideas, practical approaches, and important factors that help align process improvements with how organizations measure success. The research highlights four main ways organizations achieve this integration: aligning their structures, connecting technologies, fostering a supportive culture, and ensuring strategies are in sync. Organizations that succeed in these areas tend to perform better and make smarter decisions. The study also provides a practical framework for integration and identifies promising topics for future research.

1. Introduction

More and more organizations are realizing that true excellence means not just managing processes well, but also having solid ways to measure progress. Business Process Management (BPM) helps companies improve how work gets done, while Performance Measurement Systems (PMS) let them track progress and see what is working. Even though these two areas should fit together naturally, making them work in harmony is not always easy. As van der Aalst (2013) nicely sums up, "process management without measurement is blind, while measurement without process understanding is empty." Still, many organizations find it difficult to connect their efforts to improve processes with the systems they use to measure results (Bititci et al., 2012; Rosemann & vom Brocke, 2015).

1.1 Research Objectives

This systematic review addresses three objectives:

i. Identify the theoretical foundations underlying BPM-PMS integration.
ii. Analyse practical integration mechanisms.
iii. Synthesize critical success factors and barriers.

2. Methodology

2.1 Research Design

This study takes a thorough look at the existing research by following the systematic review approach recommended by Tranfield et al. (2003). The main steps included coming up with research questions, searching through the literature, checking the quality of the sources, pulling out key data, and then putting everything together.

2.2 Research Questions

Here are the main questions this review set out to answer:
RQ1: What theories help us understand how BPM and PMS fit together?
RQ2: What practical methods do organizations use to bring these systems together?
RQ3: What makes integration work well—or get in the way?
RQ4: What good things happen when integration succeeds?

2.3 Search Strategy and Selection

To find the most relevant studies, the review searched major databases like Web of Science, Scopus, ABI/INFORM, and Google Scholar. The search used a mix of terms about business process management (like "business process management" and "process improvement"), performance measurement (such as "performance measurement," "KPI," and "balanced scorecard"), and integration (like "integration," "alignment," and "linkage"). Starting with 1,247 articles, the review narrowed it down through careful screening and a full-text check. In the end, 87 articles made the cut—they all focused on both BPM and PMS, offered either research or practical insights, were peer-reviewed, written in English, and published between 2010 and 2025.

