# TRANSFORMATIONAL LEADERSHIP AND EXPLORATORY INNOVATION: THE MODERATING ROLE OF INTRINSIC MOTIVATION AND ENVIRONMENTAL DYNAMISM

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## Abstract

*The study investigated whether transformational leadership influences exploratory innovation and intrinsic motivation and environmental dynamism moderate this relationship. While leadership's impact on innovation has been broadly studied, specific effects of transformational leadership on exploratory innovation are underexplored in the literature. Further, the roles of intrinsic motivation and environmental dynamism as moderators are not fully explained in the literature. The study conducted in Sri Lanka intends to fill these gaps in the extant literature. A survey was conducted to collect data and statistical analyses were performed to test the hypothesized relationships. Findings revealed transformational leadership's significant positive effect on exploratory innovation. Moreover, intrinsic motivation and environmental dynamism were found to significantly moderate this relationship. Environmental dynamism amplifies the direct effect of transformational leadership on exploratory innovation, particularly in highly dynamic contexts. The study contributes to the theoretical understanding of transformational leadership's role in exploratory innovation and provides practical strategies for organizations to navigate the complexities of a rapidly changing technological landscape.*

**Keywords**: Environment dynamism, Exploratory innovation, Intrinsic motivation, Sri Lanka, Transformational leadership.

## 1. Introduction

Innovation enhances firms' competitive positioning, profitability, and long-term sustainability by fostering differentiation, customer value creation, and market leadership. Exploratory innovation involves the pursuit of new ideas, experimentation, and risk-taking often requiring organizations to venture into uncharted territories (Damanpour, 1991; Jansen et al., 2006; Levinthal & March, 1993). Since exploratory innovation fuels long-term growth and competitiveness, it is critical for organizations to engage in exploratory innovation to adapt to technological advancements and market shifts, ultimately maintaining a competitive edge.

In driving exploratory innovation, transformational leadership emerges as a pivotal determinant. Transformational leaders are adept at fostering a culture of innovation and encouraging risk-taking among their employees (Brondoni et al., 2013; Cecere et al., 2022; Makri & Scandura, 2010). Accordingly, this leadership style is particularly relevant in industries that are undergoing rapid technological change, such as information technology (IT). Previous research such as Wickramasinghe and Mahahettige (2013) identifies employees as one of the greatest assets of IT firms in Sri Lanka. Still, employees in the IT sector in Sri Lanka find limited opportunities for job engagement, which is one of the reasons for their intentions to migrate to other countries (Wickramasinghe & Eleperuma, 2022). Hence, leadership's capability to drive its employees towards innovation is an area worthy of exploration, especially in the IT sector. To test the proposed relationships, a cross-section study was conducted in the IT sector in Sri Lanka, which is known for its fast-paced growth and technological dynamism. This context provides ideal research setting to understand the effect of transformational leadership on exploratory innovation.

When understanding the gap in the literature and the importance of the present study, our review of the literature suggests three specific gaps. First, the literature emphasizes the importance of organizational ambidexterity for achieving optimal performance and innovation (Danneels, 2002; Han et al., 2016; Kraft & Bausch, 2016). For example, previous research such as Kraft and Bausch (2016) and Danneels (2002) accentuated the imperative of fostering innovation to enhance products and services successfully. One of the main challenges for organizations nowadays is how to encourage inventive behaviour among employees, as innovation is becoming essential to an organization's survival and a crucial component of gaining a competitive edge (França, & Rua, 2017; Han et al., 2016; Silvestrelli, 2018). Understanding the elements that promote innovation has been a major focus of academic research (Damanpour & Schneider, 2009).

Second, the literature identifies the role of leadership in fueling innovation (Makri & Scandura, 2010; Omran et al., 2011; Slater et al., 2014). However, apart from examining the direct effect of transformational leadership, the present study aims to investigate possible moderating effects that could have an impact on this relationship. Intrinsic motivation and environmental dynamism are the probable moderators of interest in the study. Intrinsic motivation characterized by the inherent drive to engage in meaningful work, may interact with leadership styles to shape innovation outcomes (Charbonneau et al., 2001; Zhang & Bartol, 2010). Comprehending how intrinsic motivation modifies the direct relationship between transformational leadership and exploratory innovation might offer valuable perspectives on the function of individual motivation in propelling exploratory innovation. The dynamic nature of the external environment, including factors such as market volatility, technological disruptions, and regulatory changes, can impact the efficacy of transformational leadership in fostering innovation (Damanpour & Schneider,

2009). Therefore, through an analysis of the moderating effects of environmental dynamism and intrinsic motivation, the study seeks to broaden the understanding of this important area.

