

The Influence of CEO Gender on Chinese Enterprise Innovation: The Moderating Role of Managerial Discretion

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Abstract

Purpose: Based on the upper echelon theory, some research propositions are put forward. More specifically, the objective is to examine the Chief Executive Officer (CEO)'s personal characteristics and the effect of CEO gender on enterprise innovation, and outlining the moderators of these relationships (i.e., firm age and CEO duality).

Design/methodology/approach: Through a systematic literature review of CEO's personal characteristics and enterprise strategy choices, this study explores the relationship of CEO gender on enterprise innovation.

Findings: This study develops a new theoretical framework to explore the influence of CEO gender on enterprise innovation with the enabling role of firm age and CEO duality as moderators.

Research limitations/implications: The limitation of this study is that it only puts forward the theoretical framework with the support of upper echelon theory.

Practical implications: The study can gain attention of enterprise owners to the personal characteristics of executives and managerial discretion. It also helps enterprise owners design appropriate organizations. Thus improving the innovation ability of enterprises.

Originality/value: To the best of the authors' knowledge, studies about the influence of CEO gender on enterprise innovation with the moderating effects of firm age and CEO duality are still underexplored. Hence, this study provides a new perspective for enterprise innovation.

Keywords: Upper echelon theory, CEO duality, CEO personal characteristic, CEO gender, Enterprise innovation, Firm age

Introduction

In today's dynamic, globalized, and evolving technological world, innovation is a critical competitive advantage for enterprises to sustain and drive development (Wu et al., 2021a). Enterprise innovation enables organizations to gain competitive advantage, improve enterprise performance, expand new export markets, and increase market value (Bloom & Van Reenen,

2002; Hashi & Stojčić, 2013; Love & Roper, 2015; Wan et al., 2021). The global pandemic of coronavirus (COVID-19) has forced enterprises to confront various challenges and put enterprise growth at risk (Adam & Alarifi, 2021; Markovic et al., 2021). Therefore, it is critical to improve enterprise innovation performance.

The majority of literature on enterprise innovation is devoted to corporate governance (Bianchini et al., 2017), corporate social responsibility (Wu et al., 2021b) and innovation capabilities (Heider et al., 2021). Since the introduction of the upper echelon theory (Hambrick & Mason, 1984), several studies began to examine the impact of leaders' personal traits on enterprise decision-making (Lin et al., 2020; Yang et al., 2021), while some examined the impact of top management teams (TMTs) or boards of directors on enterprises from a diverse perspective (Boone et al., 2019; Xie et al., 2020). To the best of the authors' knowledge, studies of the influence of Chief Executive Officer (CEO) characteristics on enterprise innovation are still underexplored, thus, this paper sets out to explore the influence of CEO gender on innovation from the perspective of the managerial discretion.

In addition, Hambrick and Mason (1984) developed a series of theoretical hypotheses on the relationships between demographic characteristics and various strategic performances. The findings indicate that CEO gender is one of the critical demographic characteristics influencing enterprise strategic choices or enterprise performance. Female CEOs have risen fast in recent years. More females are promoted to senior management positions in enterprises, including that of a president or chairperson. According to Catalyst (2021), more than one-third (38.5%) of the enterprises in global board in 2020 had at least three women, up from 36.2% in 2019, and of the 2,907 MSCI ACWI¹ Index enterprises in 2020, 20.6% of the directors were women, up from 20% in 2019. As a result, female CEOs contribute significantly to the acceleration of economic growth (Zeng & Wu, 2012).

Several studies indicate that male entrepreneurs drive organizational innovation and productivity (Marvel et al., 2015; Strohmeyer et al., 2017) whereas an increasing number of studies indicate that female CEOs can increase corporate investment efficiency and corporate innovativeness (Prabowo & Setiawan, 2021; Ullah et al., 2021). Therefore, with an increasing number of female CEOs, this study examines the gender gap in enterprise innovation activities to better understand female innovativeness. This will provide some useful insights to develop enterprise innovation policies.

According to the upper echelon theory, the impact of the leaders' personal characteristics on enterprise performance or strategic choices depends on the level of managerial discretion (Hambrick & Finkelstein, 1987). In past research, task complexity and market competition at the industry level, as well as firm size and corporate culture at the firm level, exert a moderating effect on the influence of gender on enterprise innovation via managerial discretion (Prabowo & Setiawan, 2021; Wu et al., 2021a; Xie et al., 2020).

