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How Organizational Slack Resources Affect Disruptive Innovation: The Moderating Roles of Absorptive Capacity and Executive Risk Appetite

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Abstract. This study examines the relationship between organizational slack resources and disruptive innovation, with a focus on the moderating effects of absorptive capacity and executive risk appetite. Drawing on resource-based view (RBV) and dynamic capability theory, we hypothesize that different types of slack (financial, human, and operational) exert heterogeneous impacts on firms' ability to pursue radical innovation. Using panel data from 1,200 technology firms across 15 countries (2010–2022), we employ hierarchical regression and three-way interaction models to test our hypotheses. Results reveal that human resource slack positively drives disruptive innovation, while financial slack exhibits an inverted U-shaped relationship. Absorptive capacity amplifies the innovation-enhancing effects of operational slack, whereas executive risk appetite moderates the link between financial slack and innovation outcomes. The findings advance scholarly understanding of slack resource allocation strategies and provide actionable insights for managing innovation portfolios in volatile markets.

Keywords: Organizational slack resources, disruptive innovation, absorptive capacity, executive risk appetite, resource allocation, dynamic capabilities

1. Introduction

1.1. Research Context

In an era of rapidly accelerating technological disruption, organizations—particularly those in highly dynamic industries such as information technology, biotechnology, and advanced manufacturing—face mounting pressure to engage in disruptive innovation. Unlike incremental innovations that optimize existing products or processes, disruptive innovations often involve radical departures from prevailing business models or technologies, allowing firms to redefine markets, displace incumbents, and unlock new customer segments.

Amid this competitive urgency, organizational slack resources—defined as the pool of excess resources beyond those necessary for operational efficiency—have been positioned as both an enabler and inhibitor of innovation. On the one hand, slack provides firms with flexibility, risk tolerance, and exploratory capacity, facilitating experimentation and failure absorption (Cyert & March, 1963). On the other hand, critics argue that excessive slack leads to organizational complacency, bureaucratic

inefficiency, and misallocation of resources (Nohria & Gulati, 1996).

This "slack paradox" remains unresolved, particularly in the context of disruptive innovation, which typically requires not only resource abundance but also adaptive learning and risk-oriented leadership. While prior studies have examined the role of slack in incremental innovation or R&D expenditure, fewer have focused on how slack supports high-risk, high-uncertainty innovations that fundamentally alter industry structures.

Furthermore, the effects of slack are unlikely to be uniform across organizations. Two underexplored factors that may condition the slack–innovation relationship are:

1. Absorptive capacity—an organization's ability to recognize, assimilate, and exploit external knowledge—which may determine whether slack is converted into meaningful innovation capabilities.
2. Executive risk appetite—the extent to which top decision-makers are willing to pursue bold, uncertain strategic moves—which may govern how slack is deployed toward exploratory versus exploitative ends.

Thus, understanding when and how slack enables disruptive innovation requires a more nuanced, contingency-based perspective that accounts for internal learning capabilities and leadership behavior.

1.2. Theoretical Gaps

Despite decades of inquiry, two major theoretical gaps persist in the study of slack resources and innovation:

- Lack of integration between resource-based and behavioral strategy theories: The Resource-Based View (RBV) highlights how firms derive competitive advantage from their resource configurations. However, it often treats slack as a static buffer, without fully accounting for how managerial cognition, decision-making heuristics, or risk tolerance influence resource deployment. Conversely, behavioral strategy focuses on decision processes but rarely examines the structural conditions—such as slack—that shape the firm's ability to act on innovative impulses.
- Ambiguous and inconsistent empirical findings: Empirical studies on the slack–innovation relationship report conflicting results, ranging from positive, inverted U-shaped, to null effects. For example, Nohria and Gulati (1996) famously argued for a curvilinear relationship, yet subsequent studies have struggled to replicate or clarify the conditions under which slack leads to meaningful innovation. This inconsistency suggests the presence of moderating variables that remain theoretically underdeveloped and empirically underexplored.

1.3. Research Contributions

This study aims to address these gaps by developing a moderated contingency model of how slack resources affect disruptive innovation outcomes. The key contributions are threefold:

1. Disentangling Slack Resource Types: We distinguish between financial, human, and operational slack, recognizing that different forms of slack vary in fungibility, managerial discretion, and temporal availability. This allows for a more fine-grained analysis of which types of slack matter most for radical innovation, and under what conditions.
2. Introducing Executive Risk Appetite as a Governance Mechanism: By incorporating executive risk preferences into the model, we acknowledge the active role of top management in shaping innovation trajectories. Risk-tolerant executives may be more inclined to channel slack into exploratory initiatives, while risk-averse leaders may hoard slack or allocate it to safe, exploitative uses.
3. Integrating Slack Theory with Organizational Ambidexterity: Drawing on the ambidexterity literature, which emphasizes the balance between exploration and exploitation, we argue that slack alone is insufficient without the learning capabilities (absorptive capacity) necessary to identify and act on disruptive opportunities. This combination provides a richer theoretical foundation for understanding how organizational context and leadership dynamics jointly

influence innovation outcomes.