Third, it is difficult to find empirical research on leadership and innovation in developing countries. On the one hand, as shown by Malik and Wickramasinghe (2018) developing countries face relentless challenges when relying on external sources for product/service or process innovations. On the other hand, engagement in innovative activities gives employees much satisfaction with their jobs (Wickramasinghe & Wickramasinghe, 2013, 2015, 2017). In the specific context of the IT sector, South Asia is reputed to provide IT services (such as India and Sri Lanka) and has a growing IT sector. In the rapidly evolving landscape of the IT sector, the pursuit of innovation has become paramount for organizations to maintain competitiveness and foster sustainable growth. Yet, it is difficult to find empirical studies on leadership and innovation in the IT sector in South Asia. The exploration of transformational leadership and its impact on exploratory innovation holds substantial significance for both theoretical advancements and practical applications for the IT sector not only in Sri Lanka but also in South Asia. Hence, the present study expects to address this gap in the literature to provide new insights that enrich the current understanding of transformational leadership's impact on exploratory innovation, particularly in dynamic and technology-driven environments.

In the above context, the present study questioned 1) how transformational leadership influences exploratory innovation and 2) do intrinsic motivation and environmental dynamism moderate this direct effect. The present empirical study was conducted in Sri Lanka to find answers to these research questions by collecting data from the IT sector. Accordingly, the objectives were to investigate 1) the nature of the relationship transformational leadership has on exploratory innovation, 2) the nature of the relationship intrinsic motivation has on exploratory innovation, 3) the nature of the relationship environmental dynamism has on exploratory innovation, and 4) whether intrinsic motivation and environmental dynamism moderate the relationship between transformational leadership and exploratory innovation.

The study aims to offer theoretical and practical contributions for enhancing exploratory innovation capabilities with transformational leadership. The relevant literature is extensively reviewed on transformational leadership, exploratory innovation, intrinsic motivation, and environmental dynamism. Thereafter, a description of the methodology adopted is provided. Finally, the results were presented and discussed. The paper concludes by offering a deeper theoretical understanding of transformational leadership’s role in exploratory innovation, and practical guidance to navigate the complexities of a rapidly changing technological landscape.

## 2. Literature Review

### *2.1 Exploratory Innovation*

Innovation encompasses diverse forms and manifestations, including technological breakthroughs, organizational strategies, social movements, and creative expressions. Schumpeter (1934) conceptualized innovation as the introduction of new products, processes, or market methods, emphasizing its role in driving economic development through the process of creative destruction. Building upon Schumpeter's seminal work

(1934), subsequent scholars such as Dosi (1988), and March (1991) have expanded the notion of innovation. Today, several primary classification schemes of innovation are available in the literature that were built on different dimensions. According to March (1991) and Levinthal and March (1993), innovation in organizations can be grouped into exploratory innovation and exploitative innovation. Exploratory innovation involves the pursuit of new opportunities, experimentation, and risk-taking to explore novel ideas or technologies. Conversely, exploitative innovation places more emphasis on streamlining and improving already-existing resources, knowledge, and capabilities to enhance efficiency, reliability, and market performance (Levinthal & March, 1993). Hence, exploratory innovation fuels long-term growth and competitiveness by exploring new markets and technologies whereas exploitative innovation ensures the optimization of existing resources and capabilities to sustain short-term performance and operational efficiency (Jansen et al., 2006). The present study investigated exploratory innovation.

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), Danneels (2002), and Jansen et al. (2006), exploratory innovation is instrumental in addressing emerging customer needs and expanding business horizons. A key aspect of exploratory innovation, as highlighted by Benner and Tushman (2002) and Levinthal and March (1993), is the departure from existing knowledge frameworks. This departure allows firms to experiment with new ideas, take risks, and explore uncharted territories. Scholars like Colombo et al. (2017), Slater et al. (2014), and Tiberius et al. (2021) emphasize the experimental nature of exploratory innovation, which often ends up with radical changes and the pursuit of new technological trajectories. Overall, exploratory innovation catalyzes organizational growth by facilitating the exploration of new markets and technologies. Its experimental nature and focus on long-term benefits make it a strategic imperative for firms seeking to stay ahead in competitive landscapes.