Several studies have shown that firm age and CEO duality moderates the CEO personal characteristics on enterprise decision-making by influencing managerial discretion (Lin et al., 2020; Xie, 2014; Sirén et al., 2018). However, it is yet unknown whether firm age and CEO duality have a moderating effect on the relationship between CEO gender and enterprise innovation. Thus, this study develops a new theoretical framework to explore the influence of CEO gender on enterprise innovation with the enabling role of firm age and CEO duality as moderators derived from an in-depth literature review. The structure of this paper is as follows. The following section discusses the literature review. Thereafter, the hypotheses development is discussed. Finally, discussion and conclusion are drawn in the last section.

¹ MSCI is an independent research firm that develops global equity indexes; the MSCI ACWI Index contains all sources of equity returns in 23 developed and 24 emerging markets.

Literature Review

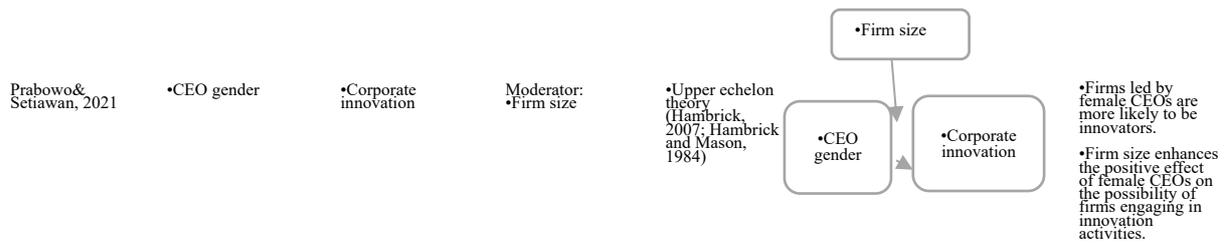
Table 1 reviews and summarizes empirical research findings on CEO's personal characteristics, managerial discretion and enterprise strategic choices. Based on the summary of Table 1, this study proposes a theoretical framework that includes CEO gender as the independent variable, enterprise innovation as the dependent variable, and CEO duality and firm age as moderating variables.

Table1. Summary of articles on CEO's personal characteristics, managerial discretion and enterprise strategic choices

Author/ Year	Main Independent variable(s)	Main Dependent variable(s)	Mediator/ Moderator	Theory/ Concept Used	Research Framework	Conclusion/ Findings
Xie, 2014	•CEO tenure	•Ownership mode	Moderator: •Firm size •Firm age •CEO duality	•Upper echelon theory (Herrmann & Datta, 2002; Hambrick & Finkelstein, 1987)		<ul style="list-style-type: none"> •CEO tenure has positive impact on the choice of full control mode. •Firm size and firm age will weaken the relationship of CEO tenure on the choice of full control mode stated, however, CEO duality has the opposite effect.
Li & Tang, 2010	•CEO hubris	•Firm risk taking	Moderator: •Market munificence •Market complexity •Market uncertainty •Firm size •Firm intangible resources •Chair-CEO duality •State ownership •Political appointment of CEO	•Upper echelon theory (Hambrick and Mason, 1984) •Behavioral decision theory (Kahneman & Lovallo, 1993; March & Shapira, 1987; Sitkin & Pablo, 1992)		<ul style="list-style-type: none"> •CEO hubris has positive impact on the firm risk taking. •CEO managerial discretion will strengthen the relationship of CEO hubris on the firm risk taking

Table1 (continue).

Author/ Year	Main Independent variable(s)	Main Dependent variable(s)	Mediator/ Moderator	Theory/ Concept Used	Research Framework	Conclusion/ Findings
Lin et al., 2020	•CEO overconfidence	•Degree of internationalization	Moderator: •CEO overseas experience •CEO duality •State ownership	•Upper echelon theory (Hambrick and Mason, 1984)		<ul style="list-style-type: none"> •CEO overconfidence positively promotes the degree of firm Internationalization. •CEO duality will strengthen the relationship of CEO overconfidence on the firm Internationalization.
Han et al., 2019	•Female CEOs	•Incremental innovation •Radical innovation	Moderator: •Gender culture	N/A		<ul style="list-style-type: none"> •Female CEOs have made significant contributions to corporate incremental and radical innovation behaviors. •The relationship between CEO gender and corporate incremental innovation behaviors has been regulated by gender culture.



