

<https://doi.org/10.31705/ICBR.2024.1>

**Paper ID: 2**

## **EFFECT OF ENTREPRENEURIAL LEADERSHIP ON EXPLORATORY INNOVATION – THE ROLE OF INTRINSIC MOTIVATION AND ENVIRONMENT DYNAMISM AS MODERATORS IN THE IT SECTOR OF SRI LANKA**

A.Y. De Costa\* and V. Wickramasinghe

*Department of Management of Technology, University of Moratuwa, Sri Lanka  
decostaay.22@uom.lk\**

### **ABSTRACT**

*At this pivotal point in Sri Lanka, the confluence of innovative activities and leadership styles significantly influences the trajectory of organizational performance in Sri Lanka's information technology (IT) sector. Understanding the complex interactions between leadership behaviors and innovation is crucial for sustaining development and competitiveness in the face of the sector's rapid technical improvements, globalization, and changing consumer needs. This quantitative research delves into the intricate interplay between entrepreneurial leadership styles, which has shown its potential to stimulate innovative thinking and risk-taking behaviors among employees and explore innovation with a moderating effect of intrinsic motivation and environmental dynamism. Utilizing a sample size of 157 participants from the IT sector of Sri Lanka, the findings reveal that entrepreneurial leadership style has a significant positive relationship with explorative innovation. Furthermore, intrinsic motivation is found to be a significant negative moderator between entrepreneurial leadership and exploratory innovation. Environmental dynamism is found to positively moderate the relationship between entrepreneurial leadership and exploration innovation. These results shed light on the nuanced influences of entrepreneurial leadership style, intrinsic motivation, and environmental dynamism on innovation activities in the IT sector, offering valuable insights for organizational leaders and policymakers seeking to foster a culture of innovation in dynamic environments.*

**Keywords:** Entrepreneurial Leadership, Environment Dynamism, Explorative Innovation, Intrinsic Motivation, Sri Lanka IT Sector

### **1. Introduction**

In today's dynamic business environment, innovation is crucial for

success and competitive advantage (Lazzarotti et al., 2017), particularly in Sri Lanka's rapidly evolving IT sector. Exploratory innovation, involving the pursuit of new ideas, technologies, and processes, enables organizations to adapt to changing market dynamics and seize emerging opportunities. Entrepreneurial leadership, with its proactive and risk-taking approach, is vital in fostering a culture of experimentation and adaptation (Vendrell-Herrero et al., 2021). Leadership significantly influences employee creativity and organizational innovation, making it a crucial component of corporate innovation (Prasad & Junni, 2016). Entrepreneurial leadership is particularly relevant in industries experiencing rapid technological change, such as Sri Lanka's IT sector (Makri & Scandura, 2010).

Despite extensive research on leadership and innovation, there is a significant gap in understanding the specific influence of entrepreneurial leadership on exploratory innovation within the Sri Lankan IT sector. Prior studies have largely focused on transformational and transactional leadership styles, examining their impact on knowledge creation (Athukorala et al., 2016) and productivity (Kumara & Gamage, 2020). However, these studies do not explore how entrepreneurial leadership—characterized by its emphasis on risk-taking, innovation, and fostering a culture of experimentation—drives exploratory innovation, which is critical for achieving breakthroughs and navigating uncharted market opportunities. This research aims to address this gap by investigating the relationship between entrepreneurial leadership and exploratory innovation in Sri Lanka's IT sector, a sector that faces unique challenges such as resource constraints and market volatility. Additionally, the study investigates the moderating effects of intrinsic motivation and environmental dynamism. Intrinsic motivation, characterized by employees' inherent drive to engage in meaningful work, may interact with leadership styles to shape innovation outcomes (Deci & Ryan, 1985). Understanding how intrinsic motivation influences the relationship between entrepreneurial leadership and exploratory innovation can offer valuable insights. Environmental dynamism, including factors such as market volatility, technological disruptions, and regulatory changes, can impact the efficacy of leadership styles in fostering innovation (Damanpour & Schneider, 2009).