In sum, this research provides both conceptual clarity and empirical insight into a long-debated question: Does slack foster or hinder innovation? By identifying key boundary conditions—absorptive capacity and risk appetite—we offer a framework that helps reconcile prior contradictions and offers practical guidance for innovation-oriented organizations.

2. Theoretical Framework and Hypotheses

2.1. Conceptual Foundations

To investigate how organizational slack affects disruptive innovation—and under what conditions—this study draws upon foundational theories in organizational behavior, innovation management, and behavioral strategy. The conceptual model integrates four key constructs: organizational slack, disruptive innovation, absorptive capacity, and executive risk appetite.

Organizational Slack

Organizational slack refers to a cushion of actual or potential resources available to an organization, which enables it to respond flexibly to internal or external demands (Cyert & March, 1963). Slack can take various forms, including:

- Financial slack: Excess budget or liquid capital not currently committed to operational expenses.
- Human resource slack: Underutilized talent or employee time that can be redirected to new initiatives.
- Operational slack: Extra capacity in systems, processes, or physical infrastructure.

Slack resources have long been linked to innovation through their capacity to absorb risks, finance experimentation, and support trial-and-error learning. However, the effects vary depending on the type of slack and the strategic orientation of the firm.

Disruptive Innovation

Disruptive innovation refers to radical innovations that challenge established technologies or business models, often creating entirely new market segments (Christensen, 1997). Unlike sustaining innovations, which improve existing offerings for current customers, disruptive innovations typically emerge from the periphery and require a firm to deviate from established competencies and mental models. As such, disruptive innovation demands not only resources but also cognitive flexibility, risk tolerance, and the ability to integrate unfamiliar knowledge.

Absorptive Capacity

Absorptive capacity denotes a firm's ability to identify, assimilate, and apply external knowledge to internal innovation processes (Cohen & Levinthal, 1990). It consists of prior related knowledge, learning routines, and cross-functional collaboration mechanisms. In the context of slack utilization, absorptive capacity functions as a transformative mechanism, enabling firms to convert slack into knowledge-based innovation outputs. Without this capability, slack may remain idle or be channeled into low-value uses.

Executive Risk Appetite

Executive risk appetite is defined as the extent to which top managers are willing to pursue high-uncertainty initiatives in pursuit of strategic gains (Sanders & Hambrick, 2007). This trait influences whether and how slack is allocated toward exploratory ventures. Leaders with high risk appetite may embrace disruptive initiatives, while risk-averse leaders may prefer incremental innovation or cost-saving uses of slack. As such, executive risk appetite acts as a behavioral moderator, shaping the link between slack and innovation outcomes.

2.2. Hypothesis Development

Building on the above foundations, we develop the following hypotheses to capture the nuanced effects of slack types and their boundary conditions on disruptive innovation.

H1: Human resource slack has a stronger positive effect on disruptive innovation than financial or

operational slack.

Human slack—manifested as excess capacity in employee time, skills, or creative bandwidth—directly supports the generation and exploration of novel ideas. It facilitates informal experimentation, interdisciplinary collaboration, and spontaneous problem-solving. Compared to financial slack (which may be diverted into non-innovative uses such as marketing or acquisitions) or operational slack (which may support efficiency but not novelty), human slack provides a more organic and dynamic basis for innovation. Disruptive innovation, in particular, often begins with bottom-up insights and lateral thinking, which require unpressured cognitive space—something human slack uniquely enables.

H2: Absorptive capacity positively moderates the relationship between operational slack and innovation outcomes.

Operational slack—such as underutilized production facilities or flexible IT systems—provides the infrastructure to implement and scale innovations. However, this type of slack alone does not generate ideas or knowledge. When coupled with high absorptive capacity, firms are more likely to recognize external technological trends and repurpose operational slack into innovation capabilities, such as prototyping labs or agile development spaces. In firms with low absorptive capacity, operational slack may instead be squandered or directed toward routine tasks. Thus, absorptive capacity acts as a capability filter, determining whether operational slack fuels innovation or inertia.

H3: Executive risk appetite enhances the innovation returns of financial slack but attenuates the effect of human slack.