Hypotheses Development

As mentioned in the first section, existing literature indicates a disparity between the influences of female CEOs on enterprise innovation. According to some literature, female CEOs enhanced enterprise innovation (Ullah et al., 2021; Wu et al., 2021a). On the other hand, some also argued that female CEOs have weakened innovation (Reutzler et al., 2018; Strohmeyer et al., 2017).

According to some scholars, the differences in CEO behaviors between males and females are due to biological and social differences. The literature on biological differences have long suggested a link between testosterone and aggression, particularly when individuals are stressed (Kedenburg, 1979; Mehta et al., 2015). As a result, males are more willing to bear the high risks associated with high returns to maintain their aggressive and dominant position (Mehta et al., 2015).

In financial investment, it has been shown that females are more averse to financial risks than males, resulting in less company investment (Charness & Gneezy, 2012). In the field of bank management, after adjusting for asset risk and other bank characteristics, it was shown that banks led by female CEOs have more conservative capital levels (Palvia et al., 2015). Due to the risky nature of enterprise innovation, the above argument means that female CEOs are generally more risk averse than male CEOs and have less incentive to engage in innovative activities. Therefore, enterprises with female CEOs are less innovative than enterprises led by male CEOs (Reutzler et al., 2018).

However, most of the research findings mentioned above disregard the working environment in which female senior executives operate such as the influence of male senior executives on female senior executives in the working environment. (Han et al., 2019). Therefore, this study will focus on the impact of female senior executives on enterprise innovation.

CEO Gender and Enterprise Innovation

Female CEOs will compare themselves to outstanding leaders or elite groups due to their socialization and self-selection. They will identify the characteristics they wish to surpass or practice and then develop their career aspirations (Van Vianen & Fischer, 2002). Existing studies have found that in male-dominated industries where gender discrimination and prejudice is apparent, female senior executives are driven to imitate male senior executives to gain the recognition and respect of subordinates (Hoyt & Murphy, 2016; Vial et al., 2016). Additionally, while the female CEO may behave more masculine, this does not mean that their female personality has been obliterated. On the contrary, unique characteristics such as emotional sensitivity, acute and strong intuition, and superior communication and social skills could promote enterprise innovation (Han et al., 2019). Therefore, this study proposes the first research hypotheses as follows:

Hypothesis 1. Enterprises with female CEOs are more innovative than enterprises with male CEOs.

The Moderating Role of Firm Age

Firm age is a proxy for internal inertia. The internal inertia formed by the older enterprise will influence the decision-making by limiting the managerial discretion (Hambrick & Finkelstein, 1987). Older enterprises rely on the firm's years of experience and habits to make decisions (Li & Tang, 2010; van de Wal et al., 2020) and these enterprises have a fixed communication mode (Li & Tang, 2010). Hence, older enterprise with internal inertia may weaken managerial discretion, whilst younger enterprise with less internal inertia may improve managerial discretion (Chin et al., 2021; Xie, 2014).

Accordingly, CEO gender may have a weaker impact on enterprise innovation when these CEOs work for older enterprises with greater inertia, whereas CEO gender may have a stronger impact on enterprise innovation when these CEOs work for younger enterprises with less inertia. Based on the discussion above, the second hypothesis is as follows:

Hypothesis 2. Firm age negatively moderates the relationship between female CEOs and enterprise innovation.

The Moderating Role of CEO Duality

CEO duality, whereby the CEO is also the chairman of the board of directors. Several studies indicate that CEO duality is also the proxy of CEO's structure rights (Daily and Johnson, 1997), and is a significant factor affecting managerial discretion (Li & Tang, 2010; Lin et al., 2020). Hence, CEO duality limits the board of directors' independence (Zajac, 1995), but on the contrary, CEO can have more managerial discretion on enterprise decision-making (Sirén et al., 2018).

By combining arguments about CEO gender and CEO duality, it is expected that CEO duality will strengthen the effect of CEO gender on enterprise innovation because female CEOs will use the powerful managerial discretion brought by CEO duality to develop career aspirations. Based on the discussion above, the third hypothesis is as follows:

Hypothesis 3. CEO duality positively moderates the relationship between female CEOs and enterprise innovation.

