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(Review Article)

Female CEOs and firm innovation in low- middle-income countries: An empirical analysis

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Abstract

Innovation is a critical driver of economic growth, yet the role of top executive characteristics—particularly CEO gender—in fostering innovation remains under-explored in developing country contexts. This study examines whether firms led by female CEOs in low- and middle-income countries are more likely to pursue innovative activities. Using firm-level data from the World Bank's Enterprise Surveys and a logistic regression framework, we analyze the impact of CEO gender on the likelihood of firm innovation (product or process introduction), controlling for research and development (R&D) activity, firm size, ownership structure, and industry sector. The results provide evidence that female-led firms have a significantly higher probability of innovating compared to male-led firms, even after accounting for key covariates. Notably, the marginal effect of having a female CEO is positive, implying that female leadership adds about 5–10 percentage points to the predicted probability of innovation, holding other factors constant. Robustness checks, including goodness-of-fit tests and multicollinearity diagnostics, support the validity of the findings. These findings align with Upper Echelons Theory, suggesting that top executives' characteristics shape organizational outcomes. The study contributes to the literature on gender diversity and innovation by highlighting how female CEOs can influence firm innovation in emerging economies. It also underscores the importance of supportive institutional frameworks—such as inclusive corporate cultures and pro-diversity policies—in amplifying the innovation benefits of female leadership. Our analysis suggests that empowering more women to reach executive roles could be a catalyst for innovation-led growth in developing economies

Keywords: Female CEO; Innovation; Developing Countries; Upper Echelons Theory; Gender Diversity; Logistic Regression

1. Introduction

Despite some progress, women remain underrepresented in corporate leadership roles worldwide, particularly in low- and middle-income countries (LMICs) (1). This underrepresentation is significant given that research increasingly links female leadership to positive firm outcomes such as higher financial performance and enhanced innovation. For example, a global survey of companies in 91 countries found that firms with more women in senior management had superior profitability (2). Likewise, studies have observed that firms led by women or with greater gender diversity in top management tend to achieve greater innovation outputs and patents (3). However, much of this evidence comes from high-income economies; the impact of female CEOs on firm innovation in LMICs remains comparatively underexplored. This paper addresses that gap by examining whether and how female chief executives influence firm innovation in LMICs, drawing on insights from leadership theory and prior empirical findings.

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1.1. Theoretical Foundations

Upper Echelons Theory posits that organizational outcomes are a reflection of top managers' characteristics and values (4). According to this theory, attributes such as gender, age, education, and experience of executives shape their strategic choices and, consequently, firm performance and innovation. Female leaders may bring different perspectives and management styles that influence decision-making. For instance, psychological and social research suggests that female leadership can confer unique advantages (as well as face distinct challenges) in organizations (5). Women executives are often found to adopt more collaborative and inclusive leadership approaches and may prioritize long-term development and innovation-friendly work climates. At the same time, they may encounter gender stereotypes or structural biases that affect their decision-making latitude (5). Together, these theoretical insights imply that a CEO's gender could meaningfully affect a firm's innovation strategy and outcomes. In LMIC contexts, where traditional gender norms can be strong, understanding this dynamic is especially important.

1.2. Female Leadership and Firm Performance

A growing body of literature examines how female leadership and gender diversity in management relate to firm performance. Several studies suggest that having women in top executive positions or on corporate boards can benefit firm outcomes under certain conditions. For instance, Adams and Ferreira (2009) found that gender-diverse boards tend to exhibit better governance practices and oversight, which can translate into improved performance (6). Similarly, Carter et al. (2003) reported a positive correlation between the presence of female directors and firm value, indicating that board diversity may enhance shareholder value (7). At a broader level, cross-country evidence supports the performance benefits of female leadership: a comprehensive study by Noland et al. (2016) linked greater female representation in corporate leadership to higher firm profitability and equity returns across a global sample (2).

Female executives may also influence firms through their management style and risk preferences. Research in corporate finance has noted that firms led by female CEOs often pursue slightly more conservative financial policies, resulting in lower leverage and more prudent risk-taking (8). For example, Faccio et al. (2016) found that companies with female CEOs had lower corporate risk levels and more efficient capital allocation compared to those led by male CEOs (8). This prudent approach can contribute to firm stability and long-term performance. Overall, while findings are not uniform in every context, many studies conclude that female leadership has a neutral-to-positive association with firm performance. These performance effects are often attributed to the diverse perspectives women bring to strategic decision-making and improved governance and monitoring within top management teams (6)(7). In summary, the literature suggests that gender diversity in corporate leadership is an important factor in firm performance, though its impact may be contingent on organizational and environmental contexts.

1.3. Female Leadership and Innovation

Beyond general performance metrics, female leadership has been increasingly studied in relation to firm innovation outcomes. Innovation is a key driver of long-term growth, and top executives play a pivotal role in setting a firm's innovation agenda and risk tolerance. A range of studies indicates that greater gender diversity in leadership is associated with higher innovation input and output. Firms with more women in senior management or on boards have been found to invest more in R&D and generate more innovative products and patents (3). Empirical analyses of large firms in the United States and Europe show a positive relationship between female representation in top management and the rate of new product introductions or patent filings (9). In the context of S&P 1500 firms, one study observed that female representation in top management improved firm performance primarily for companies pursuing an innovation-intensive strategy**, suggesting that women leaders may especially enhance outcomes in innovation-driven firms (9). This aligns with the idea that diverse leadership teams foster more creativity and out-of-the-box thinking, which is crucial for innovation.