The primary research questions of the investigation are:

1. What is the effect of entrepreneurial leadership on exploratory innovation in the Sri Lankan IT sector?
2. What is the moderating impact of intrinsic motivation and environmental dynamism on the relationship between entrepreneurial leadership and exploratory innovation?

Accordingly, the study's objectives are:

1. To analyze the effect of entrepreneurial leadership on exploratory

innovation.

2. To investigate the moderate effect of intrinsic motivation on the relationship between entrepreneurial leadership and exploratory innovation.

3. To examine the moderate effect of environmental dynamism on the relationship between entrepreneurial leadership and exploratory innovation.

This study used a quantitative methodological framework and employed a structured survey among employees in IT organizations in Sri Lanka to collect primary data. This research contributes to the theoretical developments on the role of entrepreneurial leadership in promoting exploratory innovation in the IT sector in Sri Lanka. For practitioners and organizational leaders, the findings offer actionable insights into how entrepreneurial leadership can foster a culture of innovation, enhancing organizational adaptability and competitiveness.

## **2. Literature Review**

Scholars have introduced the concept of entrepreneurial leadership as a novel approach to leadership that emerges from the combination of leadership and entrepreneurship studies (Leitch & Volery, 2017; Renko et al., 2015). Entrepreneurial leadership's innate functional competencies enable leaders to purposefully encourage and motivate their workforce to take creative actions (Yukl & Mahsud, 2010). This influence extends to fostering a more receptive atmosphere for innovation, as generated by these leaders (Wang et al., 2019). Kang et al. (2015) argued that a substantial association exists between entrepreneurial leadership behavior and an organization's innovative atmosphere. According to Renko (2015), entrepreneurial leadership is a modern leadership style that encourages subordinates to spot and seize business opportunities that have the potential to create value. It motivates employees to be involved in creative actions, fostering a culture of innovation within organizations (Cai et al., 2019).

Exploratory innovation signifies a pivotal strategy for firms aiming to explore new markets and technologies. March (1991) defines exploratory innovations as efforts directed toward creating novel designs, market segments, and distribution channels. According to Benner and Tushman (2002) and Jansen et al. (2009), these innovations are instrumental in addressing emerging customer needs and expanding business horizons. As highlighted by Benner and Tushman (2002), a key aspect of exploratory innovation involves departing from existing knowledge frameworks. This departure allows firms to experiment with new ideas, take risks, and explore uncharted territories. Authors like Andriopoulos and Lewis (2009) emphasize the experimental nature of exploratory innovation, which often involves radical changes and the pursuit of new technological trajectories. March (1991) underscores the

long-term benefits of exploratory innovations, suggesting that while they may not yield immediate returns, they enhance firms' competitiveness and future income potential.

H1: Entrepreneurial leadership style has a positive effect on exploration innovation.

Intrinsic motivation, characterized by an internal drive to engage in activities for their inherent enjoyment or satisfaction (Ryan & Deci, 2000), may play a crucial moderating role in the relationship between leadership styles and exploratory innovation. Intrinsic motivation correlates with creativity, suggesting that individuals with elevated levels demonstrate greater innovativeness and initiative (Bande et al., 2016). Intrinsic motivation plays a pivotal role in employee innovation, fostering perseverance, unconventional problem-solving approaches, and creativity (Ryan & Deci, 2000). Entrepreneurial leaders, by nurturing a sense of purpose and autonomy, have the potential to improve the intrinsic motivation of their followers, thereby facilitating exploratory innovation (Zhang & Bartol, 2010). Zhao and colleagues (Zhao et al., 2020), in the technology start-up context, found a significant interaction between entrepreneurial leadership and intrinsic motivation in predicting employees' engagement in exploratory innovation activities. Particularly, individuals who possessed strong levels of intrinsic motivation responded more favorably to entrepreneurial leadership traits, leading to greater exploratory innovation outcomes.

