

Strategic Project Leadership: Integrating and Operationalizing Workforce Sustainability in Project Governance ¹

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Abstract

Project environments have become increasingly uncertain due to economic volatility, supply chain disruptions, technological change, and workforce instability. Traditional project management frameworks primarily evaluate success through cost, schedule, and scope performance — the “iron triangle.” While these dimensions remain essential, they provide limited guidance regarding workforce continuity during adverse project conditions. This paper introduces and operationalizes the Strategic Project Leadership Model (SPLM), a project governance framework that integrates workforce sustainability into project decision-making as a fourth dimension of project success, alongside cost, schedule, and scope.

The paper first reviews literature on project success, risk management, organizational resilience, and workforce sustainability, identifying a gap: existing frameworks do not explicitly treat workforce preservation as a project governance objective during periods of adversity. SPLM addresses this gap through a proactive approach that seeks to minimize financial losses while preserving the maximum feasible workforce, emphasizing contingency preparation, organizational resilience, and balanced decision-making rather than reactive workforce reductions.

The paper then operationalizes SPLM through a mathematical decision-support framework consisting of ten equations spanning financial capacity, workforce preservation, and organizational resilience, culminating in a composite SPLM Performance Indicator (SPI SPLM). A comprehensive numerical example — a \$50 million manufacturing expansion project with an 800-employee workforce facing a \$5 million cost overrun — demonstrates that a traditional response would have required a workforce reduction of 300 employees (37.5%), whereas the SPLM-guided process, after evaluating financial mitigation measures, limits the reduction to 106 employees (13.25%), preserving 694 employees and avoiding an estimated \$3.88 million in future recruitment and training costs. A sensitivity analysis confirms the framework’s outputs respond

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predictably to changes in financial loss severity and to the weighting assumptions used in the Organizational Resilience Index.

This paper contributes to project management literature by introducing workforce sustainability as an explicit governance consideration, extending traditional definitions of project success, and providing a quantitative, replicable mechanism for balancing financial and workforce outcomes under uncertainty. The paper concludes that workforce sustainability represents an increasingly important dimension of project success and identifies opportunities for empirical validation and practical implementation.

Keywords: Strategic Project Leadership Model, Workforce Sustainability, Project Governance, Organizational Resilience, Financial Sustainability, Workforce Preservation

1. Introduction

Project environments have become increasingly complex due to globalization, technological advancement, supply chain dependencies, labor shortages, economic uncertainty, and rapidly changing organizational conditions. Modern projects frequently encounter cost overruns, schedule delays, resource shortages, and unforeseen disruptions that threaten both organizational performance and workforce stability. Traditional project management frameworks have historically evaluated success according to cost, schedule, and scope performance — the iron triangle (Atkinson, 1999; PMI, 2021). Although these dimensions remain important, scholars increasingly recognize that project success extends beyond operational performance to include stakeholder satisfaction, organizational value, and long-term sustainability (Shenhar & Dvir, 2007).

One consequence of project disruption that receives comparatively limited attention within project management literature is workforce instability. Organizations frequently respond to adverse project conditions through layoffs, hiring freezes, contractor terminations, and workforce reductions. Although these actions may generate short-term financial benefits, they may also produce long-term organizational consequences, including loss of institutional knowledge, reduced employee morale, and increased future recruitment costs (Cascio, 2002; Brockner, 1988). Existing project management frameworks provide extensive guidance regarding cost control, schedule management, and risk mitigation, but they do not explicitly incorporate workforce preservation as a project governance objective.

This paper introduces and operationalizes the Strategic Project Leadership Model (SPLM), a framework that integrates workforce sustainability into project governance. The paper proceeds in two parts. The first part establishes the conceptual foundation of SPLM: it reviews relevant literature, identifies the research gap, and defines the model's guiding principles and redefinition

of project success. The second part operationalizes SPLM through a mathematical decision-support framework — defining measurable indicators, an objective function, and a six-stage decision process — and demonstrates the framework through a comprehensive numerical example and sensitivity analysis.

This paper contributes to project management literature in four ways:

- It introduces workforce sustainability as an explicit project governance consideration.
- It extends traditional measures of project success beyond cost, schedule, and scope.
- It proposes a conceptual framework that integrates financial sustainability, workforce continuity, and organizational resilience.
- It operationalizes the framework through measurable indicators, a defined objective function, and a worked numerical example with sensitivity testing.

The central research question addressed by this paper is: how can organizations minimize financial losses while preserving the maximum feasible workforce during adverse project conditions? Importantly, SPLM does not guarantee workforce preservation or eliminate layoffs; instead, it seeks to determine the maximum achievable workforce preservation while maintaining financial sustainability and organizational viability.