### *2.2. Transformational Leadership*

Transformational leadership, which is built on transformational theory, emphasizes the important relationship between leaders and followers. Key attributes of transformational leadership include the ability to establish a clear vision, provide inspiration and ability to intellectually engage members within organizations for creative problem-solving and find innovative solutions to challenges (Afsar et al., 2017; Yadav, 2016). They also act as both coaches and counsellors, establishing direct and individualized connections with followers, thereby enhancing commitment to tasks and goals (Michaelis et al., 2010; Yadav, 2016). Moreover, in managing a highly culturally diverse workforce, the cohesiveness and intra-organizational integration of organizational members and units are facilitated by this leadership style (Boehm et al., 2015). Hence, this leadership style could foster proactive and positive attitudes and passion in employees, thereby positively impacting the organization's growth agendas (Wanasida et al., 2021). Because of these attributes, despite several different leadership styles available in the leadership literature, transformational leadership stands out as the most associated leadership style with innovation (Afsar et al., 2017; Gumusluoğlu & Ilsev, 2009; Michaelis et al., 2010).

The literature provides evidence for transformational leadership’s ability to promote exploration and facilitate radical innovation (Colombo et al., 2017; Slater et al.,

2014). For example, Slater et al. (2014) argue that leadership is a key factor in radical innovations in organisations. Previous research also supports transformational leaders' ability to change employees' attitudes toward questioning existing practices, generating novel ideas, experimental thinking, establishing organizational values, and experimentation (Millar et al., 2017; Wickramasinghe & Wickramasinghe, 2023; Yadav, 2016). Further, transformational leaders' encouragement for diverse perspectives and out-of-the-box thinking are found to facilitate exploratory innovation (Danneels, 2002; Kraft & Bausch, 2016). Furthermore, leadership qualities such as intellectual stimulation are found to drive innovation by fostering their commitment to organizational goals (Danneels, 2002). Moreover, Paulsen et al. (2013) found that transformational leadership positively impacts team climate and identification, subsequently fostering innovation within R&D teams. In addition, García-Morales et al. (2008) found that transformational leaders' ability to cultivate a shared vision among employees, foster participation and collaboration, and stimulate innovative thinking. Although such studies acknowledge the significance of transformational leadership in nurturing various types of innovation, the lack the understanding of the mechanisms of transformational leaders facilitating exploratory innovation highlights the need for more research in this important area (Gumusluoğlu & Ilsev, 2009). Therefore, it is proposed:

**H1**: Transformational leadership enhances exploratory innovation.

### *2.3. Intrinsic Motivation*

Intrinsic motivation, stemming from individuals' internal desires to engage in activities for their inherent satisfaction or the benefit of others, plays a pivotal role in influencing engagement in innovation (Amabile, 1983; Deci & Ryan, 2000; Gardner & Wickramasinghe, 2023). Intrinsic motivation has been recognized as a key driver of engagement in innovation, emphasizing its role in fostering proactive behaviours, exploring innovative solutions, and exhibiting persistence in the face of challenges (Amabile, 1983; Deci & Ryan, 2000). Studies conducted in Sri Lanka also supports this contention (Nanayakkara et al., 2022). Highly intrinsically motivated employees in service innovation initiatives are found to be deeply engaged, viewing work as enjoyable rather than burdensome, and demonstrating greater initiative and innovativeness (Bande et al., 2016; Zhang & Bartol, 2010). Hence, the literature supports the direct relationship intrinsic motivation has with employee innovation, fostering perseverance, and unconventional problem-solving approaches (Deci & Ryan, 2000; Fuller et al., 2006). Therefore, it is proposed:

**H2**: Intrinsic motivation enhances exploratory innovation

In addition to the above direct effect of intrinsic motivation on innovation, the literature highlights the importance of investigating moderating and mediating effects on innovation (Tiberius et al., 2021). For example, some past studies report positive mediation outcomes (Charbonneau et al., 2001) while others suggest partial moderator effects or fail to observe significant moderating effects (Gumusluoğlu & İlsev, 2009) on innovation. Zhang & Bartol (2010), in this regard, suggests that intrinsic motivation could influence