According to the above analysis of hypotheses development, Fig.1 shows the theoretical framework developed for this study. This new theoretical framework explores the influence of CEO gender on enterprise innovation with the enabling role of firm age and CEO duality as moderators.

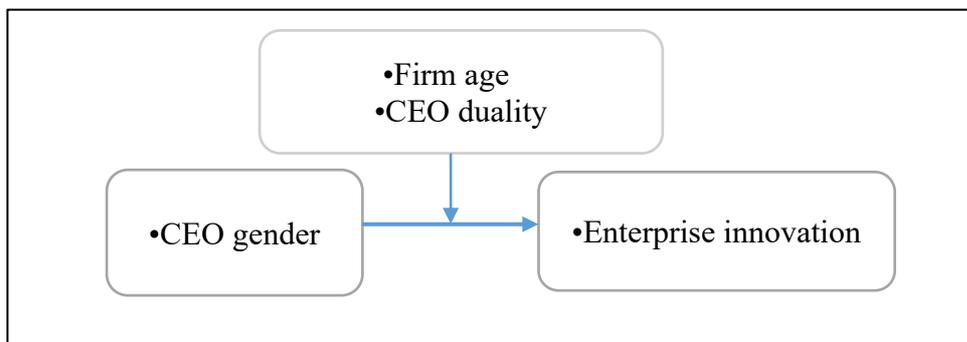


Fig.1.: Theoretical framework.

Discussion and Conclusion

Based on the upper echelon theory, the purpose of this study is to explore the influence of CEO gender on enterprise innovation under the moderation of firm age and CEO duality. Some theoretical and social implications can be obtained from this study.

Theoretical Implications

Building on insights from the upper echelon theory, there is a relationship between CEO gender and enterprise innovation. Based on literature review, some scholars suggested that female CEOs promote enterprise innovation (Han et al., 2019; Prabowo & Setiawan, 2021), whilst others suggested female CEOs weaken enterprise innovation (Reutzel et al., 2018). Therefore, it is compelling to study the influence of the female gender on enterprise innovation. In addition, this study contributes to the development of a more theoretically sound link between CEO gender and enterprise innovation.

Numerous previous studies have identified various factors, including market munificence, market complexity and market uncertainty as environmental factors (Li & Tang, 2010), firm size, firm age and CEO duality as firm-level factors (Li & Tang, 2010; Lin et al., 2020; Xie, 2014) that could contribute to or reduce managerial discretion. Based on prior studies, Prabowo and Setiawan (2021) found that firm size can moderate the relationship between CEO gender and enterprise innovation. Therefore, it is reasonable to investigate firm age and CEO duality which are also indicators at the firm level and could moderate the influence of CEO gender on enterprise innovation by influencing managerial discretion. This study contributes theoretically to enterprise innovation research by putting forward a brand-new theoretical framework using firm age and CEO duality as moderator variables to examine the relationship between CEO gender and enterprise innovation.

Practical and Social Implications

Foremost, this study demonstrates that the CEO's personal characteristics influence enterprise innovation as personal characteristics reflecting managers' psychological orientation and capability (Xie, 2014). CEOs with varying psychological inclinations and abilities make varying strategic decisions. For instance, a female CEO may take greater risks to promote enterprise innovation. Thus, the enterprise owner should take into account the effect of personal characteristics (such as gender, tenure and age) on the enterprise's decision-making and formulate appropriate policies to enhance the enterprise's innovation capability.

Secondly, this study also shows that firm-level factors moderate the influence of CEO's personal characteristics on enterprise innovation. For instance, CEO duality positively moderates the relationship between CEO gender and enterprise innovation, because CEO duality provides greater managerial discretion. Hence, when designing the organizational structure, the enterprise owner should consider whether to empower managers with more discretion and structure the organization in such a way that managerial discretion is increased or decreased thereby affecting the enterprise's strategic choices.

Limitations and Suggestions for Future Research

The study's limitation is that it is based solely on upper echelon theory, to support the theoretical framework. Future studies can focus on other theories (such as agency theory or housekeeping theory) to explore the influence of CEO gender on enterprise strategic choices.