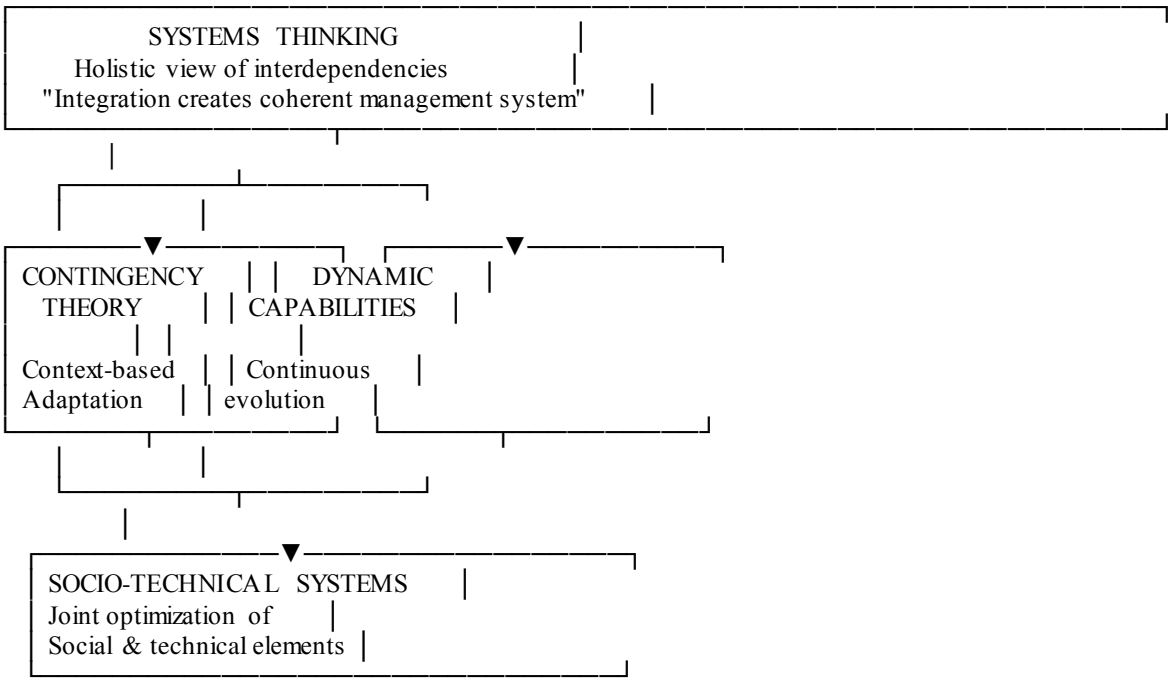
3. Theoretical Foundations

3.1 Overview

Four theoretical perspectives inform BPM-PMS integration: systems thinking, contingency theory, dynamic capabilities theory,

and socio-technical systems theory (see Figure 1).

Figure 1: Theoretical Foundations of BPM-PMS Integration



3.2 Systems Thinking

Systems thinking is all about seeing the big picture and understanding how everything connects. Bititci et al. (2012) describe performance measurement as something that works best when it is integrated into the way an organization operates. In their words, "the design and deployment of performance measures must be aligned with business processes to create a coherent system" (p. 313). Similarly, Vom Brocke et al. (2014) point out that BPM and PMS go hand-in-hand—they need to be intentionally brought together for everything to run smoothly. When these systems work in sync, organizations get useful feedback: performance data can guide process improvements in real time.

3.3 Contingency Theory

Contingency theory says there's no one-size-fits-all solution—how you integrate BPM and PMS depends on your organization. Rosemann and vom Brocke (2015) note that the best integration approach depends on things like how mature the organization is, what industry it's in, its strategy, and the technology it uses. So, what really matters? Factors like the size of the organization, how complex its processes are, how quickly things change, and the overall strategy all play a role in shaping the best approach.

3.4 Dynamic Capabilities Theory

Dynamic capabilities theory is about a company's ability to adapt and make the most of its resources. Niehaves et al. (2014) link BPM to these capabilities, suggesting that managing processes well helps organizations sense changes, seize new opportunities, and transform how they operate (p. 76). Bringing PMS into the mix makes this even stronger—it gives organizations the data they need to spot trends and make informed decisions.

3.5 Socio-Technical Systems Theory

Socio-technical systems theory looks at how people and technology work together. Mendling et al. (2018) show that successful process management means getting the right balance between technology, organizational structure, people's skills, and company culture (p. 1009).

This approach underlines that integrating roles, building skills, and creating a supportive culture are all crucial for long-term success.

4. Practical Integration Mechanisms

Four mechanism categories arise from this analysis: structural alignment, technological integration, cultural enablement, and strategic synchronization (see Table 1).

Table 1: BPM-PMS Integration Mechanisms

Category	Mechanisms	Key Enablers	Representative Literature
Structural Alignment	Process-based design Process ownership Cross-functional teams Integrated cycles	Clear accountability Governance structures Coordinated planning	Hammer (2015) Kohlbacher (2010) Burlton (2015)

Technological Integration	Integrated BPM/PMS systems Process mining BI platforms Enterprise architecture	Data integration Automation Real-time analytics	van der Aalst (2016) Dumas et al. (2018) Popovič et al. (2012)
Cultural Enablement	Process-oriented culture Data-driven decisions Continuous improvement	Leadership commitment Shared values Learning mindset	Schmiedel et al. (2014) vom Brocke & Sinnl (2011) Netland (2016)
Strategic Synchronization	Strategy deployment Balanced Scorecard Process-based planning	Strategic clarity Cascading objectives Performance dialogue	Kaplan & Norton (2008) Spanyi (2010) Harmon (2019)

4.1 Structural Alignment

Structural alignment is about setting up the right organizational connections between BPM (Business Process Management) and PMS (Performance Measurement Systems). One of the biggest steps is giving clear ownership of processes to specific people or teams. As Hammer (2015) points out, when someone is responsible for both designing and delivering results for a process, it naturally brings process management and performance measurement closer together. Another helpful practice is forming cross-functional teams. These groups bring together people with different expertise—like process specialists, measurement experts, and business leaders—to make sure measurement systems directly support process improvement. Burlton (2015) describes how business process councils help keep everyone aligned on priorities.