strength and direction as a moderator of innovation (Zhang & Bartol, 2010). These conflicting findings regarding its precise role warrant further research to explain its nuanced role. Therefore, in the present study, intrinsic motivation is taken as a moderator between transformational leadership and exploratory innovation. Transformational leaders, by nurturing a sense of purpose and autonomy, are found to have the potential to enhance the intrinsic motivation of their followers, thereby facilitating exploratory innovation (Zhang & Bartol, 2010). When employees are intrinsically motivated, they exhibit greater autonomy, creativity, and persistence in problem-solving tasks (Amabile, 1983). Thus, intrinsic motivation is posited to support the effects of transformational leadership on exploratory innovation, as motivated individuals are likely to embrace challenges and take the first move in generating novel solutions (Shin & Zhou, 2007; Wickramasinghe & Madhusanka, 2024). For example, Shin and Zhou (2007) and Zhang and Bartol (2010) suggest that employees who possess greater levels of intrinsic motivation respond more favourably to transformational leadership practices, leading to greater exploratory innovation outcomes. Considering these previous findings, it is proposed:

**H3**: Intrinsic motivation moderates the direct effect of transformational leadership on exploratory innovation

### *2.4. Environment Dynamism*

Environmental dynamism represents the frequency and extent of change and uncertainty in the external environment (Hou et al., 2019). High levels of environmental dynamism heighten uncertainty and complexity, which in turn encourages the organization's propensity for innovation (Waldman et al., 2001). Previous research showed the profound effect of environmental dynamism on organizational innovation (Auh and Menguc, 2005; Swaris & Wickramasinghe, 2024; Waldman et al., 2001; Zhang & Bartol, 2010). Zhang and Bartol (2010) showed that environmental dynamism can make a considerable impact on organizational adaptability and innovation. As highlighted by Auh and Menguc (2005), organizations facing high environmental dynamism encounter heightened uncertainty and are compelled to pursue exploratory innovation to capitalize on emerging opportunities. It is proposed:

**H4**: Environmental dynamism enhances exploratory innovation

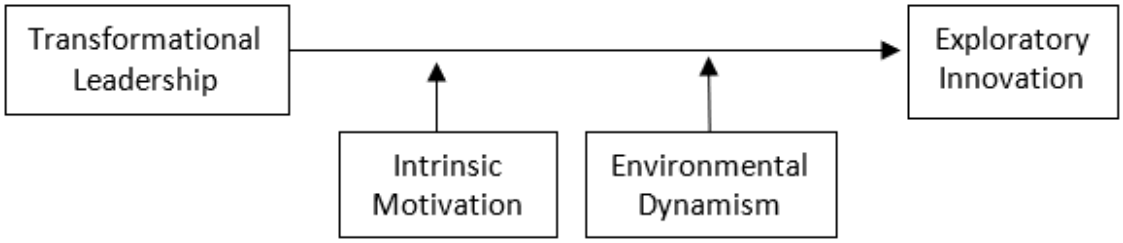
The literature identifies environmental dynamism as a contextual factor that could influence the strength and direction of the direct effect of leadership and exploratory innovation (Hou et al., 2019). The literature further suggests that environmental dynamism significantly impacts the efficacy of leadership in fostering innovation (Hou et al., 2019; Waldman et al., 2001). These support the arguments of Tiberius et al. (2021) on moderating and mediating effects on innovation. According to Amabile et al. (1983), in highly dynamic environments, transformational leaders carry out a decisive role in stimulating creativity and encouraging risk-taking among employees, thereby facilitating exploratory innovation. Moreover, in a dynamic environment, the visionary and inspirational attributes of transformational leaders are particularly instrumental in aligning organizational goals with environmental opportunities, fueling the pursuit of innovative ventures and disruptive technologies (Bunderson & Sutcliffe, 2002; Wickramasinghe, & Balasooriya, 2025). In

addition, transformational leaders present a compelling vision and adopt a strategy for the future (Judge and Piccolo, 2004). This form of idealized influence is likely to encourage and inspire organizational members to advance organizational change when faced with a highly uncertain environment. Transformational leaders in highly dynamic environments like in the IT sector may need to foster a dynamic innovation portfolio that encompasses exploratory innovation. Therefore, it is proposed:

**H5**: Environmental dynamism moderates the direct effect of transformational leadership on exploratory innovation.

Based on the literature reviewed above, Figure 1 is created for the study.