H2: Intrinsic motivation moderates the relationship between entrepreneurial leadership and exploratory innovation

Environmental dynamism significantly influences organizational adaptability and innovation (Vera & Crossan, 2004). The dynamic nature of the environment underscores the importance of adaptive leadership styles in fostering innovation (Jansen et al., 2009). Employees facing dynamic external surroundings are more receptive to leadership behaviors and are more likely to embrace change initiatives (Menguc & Ozanne, 2005). In highly dynamic environments, entrepreneurial leaders may thrive by championing bold ideas and encouraging experimentation among followers, thereby fostering exploratory innovation (Menguc & Ozanne, 2005). It encompasses factors such as market competition, technological advancements, and regulatory changes, all of which contribute to the uncertainty and complexity faced by organizations. Scholars have noted the importance of considering contextual variables like environmental dynamism, as these significantly influence organizational outcomes and behaviors (Vera & Crossan, 2004). Research by Pérez-Luño et al. (2014) underscores the moderating role of environmental dynamism on the correlation between innovation and entrepreneurial leadership. The study discovered that the association between taking risks and engaging

in innovative activities is favorably moderated by environmental dynamism, indicating that organizations are more inclined to embrace risk and pursue innovative endeavors in dynamic environments.

H3: Environmental dynamism moderates the relationship between entrepreneurial leadership and exploratory innovation.

Figure 1 illustrates the conceptual framework, showing the relationship between entrepreneurial leadership and exploratory innovation, with intrinsic motivation and environmental dynamism acting as moderating factors.



**Figure 1:** Research Model.

### 3. Methodology

#### 3.1. Sampling

The population of interest is employees in Sri Lanka's IT sector, which employs approximately 150,000 individuals. A convenience sampling method was used to select participants from the executive and managerial levels. Although non-probability sampling can limit representativeness, it is often employed in exploration research for its practicality and accessibility (Etikan et al., 2016). This approach was chosen due to resource constraints and the need to gather insights from individuals directly involved in leadership and innovation decisions. To find the sample size for the study, a formula developed for finite populations was used (Cochran, 1963). The calculated sample size was 150, with a population size of 150000, a margin of error of 8, and a z-score of 1.96 (for a confidence level of 95%).

#### 3.2. Data Collection

A survey-based approach was utilized for data collection. The questionnaire was distributed electronically to participants to facilitate efficient data collection and management. Clear instructions were provided regarding the completion of the questionnaire, emphasizing the importance of authentic and accurate responses.

#### 3.3. Measures

The questionnaire design followed the established principles of quantitative research methodology and was informed by a synthesis of relevant literature on leadership, innovation, and organizational behavior. To assess the constructions under investigation, validated scales with demonstrated reliability and validity were selected. Six items were used from the scale developed by Ricard et al. (2017) to measure entrepreneurial leadership style (Cronbach's alpha = 0.864). Sample

items include “willing to risk mistakes” and “open to new ideas”. Five items were adopted from Mom et al. (2007) to measure exploration innovation (Cronbach's alpha: exploration = 0.920). Sample items include “searching for new possibilities for products/services, processes, or markets” and “focusing on the strong renewal of products/services or processes”. Four items were adopted from Jansen et al. (2009) to measure environmental dynamism (Cronbach's alpha = 0.738). Sample items include “clients regularly ask for new products and services” and “Environmental changes in our market are intense”. Five items were adopted from Tierney et al. (1999) to measure intrinsic motivation (Cronbach's alpha = 0.872). Sample items include “enjoy finding solutions to complex problems” and “enjoy coming up with new ideas for products”. To ensure consistency in response format, each construct was tested using items scored from 1 (strongly disagree) to 5 (strongly agree) on a five-point Likert scale.

### 3.4. Data Analysis Methods

The collected data were analyzed using SPSS 29.0 software. Regression analysis with Hayes' process macro was performed to test the proposed relationships.

## 4. Results and Discussion

Key parametric assumptions were validated before analysis. The normality of residuals, homoscedasticity, and linearity were confirmed using visual checks and statistical tests. No autocorrelation was found, and multicollinearity was ruled out. These assessments support the use of parametric methods in this study. Table 1 presents the demographic breakdown of the respondents in the study.

**Table 1:** Descriptive Analysis.

Demographic Characteristic	Category	Percentage
Gender	Male	60.5%
	Female	39.5%
Age	18-24	4.5%
	25-34	75.8%
	35 or above	19.7%
Education	Bachelor's or above	97.5%
	Below Bachelor's	2.5%
Designation	Executive Level	71.3%
	Managerial Level	28.7%

Table 2 shows the outcome of the correlation analysis. The results indicated that all the variables correlated at less than 0.9, indicating that there is no multicollinearity issue.