4.2 Technological Integration

On the technology side, modern BPM tools now often include built-in ways to track performance. Dumas et al. (2018) explain that today's BPM systems can automatically collect and analyze performance data, which saves time and provides up-to-date insights. Process mining is another key advancement. Van der Aalst (2016) shows how this technique lets organizations base their improvement decisions on real process data rather than just guesswork—giving teams a much clearer picture of what's really happening.

4.3 Cultural Enablement

Culture plays a huge role in making integration last. Schmiedel et al. (2014) found that values like customer focus, striving for excellence, taking responsibility, and working as a team all help BPM and PMS work well together. Leaders set the tone here. Vom Brocke and Sinnl (2011) point out that when leaders talk about process performance, celebrate improvements, and make resource decisions based on process metrics, they help build a culture where integration sticks.

4.4 Strategic Synchronization

Strategic synchronization is about making sure strategy and measurement move together. Kaplan and Norton (2008) talk about strategy maps as tools that clarify company goals, show which processes matter most, and set up the right metrics to track both process and strategic results. Spanyi (2010) shares examples of organizations where strategy starts with looking at current process strengths and weaknesses, then uses that understanding to define what needs to change as a top priority.

5. Success Factors and Barriers

5.1 Critical Success Factors

Research points to six things that really make integration work:

Leadership Commitment: When top leaders actively support integration, things move faster and the benefits are bigger (Rosemann and vom Brocke, 2015).

Clear Governance: Integration is much harder if it's not clear who's in charge. Burlton (2015) found that unclear governance leads to confusion and duplicated efforts.

Appropriate Technology: Good systems matter. Dumas et al. (2018) note that weak technology forces people to do things manually, causes data problems, and leads to outdated information.

Stakeholder Engagement: Getting the right people involved pays off. McCormack et al. (2009) show that organizations with strong engagement between process and measurement teams get better alignment.

Balanced Scope: Start small and build up. Rosemann and vom Brocke (2015) found that phased rollouts work better than trying to do everything at once.

Skill Development: Success requires people who understand both process management and measurement. Vom Brocke and Mendling (2018) say investing in these hybrid skills is essential.

5.2 Common Barriers

Four main challenges often get in the way:

Organizational Silos: Hammer (2015) notes that having process management and performance measurement in separate departments makes integration much harder.

Measurement Complexity: Neely et al. (2000) warn that creating too many metrics can overwhelm people and make things more confusing instead of clearer.

Data Quality Issues: Popovič et al. (2012) stress that bad data undermines confidence and makes it tough to make good decisions.