2. Literature Review

2.1 Project Success Beyond the Iron Triangle

Project success has traditionally been evaluated according to cost, schedule, and scope performance, commonly known as the iron triangle (Atkinson, 1999). For several decades these dimensions have served as the primary indicators of project performance and remain central to contemporary project management practice (PMI, 2021). However, numerous scholars have argued that project success extends beyond these traditional measures. Shenhar and Dvir (2007) proposed a multidimensional approach that includes business success, customer satisfaction, organizational impact, and preparation for future opportunities. Similarly, Jugdev and Müller (2005) observed that project success has evolved from narrow operational metrics toward broader organizational and stakeholder perspectives.

Atkinson (1999) further criticized the limitations of the iron triangle, arguing that organizational learning, information quality, stakeholder satisfaction, and long-term benefits should also be considered. Contemporary projects increasingly operate within environments characterized by uncertainty, interdependence, and multiple stakeholder interests (Freeman, 1984), making broader measures of success necessary. Collectively, the literature suggests that traditional

measures of project success remain important but may no longer adequately capture the full organizational consequences of project outcomes.

2.2 Risk Management and Organizational Resilience

Project risk management has become an essential component of modern project governance. The Project Management Institute (2021) emphasizes the identification, assessment, and mitigation of risks throughout the project lifecycle. Flyvbjerg (2014) demonstrated that many large projects experience significant cost overruns and schedule delays due to optimism bias and inadequate risk assessment, with similar findings reported across construction, manufacturing, infrastructure, and information technology projects.

Organizational resilience has also emerged as an important area of management research. Lengnick-Hall et al. (2011) describe resilience as an organization's ability to anticipate, adapt, and recover from disruptions, while Sutcliffe and Vogus (2003) similarly argue that resilient organizations possess capabilities that enable sustained performance under adverse conditions. Although these studies contribute significantly to understanding uncertainty and disruption, existing risk management frameworks primarily focus on financial, technical, operational, and schedule risks; workforce continuity has received comparatively limited attention within project risk management practice.

2.3 Workforce Sustainability and Human Capital

Human capital represents one of the most valuable organizational resources. Employees contribute technical expertise, organizational knowledge, institutional memory, and operational capabilities that are often difficult to replace. Research on workforce reductions suggests that layoffs frequently produce unintended consequences: Cascio (2002) reported that workforce reductions may reduce productivity, increase turnover, and damage organizational morale, while Brockner (1988) found that layoffs negatively affect trust, commitment, and employee engagement among surviving workers.

Workforce sustainability emphasizes employee retention, organizational learning, capability development, and long-term workforce planning. Nevertheless, these concepts have traditionally been examined within human resource management and organizational behavior literature rather than project management research. Project environments frequently involve temporary teams, contractors, and dynamic resource allocation; during periods of uncertainty, workforce decisions often become secondary to cost and schedule concerns, so workforce continuity remains insufficiently represented within project governance frameworks.

2.4 Synthesis of the Literature

Three observations emerge from the reviewed literature. First, project success has evolved beyond the traditional iron triangle toward broader measures of organizational and stakeholder value. Second, organizational resilience and risk management have become increasingly important within uncertain project environments. Third, workforce sustainability has emerged as a significant organizational concern but remains largely disconnected from project governance and project success measurement.

Although these research streams have advanced independently, limited research has attempted to integrate financial sustainability, workforce continuity, and organizational resilience within a unified project governance framework. This gap establishes the theoretical foundation for SPLM, which seeks to integrate workforce sustainability into project decision-making and governance practice.

3. Research Gap and the Need for SPLM

Traditional project management frameworks continue to emphasize cost, schedule, and scope as primary indicators of project success (Atkinson, 1999; PMI, 2021). Although contemporary studies recognize stakeholder satisfaction, strategic alignment, and organizational value, workforce continuity receives comparatively limited attention. Risk management frameworks provide extensive guidance for identifying and mitigating financial, technical, operational, and schedule-related risks, but these approaches rarely address workforce preservation as a decision-making objective during adverse project conditions (Kerzner, 2022).

Organizational resilience literature emphasizes adaptability, preparedness, and recovery capabilities (Lengnick-Hall et al., 2011), yet it generally provides limited project-level guidance regarding workforce decisions during periods of uncertainty. Likewise, workforce sustainability research focuses primarily on employee well-being, retention, organizational learning, and human resource management practices — concepts that have developed largely outside the field of project management and remain insufficiently integrated within project governance processes. As a result, existing frameworks often address financial sustainability and workforce sustainability as separate organizational concerns, and during project adversity, organizations frequently prioritize short-term financial performance without systematically evaluating the long-term consequences of workforce reductions.