Figure 1 – Conceptual Model (source: Authors)




## 3. Methodology

### *3.1. Measures*

To assess the constructs under investigation, validated scales with demonstrated reliability and validity were selected. To ensure consistency in the response format, each construct was measured on a Likert scale of 1 (strongly disagree) to 5 (strongly agree). The six-item scale of Podsakoff et al. (1990) was used to measure transformational leadership. Sample items are “have high-performance expectations” and “Provide individualized support”. Five items of Mom et al. (2007) were used to measure exploratory innovation (Cronbach's alpha: = 0.920). Sample items include “search for new possibilities for products/services, processes, or markets” and “focus on 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”. Employees in Sri Lanka's IT sector comprise the study's population of interest. A cross-sectional survey-based approach was utilized to identify individuals directly involved in innovation activities. Hundred and fifty-seven individuals responded to the survey. The respondents’ characteristics are shown in Table 1. The questionnaire was distributed electronically to participants. The respondents’ anonymity was ensured.

Table 1 – Sample Profile (source: Authors)

| Characteristic | Category | % |
|---|---|---|
| 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 |

Cronbach's alpha reliability values were greater than 0.7 for all constructs. All constructs had factor loadings above 0.5 and eigenvalues above 1.0, in the principal component factor analysis. Correlation analysis was followed by regression analysis with Hayes' process macro to test the hypotheses.

## 4. Results and Discussion

### *4.1 Results*

Tables 2 to 5 show the results of regression analysis. As shown in Table 2, the R squared value of 60% (.598) shows the variability predicted by the model, which is significant ($p < 0.001$).

Table 2 – Model Summary (source: Authors)

| R | R-sq | F | p |
|---|---|---|---|
| 0.773 | 0.598 | 44.860 | 0.000 |

According to Table 3, the unstandardized regression weight of transformational leadership is 0.544 ($p < 0.001$). This supports H1. The unstandardized regression weight of intrinsic motivation is 0.709 ($p < 0.001$). This supports H2. The interaction effect of intrinsic motivation is -1.025 ($p < 0.001$). Since the confidence interval for the interaction effect with intrinsic motivation does not contain the value zero, the results support the existence of a moderating effect. This supports H3. The unstandardized regression weight of environmental dynamism is -.339 ($p < 0.001$). This supports H4. The moderation effect of environmental dynamism is 1.151 ($p < 0.001$). Since the confidence interval for the interaction effect with environmental dynamism does not contain the value zero, the results support the existence of the moderating effect. This supports H5.

Table 4 shows the highest-order unconditional interactions. The individual effect of each moderator and the collective effect of both moderators are significant ($p < 0.001$). The change in R-square due to both moderators is 28.6%. (.285). That is, both moderators have the highest impact on the direct effect of transformational leadership on exploratory innovation.

Table 3 – Model Coefficients (source: Authors)

| Construct | Coefficient | SE | t | p | LLCI | ULCI |
|---|---|---|---|---|---|---|
| Transformational leadership | 0.544 | 0.071 | 7.650 | 0.000 | 0.404 | 0.685 |
| Intrinsic motivation | 0.709 | 0.110 | 6.428 | 0.000 | 0.491 | 0.927 |
| Int_1 | -1.025 | 0.119 | -8.611 | 0.000 | -1.260 | -0.789 |
| Environmental dynamism | -0.339 | 0.088 | -3.842 | 0.000 | -0.513 | -0.165 |
| Int_2 | 1.151 | 0.112 | 10.271 | 0.000 | 0.929 | 1.372 |

Notes: Int_1 = Interaction effect of intrinsic motivation; Int_2 = Interaction effect of environmental dynamism

Table 4 – Highest-order Unconditional Interactions (source: Authors)

| Construct | R-sq change | F | p |
|---|---|---|---|
| Int_1 | 0.198 | 74.142 | 0.000 |
| Int_2 | 0.281 | 105.499 | 0.000 |
| Both | 0.286 | 53.643 | 0.000 |

Notes: Int_1 = Interaction effect of intrinsic motivation; Int_2 = Interaction effect of environmental dynamism; Both = both interactions taken together.