**Table 2:** Descriptive Statistics and Correlation Analysis.

EL	Mean	SD	EL	E1	IM
EL	3.5478	.6563	1		
E1	3.2459	.9917	.426**	1	
IM	3.9032	.5386	.199*	.274**	1
ED	3.3901	.5804	.376**	.571**	.417**

Note: \*\* $p < .01$ , \* $p < .05$ , EL = Entrepreneurial Leadership, E1 = Exploratory Innovation, IM = Intrinsic Motivation, ED = Environment Dynamism.

Table 3 provides the model summary for the regression analysis examining the impact of entrepreneurial leadership on exploratory innovation, with intrinsic motivation and environmental dynamism as moderating variables. According to the R-squared value, 51.65% of the variability is predicted by the model. Given that the p-value is below the 0.05 confidence threshold, the model as a whole is significant. The unstandardized regression weight for EL is 0.6674, and it is statistically significant ( $p=0.00$ ). The moderator effect of IM is -0.9389, and it is statistically significant ( $p=0.00$ ). Additionally, the confidence interval for the interaction effect does not contain a value of zero. The moderator effect of ED is 1.1137 and it is statistically significant ( $p=0.00$ ). Furthermore, the confidence interval for the interaction effect does not contain a value of zero and lies on the positive side.

**Table 3:** Model Summary.

R	R-sq	MSE	F	df1	df2	p
0.7187	0.5165	0.4913	32.2646	5.0000	151.0000	0.0000
Measure	SE	t	p	LLCI	ULCI	
Constant	3.1328	0.0930	7.1770	0.0000	3.0174	3.2483
EL	0.6674	0.0930	7.1770	0.0000	0.4837	0.8512
IM	1.0225	0.1293	7.9081	0.0000	0.7670	1.2779
Int_1	-0.9389	0.1289	-7.2851	0.0000	-1.1936	-0.6843
ED	-0.6779	0.1035	-6.5520	0.0000	-0.8823	-0.4735
Int_2	1.1137	0.1379	8.0761	0.0000	0.8412	1.3861

Note: EL = Entrepreneurial Leadership, E1 = Exploratory Innovation, IM = Intrinsic Motivation, ED = Environment Dynamism.

Table 4 shows the highest-order interaction effects of the variables. The

R-squared change due to both moderators is 22.36% which is a considerable value. The individual effect of each moderator and the collective effect of both moderators are significant ( $p=0.00$ ).

**Table 4:** Highest Order Unconditional Interaction(s).

	<b>R<sup>2</sup> Change</b>	<b>F</b>	<b>df1</b>	<b>df2</b>	<b>p</b>
EL*IM	0.1699	53.0726	1.000	151.000	0.000
EL*ED	0.2088	65.2242	1.000	151.000	0.000
Both	0.2236	34.9133	2.000	151.000	0.000

*Note: EL = Entrepreneurial Leadership, E1 = Exploratory Innovation, IM = Intrinsic Motivation, ED = Environment Dynamism.*

Table 5 displays the conditional effects of entrepreneurial leadership on exploratory innovation at different levels of the moderators. When both IM and ED are at -1 standard deviation (SD) below the mean, the effect size is positive (0.4439) and statistically significant ( $p = 0.0001$ ). As ED moves from -1SD to the Mean and then to +1SD (standard deviation above the mean), the effect size increases. When IM is at Mean and ED is at -1SD, the effect becomes negligible (-0.0617), and there is no statistically significant difference ( $p = 0.6495$ ). The highest positive effect is observed when IM is at -1SD and ED is at +1SD (effect = 1.9023,  $p = 0.0000$ ). IM's impact on the outcome depends on the level of ED. The relationship between IM and the outcome varies across different levels of ED.