Existing project management frameworks provide limited mechanisms for simultaneously evaluating financial sustainability, workforce continuity, organizational resilience, and project viability. More importantly, existing frameworks do not explicitly incorporate workforce

preservation as a project governance objective — this represents the central research gap addressed by this paper.

Consequently, the primary contribution of SPLM can be summarized as follows:

The Strategic Project Leadership Model introduces workforce sustainability as a project governance objective and proposes that project success should include the ability to minimize financial losses while preserving the maximum feasible workforce under adverse project conditions.

Importantly, SPLM does not replace project risk management, human resource management, or organizational resilience frameworks. Instead, it integrates workforce sustainability into project governance while maintaining financial sustainability and organizational viability.

4. Contributions of the Strategic Project Leadership Model

Contribution 1: Introduction of Workforce Sustainability into Project Governance

Existing project management frameworks primarily emphasize cost, schedule, scope, risk, and stakeholder management. SPLM introduces workforce sustainability as an explicit project governance objective and proposes that workforce continuity should be considered during project planning, risk assessment, and organizational decision-making.

Contribution 2: Extension of Project Success Criteria

Traditional definitions of project success have largely focused on the iron triangle of cost, schedule, and scope (Atkinson, 1999). SPLM further extends project success by proposing workforce sustainability as an additional dimension of project performance: successful projects should not only achieve operational objectives but also preserve organizational capabilities and workforce continuity whenever feasible.

Contribution 3: Integration of Financial and Workforce Sustainability

Existing frameworks often address financial sustainability and workforce sustainability independently. SPLM integrates these dimensions and proposes that financial performance and workforce preservation should be evaluated simultaneously, supporting balanced decision-making during periods of uncertainty.

Contribution 4: An Operational, Quantitative Decision-Support Mechanism

Beyond its conceptual contribution, this paper operationalizes SPLM through measurable indicators, a defined mathematical objective function, and a structured six-stage decision

process, demonstrated through a comprehensive numerical example. This transforms workforce sustainability from a conceptual principle into a decision-support tool usable by project leaders.

SPLM does not replace project management methodologies, risk management practices, human resource management, or organizational resilience frameworks; it complements these approaches by introducing workforce sustainability into project governance. Table 1 summarizes the distinctive characteristics of SPLM relative to traditional project management.

Table 1. Distinctive Features of SPLM

Dimension	Traditional Project Management	SPLM
Cost Performance	Yes	Yes
Schedule Performance	Yes	Yes
Scope Performance	Yes	Yes
Risk Management	Yes	Yes
Workforce Sustainability	Limited	Explicit
Organizational Resilience	Partial	Integrated
Workforce Preservation	Reactive	Proactive
Decision Focus	Financial Outcomes	Financial and Workforce Outcomes

Note: The comparative descriptors above (e.g., Limited/Explicit, Partial/Integrated, Reactive/Proactive) are conceptual distinctions; quantitative support for this comparison, including a worked numerical example, is presented in Sections 7–9.

5. The Strategic Project Leadership Model: Conceptual Foundation

The Strategic Project Leadership Model (SPLM) is a workforce-oriented project governance framework designed to support organizational decision-making during adverse project conditions. The framework addresses the growing need for project approaches that extend beyond traditional measures of cost, schedule, and scope by incorporating workforce sustainability into project governance. Its central premise is that organizations should seek to minimize financial losses while simultaneously preserving the maximum feasible workforce during periods of project uncertainty.

Rather than treating workforce reductions as unavoidable responses to adverse conditions, SPLM promotes proactive planning, contingency preparation, and balanced decision-making. The

framework recognizes that projects operate within environments characterized by uncertainty, competing stakeholder interests, resource limitations, and changing organizational priorities. Consequently, project success should reflect not only technical performance but also workforce continuity and organizational resilience.

5.1 Core Principles of SPLM

- Principle 1 — Workforce as a Strategic Asset: Employees and contractors contribute knowledge, technical expertise, organizational memory, and operational capabilities. Workforce reductions may generate long-term consequences that extend beyond immediate financial savings.
- Principle 2 — Proactive Risk Preparation: Organizations should identify foreseeable disruptions during project planning and establish appropriate contingency mechanisms before adverse conditions occur.
- Principle 3 — Financial Sustainability: Projects must remain financially viable. SPLM does not advocate unlimited workforce preservation but seeks to balance workforce continuity with organizational sustainability.
- Principle 4 — Organizational Resilience: Resilient organizations possess the ability to anticipate, adapt, and recover from disruptions. Workforce continuity contributes to resilience by preserving organizational capabilities and institutional knowledge.
- Principle 5 — Integrated Decision-Making: Financial outcomes and workforce outcomes should be evaluated simultaneously, considering both organizational and human consequences.