Table 5 shows the conditional effects of the focal predictor at the values of moderators. When both intrinsic motivation and environmental dynamism are at -1SD, the effect size is positive (0.343) and statistically significant ($p < 0.001$). As environmental dynamism moves from -1SD to the mean and then to +1SD, the effect size increases. When intrinsic motivation is at the mean and environmental dynamism is at -1SD, the effect becomes negative (-0.209), although it is not statistically significant ($p > 0.05$). The highest positive effect is observed when intrinsic motivation is at the mean and environmental dynamism is at +1SD (effect = 1.298, $p < 0.001$). Intrinsic motivation's indirect effect on the outcome depends on the level of environmental dynamism. The relationship between intrinsic motivation and the outcome varies across different levels of environmental dynamism.

Table 5 – Conditional Effect of Moderators (source: Authors)

| | | | | | | 95% CI | |
|---|---|---|---|---|---|---|---|
| IM | ED | Effect | SE | t | p | Low | Up |
| -1SD | -1SD | 0.343 | 0.085 | 4.017 | 0.000 | 0.174 | 0.511 |
| -1SD | Mean | 1.096 | 0.087 | 12.584 | 0.000 | 0.924 | 1.268 |
| -1SD | +1SD | 1.850 | 0.137 | 13.541 | 0.000 | 1.580 | 2.119 |
| Mean | -1SD | -0.209 | 0.109 | -1.926 | 0.056 | -0.424 | 0.006 |
| Mean | Mean | 0.544 | 0.071 | 7.650 | 0.000 | 0.404 | 0.685 |
| Mean | +1SD | 1.298 | 0.095 | 13.64 | 0.000 | 1.109 | 1.486 |
| +1SD | -1SD | -0.762 | 0.157 | -4.855 | 0.000 | -1.076 | -0.452 |
| +1SD | Mean | -0.008 | 0.104 | -0.078 | 0.938 | -0.213 | 0.197 |
| +1SD | +1SD | 0.745 | 0.088 | 8.517 | 0.000 | 0.573 | 0.918 |

Notes: IM = Intrinsic motivation; ED = Environmental dynamism; -1SD = standard deviation below the mean; +1SD = standard deviation above the mean

### *4.2. Discussion*

In the present study, transformational leadership emerged as a pivotal determinant of exploratory innovation. Intrinsic motivation and environmental dynamism hold the capacity to influence the direct effect of transformational leadership on exploratory innovation. Our findings provide robust support for the hypothesized relationships between transformational leadership, intrinsic motivation, environmental dynamism, and exploratory innovation. The results supported H1. This aligns with existing literature (such as Millar et al., 2017) that demonstrates how transformational leaders encourage risk-taking, experimentation, and new idea generation, which are crucial for fostering exploratory innovation. The results reinforce the notion that transformational leadership can play a vital role in steering organizations toward long-term growth and adaptability in dynamic environments. Further, H2 is also supported, as intrinsic motivation shows a significant positive relationship with exploratory innovation. This finding is consistent with previous studies (Amabile, 1983; Deci & Ryan, 2000), which indicate that intrinsically motivated individuals engage in creative and proactive problem-solving, contributing to innovation. Furthermore, H3 is supported by the data. This suggests that intrinsic motivation can enhance the impact of transformational leadership by encouraging employees to pursue exploratory projects with increased creativity and persistence (Shin & Zhou, 2007; Zhang & Bartol, 2010). The results also supported H4. This aligns with the literature indicating that dynamic environments compel organizations to innovate in response to external changes (Auh & Menguc, 2005; Waldman et al., 2001). Finally, H5 is supported by affirming that in uncertain environments, transformational leadership can be especially instrumental in promoting innovation (Bunderson & Sutcliffe, 2002; Judge & Piccolo, 2004).

The study's findings on transformational leadership largely align with existing literature, underscoring the role of such leaders in fostering an innovative organizational culture. Thereby supporting the findings from Michaelis et al. (2010) and Jansen et al. (2009) emphasizing that transformational leaders inspire their employees to challenge existing norms, which drives exploratory innovation. However, some scholars, like Afsar et al. (2017), suggest that transformational leadership may be more effective in stable environments than in highly dynamic ones, where employees may feel overwhelmed by frequent changes. Our study, on the other hand, found that transformational leadership is beneficial in dynamic settings as well, suggesting that it can effectively navigate complex environments by aligning employees with a clear vision for innovation. Intrinsic motivation also shows a strong and positive effect on exploratory innovation, echoing previous research by Amabile (1983) and Deci and Ryan (2000), who emphasize the importance of intrinsic drivers in creativity and innovation. Intrinsically motivated employees are inclined to view challenges as opportunities, which aligns with Fuller et al. (2006) and Bande et al. (2016), who find that intrinsic motivation fosters proactive engagement in innovation. Interestingly, some studies (e.g., Charbonneau et al., 2001) suggest that intrinsic motivation might function differently under varied leadership styles, potentially even acting as a moderator rather than a direct predictor of innovation outcomes. In our study, intrinsic motivation moderates the direct effect of transformational leadership on exploratory innovation, supporting the claims of Zhang and Bartol (2010) who argue that motivated individuals respond more strongly to transformational leadership, amplifying innovation outcomes. Findings on environmental dynamism add nuance to existing literature, particularly in terms of its moderating effects. Studies by Auh and Menguc (2005) and