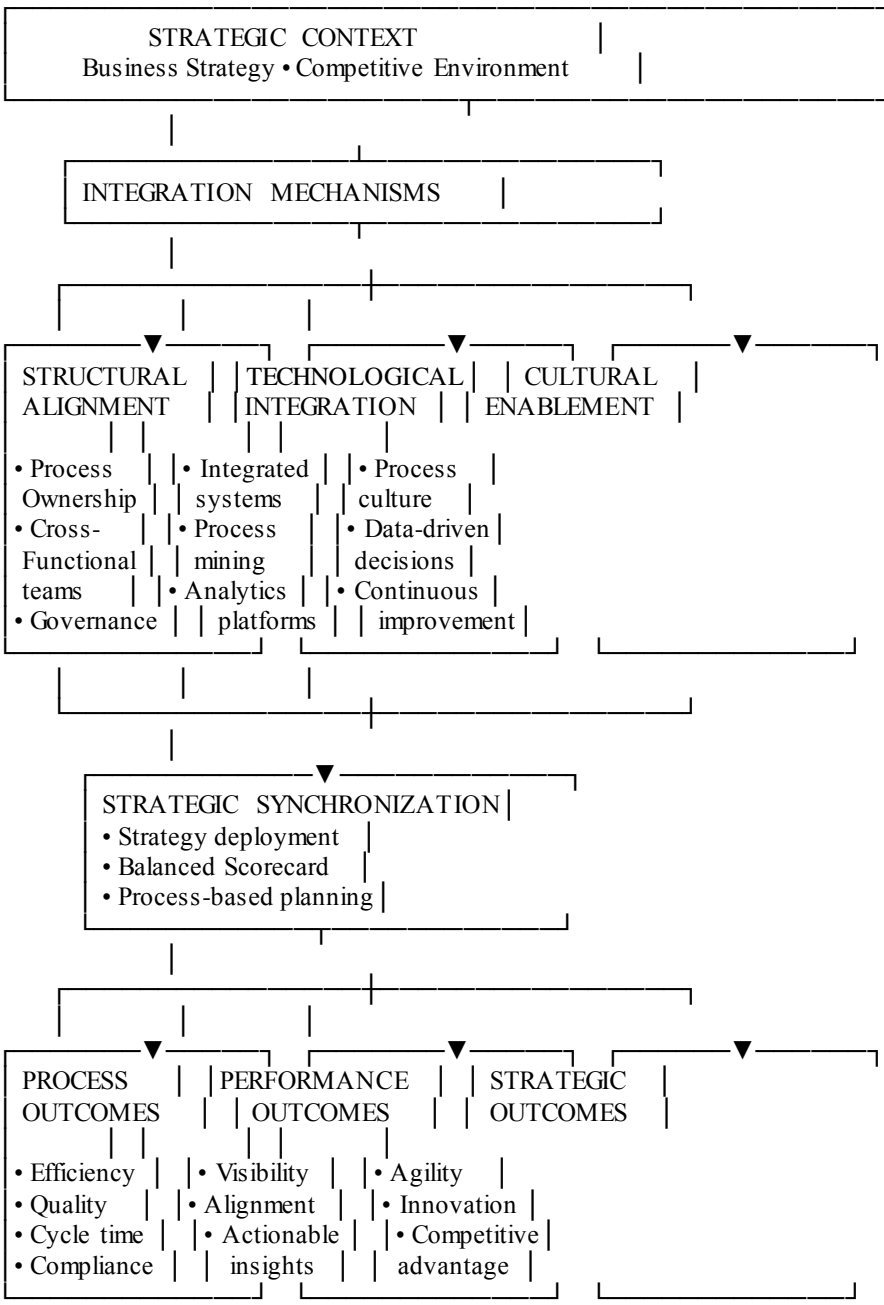
Change Resistance: Resistance to change is common, especially when integration threatens existing power structures, increases accountability, or requires new skills.

6. Integration Framework and Outcomes

6.1 Comprehensive Integration Framework

Based on synthesis of reviewed literature, Figure 2 presents a comprehensive framework for BPM-PMS integration.

Figure 2: Comprehensive BPM-PMS Integration Framework



6.2 Integration Outcomes

The literature documents multiple outcome categories from effective integration (see Table 2).

Table 2: Documented Outcomes of BPM-PMS Integration

Outcome Category	Specific Benefits	Supporting Evidence
Operational Performance	Improved efficiency (15-30%) Reduced cycle times Enhanced quality Lower costs	Kohlbacher (2010) Trkman (2010) McCormack et al. (2009)

Decision Quality	Data-driven decisions Faster problem resolution Better resource allocation Reduced uncertainty	Popovič et al. (2012) Eckerson (2010) Davenport & Harris (2017)
Strategic Alignment	Clearer strategy translation Improved goal cascading Enhanced accountability Strategic focus	Kaplan & Norton (2008) Spanyi (2010) Harmon (2019)
Organizational Agility	Faster adaptation Innovation capability Continuous improvement Change readiness	Niehaves et al. (2014) Kohlborn et al. (2014) Netland (2016)
Customer Satisfaction	Improved service delivery Faster response times Enhanced reliability Better experiences	Schmiedel et al. (2020) Burlton (2015)

Kohlbacher (2010) found that organizations focused on processes—and that use measurement systems well—see about 22% better operational performance. In the same vein, Trkman (2010) shows that aligning BPM and PMS is strongly linked to greater organizational success.