5.2 Redefining Project Success

Traditional project management frameworks evaluate success according to cost, schedule, and scope performance (Atkinson, 1999; PMI, 2021). SPLM proposes that project success should include four dimensions:

- Cost Performance
- Schedule Performance
- Scope Achievement
- Workforce Sustainability

By incorporating workforce sustainability, SPLM extends traditional project success criteria and aligns project outcomes with long-term organizational objectives.

5.3 Workforce Sustainability as a Governance Objective

Workforce sustainability refers to an organization's ability to preserve workforce continuity while maintaining financial viability during adverse project conditions. Importantly, the framework does not assume that all layoffs can be avoided. Instead, SPLM seeks to identify the maximum feasible workforce preservation achievable under existing financial constraints — workforce reductions become a final response rather than an initial reaction.

5.4 Organizational Implications

The implementation of SPLM may provide several organizational benefits:

- Improved workforce stability
- Enhanced organizational resilience
- Reduced knowledge loss
- Lower recruitment and training costs
- Greater stakeholder confidence
- Improved long-term organizational performance

This proactive orientation is consistent with change-management research suggesting that organizations navigate disruption more effectively when leaders act ahead of a crisis rather than in reaction to it (Kotter, 1996).

5.5 Conceptual Representation of SPLM

SPLM can be conceptually represented through the interaction of three complementary dimensions — Financial Sustainability, Workforce Sustainability, and Organizational Resilience — which collectively support balanced project decision-making. Accordingly, SPLM may be defined as follows:

The Strategic Project Leadership Model is a project governance framework that seeks to minimize financial losses while preserving the maximum feasible workforce under adverse project conditions.

6. Practical Applications of SPLM

SPLM has potential applications across industries characterized by project uncertainty, workforce dependency, and financial constraints. It is particularly relevant in environments where workforce knowledge, technical expertise, and organizational continuity significantly influence project success.

Manufacturing Projects

Manufacturing organizations frequently experience supply chain disruptions, fluctuating material costs, labor shortages, and market uncertainty. SPLM may assist by encouraging proactive contingency planning and workforce preservation strategies before adverse conditions occur, reducing future recruitment costs and supporting long-term competitiveness.

Construction and Infrastructure Projects

Construction projects commonly encounter cost overruns, schedule delays, material shortages, and changing stakeholder requirements, often creating workforce instability among contractors and temporary employees. SPLM provides a framework for evaluating workforce implications alongside financial decisions.

Information Technology Projects

Technology projects operate in rapidly changing environments characterized by evolving requirements, specialized expertise, and high employee mobility. SPLM may assist technology organizations in preserving critical knowledge resources while maintaining financial sustainability during periods of uncertainty.

Healthcare and Medical Device Projects

Healthcare and medical device organizations depend heavily on specialized skills, regulatory knowledge, and technical expertise. By emphasizing workforce continuity, SPLM may support organizational resilience and reduce the loss of specialized knowledge.

Public Sector Projects

Government and public-sector projects frequently operate under budget limitations, political pressures, and changing policy environments. SPLM may assist public organizations in evaluating workforce implications while maintaining fiscal responsibility.

Across these industries, SPLM encourages organizations to view employees and contractors as strategic assets rather than variable costs, promoting balanced decision-making that simultaneously considers financial sustainability, workforce continuity, organizational resilience, and long-term project success.

7. Mathematical Framework of SPLM

SPLM operationalizes workforce sustainability through a quantitative decision-support framework consisting of five components: Financial Capacity, Workforce Capacity, Workforce Preservation, Organizational Resilience, and Overall SPLM Performance. The framework does not

assume that all workforce reductions can be prevented; instead, it seeks to determine the maximum feasible workforce preservation achievable while maintaining organizational viability.

7.1 Fundamental Variables

Table 2. Variables Used in SPLM

Symbol	Full Form	Unit
TB	Total Budget	Dollars (\$)
CR	Contingency Reserve	Dollars (\$)
AC	Actual Cost	Dollars (\$)
AFC	Available Financial Capacity	Dollars (\$)
TW	Total Workforce	Employees
PW	Preserved Workforce	Employees
LW	Lost Workforce	Employees
WPP	Workforce Preservation Percentage	%
WLP	Workforce Loss Percentage	%
FPP	Financial Protection Percentage	%
WSI	Workforce Sustainability Index	Index
ORI	Organizational Resilience Index	Index
SPI SPLM	SPLM Performance Indicator	Index

7.2 Equations

Equation 1 — Contingency Reserve

$$CR = TB \times r$$

where r = risk allocation percentage. Determines the financial protection available during adverse conditions.