Waldman et al. (2001) emphasize that higher levels of environmental dynamism push organizations to innovate to adapt to rapid environmental changes and maintain competitive advantage. However, some researchers, such as Bunderson and Sutcliffe (2002), suggest that in highly dynamic environments, transformational leaders must exercise caution, as frequent shifts might increase pressure on employees and potentially hinder innovation if not managed well. In contrast, our findings suggest that environmental dynamism not only encourages innovation but also strengthens the effect of transformational leadership and exploratory innovation, affirming that transformational leaders thrive in change-rich environments by fostering adaptability and innovation within their teams (Judge & Piccolo, 2004). However, the observed negative unstandardized regression weight for environmental dynamism contrasts with some prior studies, suggesting that while environmental dynamism promotes exploratory innovation, it may also add layers of complexity that require careful navigation.

## 5. Conclusions and Implications

In conclusion, this study has delved into the intricate dynamics of transformational leadership and exploratory innovation. The findings showed the value of understanding how transformational leadership interacts with intrinsic motivation and environmental dynamism to shape innovation outcomes. Primarily, the research reaffirms the pivotal role of leadership in fostering innovation within organizations. Transformational leadership emerges as a catalyst for promoting explorative innovation, fostering a culture of creativity, risk-taking, and visionary thinking among employees. However, the present study also acknowledges the nuanced interplay between transformational leadership style, intrinsic motivation and environmental dynamism. These moderating factors underscore the need for tailored leadership approaches that align with the specific needs and challenges faced by organizations. In essence, by shedding light on how diverse facets of leadership affect exploratory innovation endeavours, the findings of our study contribute to the growing body of knowledge on leadership and innovation. By recognizing the importance of contextual factors and the moderating role they play, organizations can leverage leadership to drive exploratory innovation to gain competitive advantage in the ever-changing business environment.

### *5.1 Theoretical Implications*

Meaningful theoretical ramifications flow from the findings for the understanding of how transformational leadership, intrinsic motivation and environmental dynamism interact to enhance explorative innovation. The empirical data presented in this study advances the field of leadership. While transformational leadership has been extensively studied in various contexts (Boehm et al., 2015; Kraft & Bausch, 2016; Le & Le, 2023), its influence on exploratory innovation together with intrinsic motivation and environmental dynamism remains underexplored. This integration enhances our comprehension of the complex mechanisms through which leadership influences organizational innovation processes. The examination of intrinsic motivation and environmental dynamism as moderating factors extends current knowledge by highlighting the contextual conditions under which transformational leaders exert their influence on innovation activities. This nuanced understanding aligns with the contingency perspective of leadership, emphasizing the

importance of considering situational factors in leadership research (e.g. such as Wang & Rode, 2010).

Further, the present study contributes to theoretical understanding by clarifying the connections between exploratory innovation and transformational leadership. The results validate prior studies (such as Le & Le, 2023) that found the direct effect of transformational leadership on exploratory innovation. The present study also investigated the moderating influences of intrinsic motivation and environmental dynamism. The findings demonstrate how transformational leadership behaviours and approaches can either facilitate or inhibit exploratory innovation. These insights contribute to the broader corpus of information on leadership and innovation, offering valuable implications for both researchers and practitioners in the field.

Furthermore, there is a scarcity of empirical studies on transformational leadership connecting to exploratory innovation, particularly in developing and South Asian countries like Sri Lanka. The IT sector is affected by several personnel-related issues over time (Poravi, & Wickramasinghe, 2010). One of the key mechanisms to keep employees satisfied is to engage them in innovation activities. This study provides context-specific insights into the leadership-innovation nexus within a developing economy with a strong IT sector. This contextualization acknowledges the unique socio-economic factors that may shape leadership practices and innovation dynamics in Sri Lanka, thereby enriching the generalizability and applicability of the findings beyond Western-centric perspectives.