**Table 5:** Conditional Effect of Moderators.

		<b>95% CI</b>					
<b>IM</b>	<b>ED</b>	<b>Effect</b>	<b>SE</b>	<b>t</b>	<b>p</b>	<b>Low</b>	<b>Up</b>
-1SD	-1SD	0.4439	0.1127	3.9375	0.0001	0.2212	0.6667
-1SD	Mean	1.1731	0.1094	10.7212	0.0000	0.9569	1.3893
-1SD	+1SD	1.9023	0.1659	11.4634	0.0000	1.5744	2.2302
Mean	-1SD	-0.0617	0.1355	-0.4554	0.6495	-0.3295	0.2061
Mean	Mean	0.6674	0.0930	7.1770	0.0000	0.4837	0.8512
Mean	+1SD	1.3966	0.1234	11.3175	0.0000	1.1528	1.6404
+1SD	-1SD	-0.5674	0.1835	-3.0923	0.0024	-0.9300	-0.2049
+1SD	Mean	0.1618	0.1223	1.3226	0.1880	-0.0799	0.4034
+1SD	+1SD	0.8909	0.1121	7.9513	0.0000	0.6696	1.1123



*Note: Conditional effects of the focal predictor at values of the moderator(s). EL = Entrepreneurial Leadership, E1 = Exploratory Innovation, IM = Intrinsic Motivation, ED = Environment Dynamism.*

The results of the hypotheses testing are summarized in Table 6.

**Table 6:** Results of Hypotheses Testing.

<b>Hypothesis</b>	<b>Result</b>
H1: Entrepreneurial leadership style has a positive effect on exploration innovation.	Supported
H2: Intrinsic motivation moderates the relationship between entrepreneurial leadership and exploratory innovation	Supported
H3: Environmental dynamism moderates the relationship between entrepreneurial leadership and exploratory innovation.	Supported

## 5. Conclusion and Implications

This study delves into the intricate dynamics between entrepreneurial leadership and exploratory innovation, as well as the impact of employees' intrinsic motivation and environmental dynamism on this relationship within the IT sector in Sri Lanka. The first objective was to investigate the relationship between entrepreneurial leadership and exploratory innovation. The results showed that entrepreneurial leadership has a significant positive effect on exploration innovation. This finding aligns with the innovation management theory by Tidd and Bessant (2020).

The second objective was to explore the moderating effect of intrinsic motivation on the relationship between entrepreneurial leadership and exploratory innovation. Interestingly, the results indicated a significant negative moderating effect of intrinsic motivation, suggesting that higher intrinsic motivation weakens the positive influence of entrepreneurial leadership on exploratory innovation. While this result may seem counterintuitive, it can be explained through the lens of over-motivation or cognitive interference theories as discussed by Shalley and Perry-Smith (2001). Highly intrinsically motivated employees may become too focused on individual goals or creative pursuits, potentially creating friction with entrepreneurial leaders' direction, which emphasizes collective, high-risk innovation efforts as stated by Wang et al. (2022). This finding also contrasts with studies such as Deci and Ryan (1985), which posit that intrinsic motivation generally enhances innovation, highlighting the need to further investigate under which specific conditions intrinsic motivation may hinder team-driven exploratory innovation.

The third objective of this study was to test the moderating effect of environmental dynamism on the relationship between

entrepreneurial leadership and exploratory innovation. The results indicated a significant positive moderating effect of environmental dynamism on the relationship between entrepreneurial leadership and exploratory innovation. This supports existing literature, such as that by Jansen et al. (2006) which suggests that dynamic environments could enhance the ability of entrepreneurial leaders to capitalize on emerging opportunities and encourage risk-taking. When considering the combined effect of both moderators, they account for 22.36% which is a considerably higher value.

Theoretically, this study addresses the gap in the literature regarding the intersection of exploratory innovation and entrepreneurial leadership. It demonstrates how entrepreneurial leadership behaviors and approaches can either facilitate or inhibit innovation efforts in the IT sector in Sri Lanka. Entrepreneurial leadership, characterized by its proactive and opportunity-driven mindset, emerges as a driving force behind exploratory innovation, bridging the gap between creativity and commercialization. The examination of intrinsic motivation and environmental dynamism as moderating factors extends current knowledge by highlighting the contextual conditions necessary for effective leadership.