Equation 2 — Available Financial Capacity

$$AFC = TB + CR$$

Identifies the maximum financial resources available before workforce decisions become necessary.

Equation 3 — Financial Loss

$$FL = AC - TB$$

Measures the magnitude of cost overruns.

Equation 4 — Workforce Loss

$$LW = TW - PW$$

Determines the number of employees affected during adverse conditions.

Equation 5 — Workforce Preservation Percentage

$$WPP = (PW / TW) \times 100$$

A higher value indicates stronger workforce preservation.

Equation 6 — Workforce Loss Percentage

$$WLP = (LW / TW) \times 100$$

Lower values indicate better workforce outcomes.

Equation 7 — Financial Protection Percentage

$$FPP = [(CR - FL) / CR] \times 100$$

Evaluates how effectively the contingency reserve absorbed the financial loss.

Equation 8 — Workforce Sustainability Index

$$WSI = PW / TW$$

WSI = 1.0 indicates complete preservation; WSI = 0 indicates total workforce loss.

Equation 9 — Organizational Resilience Index

$$ORI = (WPP + FPP) / 2$$

Combines financial and workforce performance; equal weighting is adopted as a neutral baseline in the absence of empirical calibration. Future research may apply structured weighting methods, such as Saaty's (1980) Analytic Hierarchy Process, to derive industry-specific weightings.

Equation 10 — SPLM Performance Indicator

$$SPI\ SPLM = (WSI + ORI) / 2$$

Evaluates the overall effectiveness of SPLM.

7.3 Mathematical Objective of SPLM

The objective function of SPLM is to maximize Preserved Workforce subject to:

$$Actual\ Cost \leq Available\ Financial\ Capacity$$

$$Preserved\ Workforce \leq Total\ Workforce$$

This objective ensures that workforce preservation remains financially sustainable. Unlike traditional cost-control approaches, SPLM simultaneously evaluates financial protection, workforce preservation, and organizational resilience — enabling balanced project decision-making rather than purely financial decision-making. Importantly, SPLM does not guarantee workforce preservation; it identifies the maximum feasible workforce retention achievable under existing financial conditions.

7.4 The SPLM Decision Process

The SPLM decision process consists of six sequential stages:

- Stage 1: Project Planning: Organizations determine project budget, workforce requirements, and project risks.
- Stage 2: Contingency Preparation: A contingency reserve is allocated based upon identified risks.
- Stage 3: Adverse Conditions: Unexpected events such as inflation, delays, supply chain disruptions, or market changes affect project performance.
- Stage 4: Financial Evaluation: The organization evaluates available financial resources, cost overruns, and financial protection.
- Stage 5: Workforce Evaluation: Project leaders determine the maximum feasible workforce preservation achievable under existing financial conditions.
- Stage 6: Organizational Decision: Corrective actions may include cost optimization, schedule adjustments, resource reallocation, and workforce preservation measures.

This process enables organizations to balance financial sustainability and workforce continuity rather than relying exclusively on workforce reductions.

8. Comprehensive Numerical Example

A multinational manufacturing organization is executing a project to expand its production capacity through the installation of automated production equipment, facility modernization, and supply chain integration. The approved project budget is \$50 million, and the project requires a workforce consisting of operators, technicians, engineers, managers, and contractors.

During project execution, the organization experiences several unforeseen events, including inflation in raw material prices, increased equipment procurement costs, higher logistics expenses, and project schedule delays. Under traditional project management practice, management proposes significant workforce reductions to compensate for the resulting financial shortfall. Instead, the organization applies SPLM to evaluate financial mitigation measures before determining the minimum workforce reduction required to maintain project viability.

Note: the financial values and mitigation measures presented in this case study are illustrative assumptions created solely to demonstrate the operational application of SPLM and should not be interpreted as universal values applicable to all projects.

Step 1 — Total Workforce

Employee Category	Number of Employees
Operators	300
Technicians	250
Engineers	100
Managers	50
Contractors	100
Total Workforce (TW)	800

$TW = 300 + 250 + 100 + 50 + 100 = 800$ employees.

Step 2 — Approved Project Budget

Cost Component	Planned Cost (USD)
Materials	\$20,000,000
Labor	\$15,000,000
Equipment	\$10,000,000

Cost Component	Planned Cost (USD)
Logistics	\$3,000,000
Administration	\$2,000,000
Total Budget (TB)	\$50,000,000

Step 3 — Contingency Reserve

Management allocates a contingency reserve equal to 15% of the approved budget ($r = 0.15$):

$$CR = 50,000,000 \times 0.15 = \$7,500,000$$

Step 4 — Available Financial Capacity

$$AFC = 50,000,000 + 7,500,000 = \$57,500,000$$

Step 5 — Adverse Project Conditions

During execution, the organization experiences a rise in steel and raw material prices due to inflation, increased equipment procurement costs from supplier price revisions, higher logistics costs from transportation disruptions, and additional delay costs caused by supply chain interruptions.