### *5.2. Managerial Implications*

For practitioners, organizational leaders and policymakers, the findings of our study offer actionable insights into how transformational leadership can be harnessed to foster a culture of innovation. Appropriate procedures should be introduced to identify the key behaviours and practices of transformational leaders that encourage exploratory innovation. By doing so, organizations can take appropriate steps to design targeted leadership development programmes. The importance of targeted leadership development programmes is well documented in the literature (Akuratiyagamage, 2004b, 2007; Mamman et al., 2006; Wickramasinghe, 2007, 2013). Well-crafted management development programmes can train leaders to effectively inspire and motivate their teams, encourage creativity, experimentation, and risk-taking that are essential for exploratory innovation.

Further, the study provides strategic value to organizations by empirically demonstrating how transformational leadership can be leveraged to achieve long-term innovation goals. Understanding the relationship between leadership and innovation allows organizations to align their leadership strategies with innovation objectives, facilitating a more coherent and effective approach to innovation management. This alignment is crucial for enhancing the organization's adaptability and competitiveness in fast-paced business sectors.

Furthermore, in an era of rapid technological change, organizational resilience, and the ability to innovate are paramount. This study's findings can help organizations build a robust innovation capability by promoting leadership practices that encourage exploratory innovation. Such practices enable organizations to navigate disruptive changes, adapt to new market conditions, and seize emerging opportunities, thereby enhancing their long-term sustainability and success.

In addition, the examination of the moderating effects of intrinsic motivation and environmental dynamism offered an in-depth understanding of two contextual factors that

influence the relationship between transformational leadership and exploratory innovation. For instance, the study found that transformational leadership can be crucial in highly dynamic environments to maintain high levels of innovation and adaptability. This insight helps organizations tailor their leadership approaches to better suit specific contexts, thereby enhancing the effectiveness of innovation strategies.

The moderating effects of both intrinsic motivation and environmental dynamism imply that while both moderators play important roles in shaping innovation outcomes, their relative importance may vary depending on the specific context and organizational goals. Leaders should assess the unique needs and challenges of their organization and tailor their strategies accordingly. In some situations, intrinsic motivation may be more critical for driving innovation, while in others, environmental dynamism may have a greater impact. Therefore, leaders should pay attention to both moderators and prioritize based on the organization's priorities and strategic objectives. Promoting intrinsic motivation and adapting 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. While both moderators are important, leaders should assess their organization's unique needs and priorities to determine the appropriate balance and emphasis on each moderator.

### *5.3. Limitations of the study and future research*

First, the study is restricted to capturing the nuanced quantitative aspects of leadership and innovation dynamics within organizations. Second, more longitudinal or experimental research is required to verify the causation shown in the present study. Third, there may be unmeasured confounding variables or omitted variable bias that could influence the observed relationships. Fourth, while the study focuses on specific moderators, such as intrinsic motivation and environmental dynamism, other potential moderators or interaction effects may exist but were not explored. In addition, a detailed analysis of explorative activities that occurred in organizations is worthy of understanding. As suggested by Wickramasinghe (2022), social network analysis could be used for this purpose.

Moving forward, further research endeavours in the domain of innovation and leadership could explore several promising directions to deepen our understanding of the intricate connection between innovative activities and leadership. First, there is a need for longitudinal studies to investigate how leadership influences innovation throughout time. Researchers can offer insights into the long-term effects of various leadership philosophies on organizational innovation by monitoring changes in innovation performance and leadership behaviours over an extended period of time. Previous research in the Sri Lankan context (such as Nanayakkara et al., 2020; Wickramasinghe, 2025) suggest the need of evaluating organization culture to better understand leadership styles. Hence, conducting qualitative research could provide deeper insight into fostering intrinsic motivation and creating a more dynamic environment to enhance exploratory innovation. Second, investigations on the processes through which leadership impact innovation outcomes are warranted. Third, as emphasized by Akuratiyagamage (2004a 2007) and Wickramasinghe and Pathirana (2022), in the Sri Lankan context, leadership development programmes can enhance leadership capabilities. Hence, future studies could examine the functions of leadership development programmes in enhancing leaders' ability to foster innovation

within their teams and organizations. Last but not least future research could replicate the study across additional countries and sectors for broader applicability.

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