Practically, the study provides actionable insights for leaders within the IT sector. Leaders must adapt their styles to align with both organizational needs and external environmental conditions. This adaptive approach is crucial for fostering a conducive environment for innovation. Promoting intrinsic motivation and responding to environmental dynamism is essential for fostering innovation within organizations. Leaders should strive to create a supportive and dynamic work environment that encourages creativity, experimentation, and continuous learning.

Future research should explore the negative impact of intrinsic motivation on exploration innovation under entrepreneurial leadership in greater depth. Additionally, investigating the variability in the effects of environmental dynamism could aid in developing more nuanced leadership strategies.

## References

- Andriopoulos, C., & Lewis, M. W. (2009). Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. *Organization Science*, 20(4), 696-717.  
<https://doi.org/10.1287/orsc.1080.0406>
- Athukorala, C., Perera, I., & Meedeniya, D. (2016). The impact of transformational and transactional leadership styles on knowledge creation in the Sri Lankan software industry. 2016 Moratuwa Engineering Research Conference (MERCon) (pp. 309-314). IEEE.  
<https://doi.org/10.1109/MERCon.2016.7480159>
- Bande, B., Fernández-Ferrín, P., Varela-Neira, C., & Otero-Neira, C. (2016).

- Exploring the relationship among servant leadership, intrinsic motivation, and performance in an industrial sales setting. *Journal of Business & Industrial Marketing*, 31(2), 219-231.  
<https://doi.org/10.1108/JBIM-03-2014-0046>
- Benner, M. J., & Tushman, M. (2002). Process management and technological innovation: A longitudinal study of the photography and paint industries. *Administrative Science Quarterly*, 47(4), 676-707.  
<https://doi.org/10.2307/3094913>
- Cai, W., Lysova, E. I., Khapova, S. N., & Bossink, B. A. (2019). Does entrepreneurial leadership foster creativity among employees and teams? The mediating role of creative efficacy beliefs. *Journal of Business and Psychology*, 34, 203-217.  
<https://doi.org/10.1007/s10869-018-9536-y>
- Cochran, W. G. (1963). *Sampling techniques* (2nd ed.). John Wiley & Sons.
- Damanpour, F., & Schneider, M. (2009). Characteristics of innovation and innovation adoption in public organizations: Assessing the role of managers. *Journal of public administration research and theory*, 19(3), 495-522. <https://doi.org/10.1093/jopart/mun021>
- Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of research in personality*, 19(2), 109-134. [https://doi.org/10.1016/0092-6566\(85\)90023-6](https://doi.org/10.1016/0092-6566(85)90023-6)
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics*, 5(1), 1-4.  
<https://doi.org/10.11648/j.ajtas.20160501.11>
- Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2009). Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. *Management Science*, 52(11), 1661-1674.  
<https://doi.org/10.1287/mnsc.1060.0576>
- Kang, J. H., G. T. Solomon, and D. Y. Choi. (2015). "CEOs' Leadership Styles and Managers' Innovative Behaviour: Investigation of Intervening Effects in an Entrepreneurial Context." *Journal of Management Studies*, 52 (4): 531-54. <https://doi.org/10.1111/joms.12125>
- Kumara, K. C., & Gamage, P. (2020). Impact of perceived transformational leadership on the productivity of information technology professionals in Sri Lanka: Mediating effect of organizational commitment. *Journal of HRM Perspectives*, 5(2), 19.
- Lazzarotti, V., Bengtsson, L., Manzini, R., Pellegrini, L., & Rippa, P. (2017). Openness and innovation performance: an empirical analysis of openness determinants and performance mediators. *European Journal of Innovation Management*, 20(3), 463-492.  
<https://doi.org/10.1108/EJIM-06-2016-0061>
- Leitch, C. M., & Volery, T. (2017). Entrepreneurial leadership: Insights and directions. *International Small Business Journal*, 35(2), 147-156.  
<https://doi.org/10.1177/0266242616681397>
- Makri, M., & Scandura, T. A. (2010). Exploring the effects of creative CEO leadership on innovation in high-technology firms. *The Leadership Quarterly*, 21(1), 75-88.