Step 6 — Actual Project Cost

Cost Component	Planned Cost	Actual Cost	Increase
Materials	\$20,000,000	\$22,000,000	\$2,000,000
Labor	\$15,000,000	\$15,000,000	\$0
Equipment	\$10,000,000	\$11,000,000	\$1,000,000
Logistics	\$3,000,000	\$4,000,000	\$1,000,000
Administration & Delay Costs	\$2,000,000	\$3,000,000	\$1,000,000
Total	\$50,000,000	\$55,000,000	\$5,000,000

Actual Cost (AC) = \$55,000,000, a total cost increase of \$5 million compared with the original approved budget.

Step 7 — Financial Loss

$$FL = 55,000,000 - 50,000,000 = \$5,000,000$$

Step 8 — Financial Protection Percentage

$$FPP = [(7,500,000 - 5,000,000) / 7,500,000] \times 100 = 33.33\%$$

This indicates that one-third of the contingency reserve remains available after absorbing the project cost overrun.

Step 9 — Traditional Project Management Decision

Under traditional practice, management initially estimates that approximately 300 positions would need to be eliminated to recover the projected financial shortfall if no additional financial mitigation strategies are implemented:

$$PW(\text{traditional}) = 500; LW(\text{traditional}) = 800 - 500 = 300$$

Step 10 — SPLM Financial Mitigation Strategy

Unlike the traditional approach, SPLM evaluates alternative financial mitigation measures before recommending workforce reductions.

Table 3. Illustrative Financial Mitigation Measures

Mitigation Strategy	Estimated Savings (USD)
Procurement renegotiation	\$800,000
Schedule optimization	\$700,000
Resource reallocation	\$500,000
Contractor redistribution	\$400,000
Administrative cost reduction	\$600,000
Total Estimated Savings (MS)	\$3,000,000

Note: the mitigation savings shown are illustrative assumptions developed solely for this case study; actual savings will depend on project characteristics, contractual arrangements, market conditions, and managerial decisions.

Step 11 — Remaining Financial Gap

$$\text{Remaining Financial Gap} = 5,000,000 - 3,000,000 = \$2,000,000$$

Step 12 — Workforce Reduction Required

The average project employment cost associated with one workforce position is assumed to be \$18,750. The required workforce reduction is derived from the remaining financial gap and this assumed average employment cost:

$$LW = 2,000,000 / 18,750 \approx 106 \text{ employees}$$

Step 13 — Workforce Preserved

$$PW = 800 - 106 = 694 \text{ employees}$$

Step 14 — Workforce Preservation Percentage

$$WPP = (694 / 800) \times 100 = 86.75\%$$

Step 15 — Workforce Loss Percentage

$$WLP = (106 / 800) \times 100 = 13.25\%$$

Step 16 — Workforce Sustainability Index

$$WSI = 694 / 800 = 0.8675$$

A value approaching 1.00 indicates a high level of workforce continuity; 0.00 would indicate complete workforce loss.

Step 17 — Organizational Resilience Index

For demonstration purposes, equal weighting between workforce and financial performance is assumed as a neutral baseline; Saaty's (1980) Analytic Hierarchy Process offers one structured method for deriving alternative, industry-specific weightings in future applications.

$$ORI = (86.75 + 33.33) / 2 = 60.04$$

Step 18 — SPLM Performance Indicator

$$SPLM = (WPP + FPP + ORI) / 3 = (86.75 + 33.33 + 60.04) / 3 = 60.04$$

This indicator is intended as a summary measure for comparative evaluation within the proposed framework.

Step 19 — Additional Employees Preserved

$$\text{Employees Saved} = 694 - 500 = 194$$

SPLM preserves an additional 194 employees compared to the traditional project management approach.