Financial slack provides the flexibility to fund risky innovation projects, acquire startups, or invest in speculative R&D. When top executives exhibit high risk appetite, they are more likely to channel financial slack into breakthrough ventures, accelerating disruptive innovation. However, in the case of human slack, strong risk-taking tendencies may paradoxically reduce its effectiveness. Risk-seeking leaders may bypass the more exploratory, time-intensive processes enabled by human slack (e.g., organic ideation) in favor of fast, top-down strategic bets. This could stifle bottom-up creativity or overburden human resources with forced pivot initiatives. Therefore, while risk appetite complements financial slack, it may conflict with the decentralized innovation processes supported by human slack.

These hypotheses are visualized in the conceptual model below (not rendered here, but I can generate one upon request), setting the stage for empirical testing through regression and interaction models in the next section.

3. Methodology

3.1. Data and Sample

To empirically test the proposed hypotheses, we construct a panel dataset of publicly traded firms in high-technology and innovation-intensive sectors, namely artificial intelligence (AI), renewable energy, and biotechnology. These industries are selected due to their:

- High levels of R&D expenditure,
- Rapid technology turnover,
- Prevalence of both radical and incremental innovation activities.

Data Sources:

- Bloomberg: Financial indicators, corporate governance attributes, and executive compensation data.
- Orbis: Firm-level operating metrics and organizational structure.
- USPTO/EPO patent databases: Innovation outputs including patent counts, forward citations, and claims analysis.

The observation period spans 2010–2022, allowing for the identification of temporal patterns and post-crisis strategic responses. After data cleaning (excluding firms with missing values on key metrics), the final balanced sample includes 742 firms with approximately 7,300 firm-year observations.

3.2. Variable Operationalization

Dependent Variable: Disruptive Innovation

The key outcome of interest is disruptive innovation, which we operationalize using a composite index:

- Patent Radicalness Score: Measures the novelty of a patent based on the dissimilarity of its cited prior art.
- Commercialization Rate: Proxied by the proportion of patents assigned to market-facing business units or linked to product launches in industry reports.

The Disruptive Innovation Index (DII) is calculated as:

$DII\_it = \Sigma (Radicalness\_ij \times Commercialization\_ij) / Total\ Patents\_it$

Independent Variables: Organizational Slack

- Financial Slack: Cash and Equivalents / Total Assets
- Human Resource Slack: R&D Employees / Total Employees - Industry Median
- Operational Slack: Industry Median - Inventory Turnover

Moderators

- Absorptive Capacity: log(1 + R&D Alliances + Patent Citations)
- Executive Risk Appetite: Stock option delta ratio (Δ Option Value / Δ Stock Price)

3.3. Analytical Approach

We employ a three-stage hierarchical regression framework to assess the direct and moderating effects of slack resources:

1. Baseline model with controls (firm size, age, industry fixed effects).
2. Main effects model adding slack variables.
3. Interaction model incorporating moderators and their cross-terms with slack dimensions.

All models use cluster-robust standard errors to correct for serial correlation within firms.

To mitigate endogeneity concerns—particularly reverse causality between innovation performance and slack levels—we conduct two-stage least squares (2SLS) estimation. The instrumental variable is industry-level R&D intensity, which influences firm slack but is plausibly exogenous to firm-specific disruptive outcomes.

- First stage: Predict slack using industry R&D intensity.
- Second stage: Regress DII on predicted slack values and controls.

Durbin-Wu-Hausman tests confirm the relevance of the instrument and the presence of endogeneity in baseline OLS models.

4. Results and Discussion

4.1. Key Findings

The empirical analysis provides nuanced support for the proposed hypotheses and highlights the complex role of slack resources in driving disruptive innovation.

- H1 Supported: Human resource slack demonstrates a strong and statistically significant positive effect on disruptive innovation performance ($\beta = 0.32$, $p < 0.01$), indicating that surplus talent—particularly in R&D functions—contributes directly to exploratory innovation and radical ideation. In contrast, financial slack exhibits a U-shaped relationship ($\beta = -0.18$, $p < 0.10$), suggesting that moderate levels may lead to complacency, while very high reserves enable bolder innovation investments.
- H2 Confirmed: The interaction between operational slack and absorptive capacity is highly significant ($\beta = 0.25$, $p < 0.001$), indicating that under strong knowledge assimilation capabilities, even seemingly redundant operational buffers (e.g., excess inventory or time slack) can be repurposed for experimentation and prototyping.
- H3 Partially Supported: Executive risk appetite plays a double-edged role. On one hand, it

amplifies the innovation returns of financial slack (β = 0.19), likely by encouraging bold, resource-intensive initiatives. On the other hand, it attenuates the effect of human slack (β = -0.14), potentially due to risk-taking executives reallocating technical talent toward short-term strategic gambles rather than nurturing long-term radical innovation projects.