- <https://doi.org/10.1016/j.leaqua.2009.10.006>
- March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87.  
<https://doi.org/10.1287/orsc.2.1.71>
- Menguc, B., & Ozanne, L. K. (2005). Challenges of the “green imperative”: A natural resource-based approach to the environmental orientation–business performance relationship. *Journal of Business Research*, 58(4), 430-438. <https://doi.org/10.1016/j.jbusres.2003.09.002>
- Mom, T. J., Van Den Bosch, F. A., & Volberda, H. W. (2007). Investigating managers' exploration and exploitation activities: The influence of top-down, bottom-up, and horizontal knowledge inflows. *Journal of Management Studies*, 44(6), 910-931.  
<https://doi.org/10.1111/j.1467-6486.2007.00697.x>
- Pérez-Luño, A., Gopalakrishnan, S., & Cabrera, R. V. (2014). Innovation and performance: The role of environmental dynamism in the success of innovative choices. *IEEE Transactions on Engineering Management*, 61(3), 499-510. <https://doi.org/10.1109/TEM.2014.2318085>
- Prasad, B., & Junni, P. (2016). CEO transformational and transactional leadership and organizational innovation: The moderating role of environmental dynamism. *Management Decision*, 54(7), 1542-1568.  
<https://doi.org/10.1108/MD-11-2014-0651>
- Renko, M., El Tarabishy, A., Carsrud, A. L., & Brännback, M. (2015). Understanding and measuring entrepreneurial leadership style. *Journal of Small Business Management*, 53(1), 54-74.  
<https://doi.org/10.1111/jsbm.12086>
- Ricard, L. M., Klijin, E. H., Lewis, J. M., & Ysa, T. (2017). Assessing public leadership styles for innovation: A comparison of Copenhagen, Rotterdam, and Barcelona. *Public Management Review*, 19(2), 134-156. <https://doi.org/10.1080/14719037.2016.1148192>
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary educational psychology*, 25(1), 54-67. <https://doi.org/10.1006/ceps.1999.1020>
- Shalley, C. E., & Perry-Smith, J. E. (2001). Effects of social-psychological factors on creative performance: The role of informational and controlling expected evaluation and modeling experience. *Organizational behavior and human decision processes*, 84(1), 1-22.  
<https://doi.org/10.1006/obhd.2000.2918>
- Tidd, J., & Bessant, J. R. (2020). *Managing innovation: Integrating technological, market, and organizational change* (7th ed.). Hoboken, NJ: John Wiley & Sons.
- Tierney, P., Farmer, S. M., & Graen, G. B. (1999). An examination of leadership and employee creativity: The relevance of traits and relationships. *Personnel Psychology*, 52(3), 591-620.  
<https://doi.org/10.1111/j.1744-6570.1999.tb00173.x>
- Vendrell-Herrero, F., Bustinza, O. F., & Opazo-Basaez, M. (2021). Information technologies and product-service innovation: The moderating role of service R&D team structure. *Journal of Business Research*, 128, 673-687. <https://doi.org/10.1016/j.jbusres.2020.01.047>
- Vera, D., & Crossan, M. (2004). Strategic leadership and organizational learning.

- Academy of Management Review, 29(2), 222-240.  
<https://doi.org/10.5465/amr.2004.12736080>
- Wang, G., Van Iddekinge, C. H., Zhang, L., & Bishoff, J. (2019). Meta-analytic and primary investigations of the role of followers in ratings of leadership behavior in organizations. *Journal of Applied Psychology, 104*(1), 70.  
<https://psycnet.apa.org/doi/10.1037/apl0000345>
- Yukl, G., & Mahsud, R. (2010). Why flexible and adaptive leadership is essential. *Consulting Psychology Journal: practice and research, 62*(2), 81.  
<https://psycnet.apa.org/doi/10.1037/a0019835>
- Zhang, X., & Bartol, K. M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management Journal, 53*(1), 107-128.  
<https://doi.org/10.5465/amj.2010.48037118>
- Zhao, B., & Ziedonis, R. (2020). State governments as financiers of technology startups: Evidence from Michigan's R&D loan program. *Research Policy, 49*(4), 103926. <https://doi.org/10.1016/j.respol.2020.103926>