Step 20 — Recruitment and Training Cost Avoided

Assuming an average replacement cost of \$20,000 per employee:

$$RCA = 194 \times 20,000 = \$3,880,000$$

Step 21 — Comparative Analysis

Table 4. Traditional Project Management versus SPLM

Performance Measure	Traditional PM	SPLM
Total Workforce	800	800
Workforce Preserved	500	694
Workforce Reduced	300	106
Workforce Preservation Rate	62.5%	86.75%
Workforce Reduction Rate	37.5%	13.25%
Financial Loss	\$5,000,000	\$5,000,000
Mitigation Savings	Not Evaluated	\$3,000,000
Additional Employees Preserved	0	194
Recruitment Cost Avoided	—	\$3,880,000

Table 5. Final Results Summary

Indicator	Result
Total Workforce	800 employees
Workforce Preserved	694 employees
Workforce Reduced	106 employees
Additional Employees Preserved	194 employees
Workforce Preservation Percentage	86.75%
Workforce Loss Percentage	13.25%

Indicator	Result
Financial Loss	\$5,000,000
Financial Protection Percentage	33.33%
Organizational Resilience Index	60.04
SPLM Performance Indicator	60.04
Recruitment and Training Cost Avoided	\$3,880,000

This illustrative case study demonstrates that a traditional approach proposed reducing the workforce by 300 employees, whereas the SPLM process — after evaluating financial mitigation measures before considering workforce reductions — reduced the required workforce reduction to 106 employees, preserving 694 of the original 800 employees, an 86.75% preservation rate, and avoiding an estimated \$3.88 million in future recruitment and training costs. The numerical example is intended to demonstrate the application of the framework and should not be interpreted as evidence that identical outcomes will occur across all projects; results will depend on project-specific financial conditions, workforce composition, and the effectiveness of available mitigation measures.

9. Sensitivity of Results to Key Assumptions

The numerical example above relies on a single set of illustrative assumptions. To test whether the framework's conclusions hold beyond this one scenario, Table 6 compares the base case against two alternative conditions: a larger cost overrun that exceeds the available contingency reserve, and an alternative Organizational Resilience Index weighting that favors workforce preservation over financial protection.

Table 6. Sensitivity Analysis of SPLM Outputs Under Alternative Assumptions

Scenario	Assumption Changed	WPP	SPI SPLM
Base case	Financial Loss = \$5.0M; ORI weighting 50/50	86.75%	60.04
Higher financial loss	Financial Loss increased to \$9.0M (exceeds \$7.5M Contingency Reserve)	Approx. 70–75% (larger workforce reduction required)	Lower; FPP becomes negative, indicating the reserve was fully exhausted
Workforce-weighted ORI	ORI weighting changed to 70% workforce / 30% financial	86.75% (unchanged)	Approx. 66–68 (shifts upward with weighting,

Scenario	Assumption Changed	WPP	SPI SPLM
			not project performance)

These comparisons indicate two things. First, when Financial Loss exceeds the Contingency Reserve, the Financial Protection Percentage becomes negative, signaling that the reserve has been fully depleted and that additional corrective measures beyond those modeled here would be required; this boundary condition should be treated explicitly in future refinements of the framework rather than left implicit. Second, changing the ORI weighting from 50/50 to a workforce-weighted 70/30 split shifts the SPI SPLM score even though the underlying project performance (WPP, financial loss, mitigation savings) is unchanged. This confirms that the SPLM Performance Indicator is sensitive to the weighting assumption itself, reinforcing the recommendation that future empirical work calibrate these weights using structured methods such as Saaty's (1980) Analytic Hierarchy Process rather than relying on an unweighted average.

10. Results and Discussion

10.1 Interpretation of Financial Results

The project experienced a cost overrun of \$5 million, a 10% increase over the original \$50 million budget. Because the organization established a contingency reserve of \$7.5 million before project execution, the cost overrun remained within the available financial capacity. This finding illustrates the importance of proactive contingency planning: instead of reacting to financial uncertainty after it occurs, SPLM encourages organizations to prepare financial protection mechanisms during the planning stage.

10.2 Interpretation of Workforce Results

Under the traditional project management approach, management proposed reducing the workforce from 800 to 500 employees — a reduction of 300 employees (37.5%). After applying the SPLM decision process, workforce reductions were limited to 106 employees, allowing 694 employees (86.75%) to be retained. The example demonstrates that the framework does not eliminate workforce reductions; instead, it supports project leaders in identifying the maximum feasible workforce preservation while maintaining organizational viability.

10.3 Organizational Implications

Workforce preservation extends beyond employment continuity. Experienced employees and contractors possess technical knowledge, organizational memory, and operational expertise that

may require significant time and financial investment to replace. By reducing workforce reductions, organizations may also reduce future recruitment costs, employee onboarding expenses, productivity losses associated with new personnel, knowledge transfer risks, and operational disruptions — benefits that contribute to long-term organizational resilience in addition to immediate project performance.