At the board level, evidence also supports the link between gender diversity and innovation. Miller and Triana (2009) found that boards with greater female representation were associated with increased innovation, which in turn mediated improved firm performance (10). However, the influence of women on boards may depend on reaching a critical mass. Torchia et al. (2011) noted that having a token female director was not enough; only when boards had approximately three or more female members did the level of firm innovation (e.g. number of new product developments) rise significantly (11). This finding indicates that a substantial presence of women in decision-making bodies can alter group dynamics and encourage more innovative ideas.

Sector- and context-specific studies further reinforce these patterns. An analysis of technology-based firms and SMEs in Spain showed that top management teams with balanced gender composition achieved greater innovation in both product and process domains (12). Likewise, research on high-tech start-ups (such as biotechnology firms undergoing

IPOs) found that gender-diverse leadership teams possessed stronger innovation capabilities, contributing to better innovation performance during their initial public offerings (13). Chen et al. (2018) provide additional evidence from an international sample: firms with higher female board representation had significantly greater R&D intensity and patent outputs, which corresponded with improved financial performance (3). In sum, a multitude of studies from different regions and industries suggest that female leadership and gender diversity in top management can be catalysts for firm innovation. Women leaders may introduce diverse knowledge and networks, improve problem-solving within teams, and foster an organizational culture more open to change—all of which are conducive to innovation.

1.4. Evidence from Developing and Emerging Economies

While the positive links between female leadership, performance, and innovation are well documented in developed countries, recent research has started to examine whether similar patterns hold in developing and emerging economies. These contexts often feature different institutional, cultural, and economic conditions that can moderate the impact of female leaders. Overall, findings indicate that female leadership can indeed spur innovation in LMICs, but supportive environments are crucial for unlocking this potential.

One cross-country study of 75 economies (spanning many developing countries) found no intrinsic gender gap in firms' propensity to innovate once key factors were accounted for (14). Strohmeyer et al. (2017) showed that women-led firms were just as likely as men-led firms to engage in innovation when given comparable resources and opportunities. Notably, their analysis revealed that differences in innovation outcomes were largely explained by access to resources and institutional support, rather than by gender differences in risk-taking (14). Female CEOs did not significantly differ from male CEOs in risk aversion related to innovation, countering a common assumption. Instead, constraints like limited access to finance and weaker institutional environments tended to dampen innovation in women-led firms. This suggests that under the right conditions – such as availability of capital and an even playing field – female-led businesses are equally innovative.

Institutional context appears to play a decisive role. Audretsch et al. (2022) analyzed firms across 75 countries and found that in environments with greater **economic freedom** (for instance, lower barriers to credit, more robust property rights, and supportive fiscal policies), women-led firms showed significantly higher innovation performance (15) In their study, increases in a country's fiscal freedom index were associated with a stronger propensity to introduce new products or technologies in women-led companies, effectively narrowing the innovation gap. This indicates that when external constraints are lifted, female CEOs leverage opportunities to innovate at least as much as their male counterparts.

Political and cultural institutions matter as well. Investigating 25 transitional economies in Eastern Europe and Central Asia, Iman et al. (2022) found that democratization level influenced the female leadership–innovation relationship (16). In countries with higher democratic development (characterized by more inclusive institutions and likely more gender-equal norms), firms led by women were just as innovative as those led by men (16). By contrast, in less democratic, more male-dominated environments, female-led firms tended to lag in innovation investment. The study suggests that democratization helps eliminate biases and structural barriers that otherwise hinder female executives from driving innovation. These outcomes highlight that empowering women leader goes hand-in-hand with broader institutional progress.

Survey evidence further underscores these trends in developing regions. A global report by the International Labour Organization, which surveyed nearly 13,000 enterprises in over 70 countries, found that a majority of firms perceived positive impacts on performance and innovation after appointing women to senior management positions (1). Many companies in Africa, Asia, and Latin America reported that greater gender diversity in management improved creativity and problem-solving, leading to new product development and higher competitiveness (1). Such findings from practitioners align with academic research, reinforcing the business case for female leadership in emerging markets.

In summary, the evidence from LMICs, although still emerging, aligns with global findings that female leadership can be a valuable asset for firm innovation. However, it also emphasizes that context matters greatly. Supportive institutions, access to finance, and inclusive cultural norms amplify the positive effects of female CEOs on innovation, whereas restrictive or discriminatory environments can mute those benefits. This dual message is particularly relevant for policymakers and business leaders in developing economies: promoting gender diversity in corporate leadership, in tandem with improving the business climate for innovation, could yield substantial dividends in terms of innovative activity and economic growth.

2. Conclusion

Across both developed and developing economies, female leadership and gender diversity in corporate management have been shown to influence firm innovation and performance in meaningful ways. The theoretical expectation from Upper Echelons Theory—that top executives shape organizational outcomes through their personal characteristics—is strongly supported by empirical evidence linking female CEOs and diverse top management teams to enhanced innovation outputs and competitive advantage. In low- and middle-income countries, women-led firms are increasingly demonstrating innovative success, especially when aided by supportive institutional frameworks that reduce gender-based barriers.

The expanded literature suggests that empowering more women to lead businesses can broaden a firm's strategic outlook, improve decision-making processes, and foster an organizational culture conducive to innovation. At the same time, merely placing women in leadership is not a panacea; the surrounding conditions must allow their contributions to take effect. Efforts to improve access to capital, strengthen governance, and promote gender-inclusive policies work synergistically with female leadership to drive innovation. Ultimately, advancing gender diversity in corporate leadership is not only a matter of equity but also an avenue to boost firm-level innovation and economic development, particularly in the developing world. Future research and policy should continue to address the challenges female leaders face in LMICs and identify mechanisms to leverage their talents for innovative performance.

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