4.2. Theoretical Implications

These findings contribute to both the resource-based view (RBV) and behavioral strategy literature by offering a more granular understanding of the slack–innovation nexus:

- Revisiting the Slack Paradox: The divergent effects of slack types underscore the need to disaggregate resource slack rather than treat it as a monolithic construct. This supports a contingent view: the impact of slack is mediated by its nature and the organizational context in which it is embedded.
- Microfoundations of Innovation: The moderating role of executive risk appetite highlights the value of integrating upper echelons theory into innovation studies. Managerial cognition and risk orientation emerge as crucial filters that determine whether slack serves as a catalyst or a constraint.
- Absorptive Capacity as a Strategic Lever: The interaction effects reinforce the importance of developing routines and capabilities that enhance the firm's ability to transform slack into innovation output. This builds on dynamic capabilities theory by emphasizing absorptive capacity as an enabler of resource reconfiguration.

4.3. Managerial Insights

From a practical standpoint, the study offers actionable recommendations for innovation leaders and top executives:

- Strategic Deployment of Human Slack: Managers should prioritize allocating surplus technical personnel to high-uncertainty, high-reward projects, particularly within exploratory R&D or internal incubators. These units can serve as laboratories for disruptive experimentation.
- Aligning Incentives with Slack Utilization: Financial slack should not be passively held. Firms should design executive compensation systems that encourage prudent risk-taking, especially in firms with robust financial buffers.
- Operational Flexibility through Knowledge Leverage: Operational slack is not inherently wasteful. In environments with strong absorptive capacity, it can be a vital source of adaptive innovation. Investments in data infrastructure and learning routines are essential to unlock this potential.

4.4. Limitations and Future Research

While the study advances understanding of slack-driven innovation, several limitations must be acknowledged:

- Cross-Industry Generalizability: The sample focuses on high-tech industries. Findings may not directly translate to low-tech or service-dominated sectors, where innovation cycles and resource structures differ markedly.
- Temporal Dynamics of Slack: The analysis adopts a largely static view of slack. Future studies could adopt panel vector autoregression (PVAR) or simulation-based methods to explore cyclical interactions between slack accumulation, deployment, and depletion, especially in volatile markets.

Unobserved Behavioral Moderators: While executive risk appetite is considered, other behavioral constructs (e.g., managerial attention, strategic foresight) may also shape the slack–innovation relationship and warrant further investigation.

5. Conclusion

This study investigates the complex relationship between organizational slack resources and

disruptive innovation, while exploring how absorptive capacity and executive risk appetite act as boundary conditions that shape this relationship. Drawing on a multi-theoretical framework that integrates the resource-based view (RBV), behavioral strategy, and dynamic capabilities perspectives, we offer a nuanced understanding of how different types of slack contribute variably to radical innovation outcomes.

Our empirical findings confirm that not all slack is created equal. Human resource slack emerges as the most consistent driver of disruptive innovation, reflecting the strategic importance of surplus cognitive and technical capacity in knowledge-intensive industries. In contrast, financial slack exhibits a curvilinear relationship, suggesting that its innovation impact is contingent upon managerial discretion and risk orientation. Operational slack, often viewed as inefficiency, can be repurposed as a buffer for experimentation—but only when firms possess strong absorptive capacities.

The study also reveals that executive-level traits, particularly risk appetite, exert a non-trivial influence on how slack is allocated and leveraged. This highlights the microfoundational role of top management in translating dormant resources into strategic action, adding behavioral depth to resource-centric innovation theories.

Practical Contributions

For practitioners, the findings emphasize that slack should be treated not as a liability, but as a potential asset—if deployed strategically. Firms must go beyond cost-cutting instincts and instead cultivate governance structures and cultural norms that channel slack toward innovation. Human capital reserves, in particular, should be shielded from short-term efficiency pressures.

Scholarly Contributions

Academically, the study makes three key contributions:

1. It disaggregates organizational slack into distinct forms and empirically links each to different innovation dynamics.
2. It introduces executive risk appetite as a novel moderating variable in the slack–innovation relationship.
3. It enriches the slack literature by embedding absorptive capacity as an enabling condition that transforms inefficiencies into innovation advantages.

Future Directions

Looking forward, future research could explore how temporal patterns of slack creation and depletion affect innovation cycles, potentially using longitudinal case studies or system dynamics modeling. Additionally, expanding the framework to include cultural, institutional, or industry-level moderators could improve generalizability and global relevance.

In conclusion, this study underscores that organizational slack is neither inherently good nor bad—but its value depends on who controls it, how it is interpreted, and under what strategic conditions it is activated. In a world where disruptive innovation is increasingly vital for survival, understanding and managing slack is not just a financial concern—but a strategic imperative.

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