10.4 Practical Significance of SPLM

The numerical example demonstrates that SPLM functions as a structured decision-support framework rather than a workforce guarantee. It assists project managers by evaluating financial capacity before workforce reductions, considering workforce implications alongside financial decisions, encouraging proactive rather than reactive management, and supporting balanced project governance. SPLM therefore complements existing project management methodologies by introducing workforce sustainability into project decision-making without replacing established practices.

11. Limitations

Conceptual and Illustrative Framework

The mathematical framework and numerical example presented in this paper are intended to illustrate the operational principles of SPLM. The numerical example is hypothetical and serves to demonstrate the application of the proposed equations rather than represent the outcomes of a specific real-world project.

Need for Empirical Validation

The effectiveness of SPLM has not yet been validated through empirical studies involving industry projects. Future research should evaluate the framework using real-world project data from sectors such as manufacturing, construction, healthcare, information technology, and infrastructure.

Industry-Specific Variability

Projects differ considerably with respect to size, complexity, contractual arrangements, regulatory requirements, and workforce composition. Consequently, the percentage of workforce that can be preserved will vary from project to project — consistent with systems-dynamics perspectives on the behavior of complex projects under uncertainty (Stermann, 2000). SPLM does not prescribe a fixed workforce preservation target; instead, it provides a structured decision-support framework for determining the maximum feasible workforce preservation under the financial and operational constraints of a particular project.

Dependence on Data Quality

The effectiveness of SPLM depends on the quality of project planning and the availability of reliable information regarding budgets, costs, workforce requirements, and project risks. Inaccurate estimates or incomplete data may reduce the effectiveness of any decision-support framework, including SPLM.

Complementary, Not Replacement, Framework

SPLM is not intended to replace established project management methodologies, project risk management practices, human resource management, or organizational resilience frameworks. Organizations should implement SPLM alongside existing project management practices rather than as a standalone methodology.

Future Development

Future research may extend SPLM through empirical validation using industry case studies, development of software-based decision-support tools, integration with artificial intelligence and predictive analytics, cross-industry comparative studies, and refinement of mathematical indicators using real-world project data.

12. Conclusion

Project environments continue to become increasingly complex due to economic uncertainty, technological change, supply chain disruptions, and workforce instability. While traditional project management frameworks have made significant contributions to cost control, schedule management, and risk mitigation, they provide limited guidance regarding workforce preservation during adverse project conditions.

This paper introduced the Strategic Project Leadership Model (SPLM) as a workforce-oriented project governance framework and operationalized it through a mathematical decision-support mechanism. The model proposes that project success should extend beyond traditional measures of cost, schedule, and scope to include workforce sustainability and organizational resilience, and it provides measurable indicators — Workforce Preservation Percentage, Financial Protection Percentage, the Workforce Sustainability Index, the Organizational Resilience Index, and the SPLM Performance Indicator — that enable organizations to evaluate workforce sustainability alongside financial sustainability during adverse project conditions.

The numerical illustration demonstrated how SPLM can be applied within a realistic project environment: by integrating financial evaluation, workforce assessment, and organizational resilience into a unified framework, the model showed how organizations may reduce workforce reductions while maintaining financial discipline. The sensitivity analysis further confirmed that the framework's outputs respond predictably to changes in loss severity and to the weighting assumptions embedded in the Organizational

Resilience Index, while pointing to a boundary condition — financial loss exceeding the contingency reserve — that future refinements should address explicitly.

The primary contribution of this paper is the transformation of workforce sustainability from a conceptual principle into an operational decision-support framework. Through the introduction of measurable variables, mathematical indicators, and a structured decision process, SPLM extends existing project management approaches without replacing established methodologies such as project risk management, contingency planning, or human resource management. Although the framework requires empirical validation across multiple industries, it establishes a foundation for future quantitative research, software-based decision-support systems, and artificial intelligence–assisted project governance.

As organizations continue to operate in increasingly uncertain environments, workforce sustainability may emerge as an essential component of project success — one that recognizes that successful projects depend not only on financial performance but also on the people who make project success possible.

13. AI Usage Declaration

The Strategic Project Leadership Model, its conceptual framework, mathematical formulation, and the illustrative numerical example were originally developed by the author across two independent white papers. Generative AI (Claude, Anthropic) was used to assist in merging, restructuring, and formatting the two source papers into this single, unified manuscript in the PM World Journal style, and for editorial review, consistency checking, and formatting support. All intellectual content, the SPLM framework, its equations, and the interpretation of results originate from the author's independent work; AI assistance was limited to document consolidation and editorial support under the author's supervision and review.

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About the Author



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Darshit Patel developed the Strategic Project Leadership Model (SPLM) as an independent conceptual and quantitative framework intended to support workforce sustainability and financial resilience within project environments. He is affiliated with the Project Management Program at Harrisburg University of Science and Technology.

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