7. Discussion and Implications

7.1 Theoretical Contributions

This review makes three main contributions on the theory side:

Integrated Theoretical Framework: The study brings together four major perspectives to explain why integration matters (systems thinking), how to tailor it to each situation (contingency theory), how it helps organizations adapt (dynamic capabilities), and how social and technical aspects need to work together (socio-technical systems).

Mechanism Taxonomy: The four categories—structural, technological, cultural, and strategic—help explain the different ways integration can happen and how these approaches connect.

Outcome Model: The model shows how integration makes a difference at several levels: day-to-day operations, overall strategy, and organization-wide performance.

7.2 Practical Implications

For people working in organizations, here are some practical takeaways:

Start with Strategic Clarity: Get clear about the organization's main goals and which processes need better measurement.

Adopt Phased Approaches: Instead of trying to overhaul everything at once, start with focused pilots that prove value and then expand from there.

Balance Multiple Mechanisms: Pay attention to structure, technology, culture, and strategy all at once for the best results.

Invest in Capabilities: Make sure teams have the right mix of process and measurement expertise.

Ensure Leadership Commitment: Strong support from leaders is key to overcoming resistance and keeping things moving.

7.3 Limitations

Like any review, this one has some limits. The search was thorough but might have missed studies in other languages or unpublished work. Assessing quality can also be somewhat subjective. Plus, since BPM and PMS are changing fast, some new developments may not be fully captured.

Most of the research looks at big organizations in developed countries, which means findings might not apply everywhere—like in small businesses or emerging markets. Finally, combining lots of different study types and contexts can sometimes blur the finer details.

8. Future Research Directions

The review points to several areas that would benefit from more research:

8.1 Digital Transformation Context

New digital technologies are changing the way BPM and PMS can be integrated. Future studies should look at how things like AI, machine learning, and automation open up new possibilities for integration and measurement. Schmiedel et al. (2020) point out that digital maturity leads to real-time, automatic, and predictive measurement, but there isn't a lot of research on this yet.

8.2 Sustainability and ESG Integration

As organizations focus more on environmental, social, and governance (ESG) performance, there are new challenges for integration. Research should explore how sustainability metrics fit into process management and what helps ESG, BPM, and PMS work together.

8.3 Dynamic and Agile Contexts

Most research so far assumes things stay pretty stable. But organizations in fast-changing or agile environments face unique integration challenges. More research is needed on how to keep BPM and PMS aligned while everything else is shifting.

8.4 Cross-Organizational Integration

More collaboration across supply chains and organizational networks means integration now crosses organizational boundaries. Studies should look at how governance, measurement, and process improvement work in these multi-party situations.

8.5 Human and Social Dimensions

While theory says people matter, most research focuses on the technical side. We need more studies on human factors, behaviors, and the social side of integration.

8.6 Longitudinal Studies

Most research takes a snapshot in time. Long-term studies that track integration as it evolves would offer insight into what makes integration last and how it matures.

9. Conclusion

This review looked at how organizations bring together Business Process Management and Performance Measurement Systems. Analyzing 87 studies, it highlights the key theories, practical ways integration happens, what helps or hinders success, and the positive outcomes that can result. The big takeaway is that integrating BPM and PMS is a complex challenge that touches structure, technology, culture, and strategy. Organizations that do it well use several mutually reinforcing approaches, learn from systems thinking, adapt to their context, keep evolving, and strike a balance between people and technology.

Success comes down to leadership support, clear rules and roles, the right technology, involving all the right people, rolling out changes in phases, and helping teams develop the right skills. The biggest barriers are silos between departments, too many or confusing measurements, poor data, and resistance to change. When organizations get integration right, they see real benefits—like better performance, smarter decisions, stronger alignment between goals and actions, more agility, and happier customers. But these gains take commitment and ongoing investment in skills and systems.

As the business world gets more complex and competitive, being able to connect how you manage processes with how you measure results becomes more important than ever. This review offers a roadmap for doing just that and points to where future research can help organizations go even further.

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