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References

- Adam, N. A., & Alarifi, G. (2021). Innovation practices for survival of small and medium enterprises (SMEs) in the COVID-19 times: the role of external support. *Journal of Innovation and Entrepreneurship*, 10(1), 1-22. <https://doi.org/10.1186/s13731-021-00156-6>
- Bianchini, S., Krafft, J., Quatraro, F., & Ravix, J. L. (2017). Corporate governance and innovation: Does firm age matter? *Industrial and Corporate Change*, 27(2), 349-370. <https://doi.org/10.1093/icc/dtx031>
- Bloom, N., & Van Reenen, J. (2002). Patents, real options and firm performance. *Economic Journal*, 112(478), 97-116. <https://doi.org/10.1111/1468-0297.00022>
- Boone, C., Lokshin, B., Guenter, H., & Belderbos, R. (2019). Top management team nationality diversity, corporate entrepreneurship, and innovation in multinational firms. *Strategic Management Journal*, 40(2), 277-302. <https://doi.org/10.1002/smj.2976>
- Charness, G., & Gneezy, U. (2012). Strong evidence for gender differences in risk taking. *Journal of Economic Behavior & Organization*, 83(1), 50-58. <https://doi.org/10.1016/j.jebo.2011.06.007>
- Crossland, C., & Hambrick, D. C. (2007). How national systems differ in their constraints on corporate executives: A study of CEO effects in three countries. *Strategic Management Journal*, 28(8), 767-789. <https://doi.org/10.1002/smj.610>
- Catalyst. (2021). Women on corporate boards. *Report*, <https://www.catalyst.org/research/women-on-corporate-boards/>
- Chin, T., Wang, W., Yang, M., Duan, Y., & Chen, Y. (2021). The moderating effect of managerial discretion on blockchain technology and the firms' innovation quality: Evidence from Chinese manufacturing firms. *International Journal of Production Economics*, 240, 108219. <https://doi.org/10.1016/j.ijpe.2021.108219>
- Daily, C. M., & Johnson, J. L. (1997). Sources of CEO power and firm financial performance: A longitudinal assessment. *Journal of Management*, 23(2), 97-117. [https://doi.org/10.1016/s0149-2063\(97\)90039-8](https://doi.org/10.1016/s0149-2063(97)90039-8)
- Finkelstein, S., & Hambrick, D. C. (1990). Top-Management-Team tenure and organizational outcomes: the moderating role of managerial discretion. *Administrative Science Quarterly*, 35(3), 484-503. <https://doi.org/10.2307/2393314>
- Hambrick, D. C., & Finkelstein, S. (1987). Managerial discretion: A bridge between polar views of organizational outcomes. *Research in Organizational Behavior*, 9(4), 369-406.
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9(2), 193-206. <https://doi.org/10.2307/258434>
- Han, S., Cui, W., Chen, J., & Fu, Y. (2019). Female CEOs and corporate innovation behaviors—research on the regulating effect of gender culture. *Sustainability*, 11(3), 682. <https://doi.org/10.3390/su11030682>
- Hashi, I., & Stojčić, N. (2013). The impact of innovation activities on firm performance using a multi-stage model: evidence from the community innovation Survey 4. *Research Policy*, 42(2), 353-366. <https://doi.org/10.1016/j.respol.2012.09.011>
- Heider, A., Gerken, M., van Dinther, N., & Hülsbeck, M. (2021). Business model innovation through dynamic capabilities in small and medium enterprises – Evidence from the German mittelstand. *Journal of Business Research*, 130, 635-645. <https://doi.org/10.1016/j.jbusres.2020.04.051>

- Hoyt, C. L., & Murphy, S. E. (2016). Managing to clear the air: stereotype threat, women, and leadership. *The Leadership Quarterly*, 27(3), 387-399. <https://doi.org/10.1016/j.leaqua.2015.11.002>
- Kedenburg, D. (1979). Testosterone and human aggressiveness: An analysis. *Journal of Human Evolution*, 8(3), 407-410. [https://doi.org/10.1016/0047-2484\(79\)90064-2](https://doi.org/10.1016/0047-2484(79)90064-2)
- Li, J., & Tang, Y. (2010). CEO hubris and firm risk taking in China: the moderating role of managerial discretion. *Academy of Management Journal*, 53(1), 45-68. <https://doi.org/10.5465/amj.2010.48036912>
- Lin, R., Li, F., & Olawoyin, A. (2020). CEO overconfidence and firm internationalization: The moderating role of experience and managerial discretion. *Nankai Business Review International*, 11(4), 597-616. <https://doi.org/10.1108/NBRI-08-2019-0037>
- Love, J. H., & Roper, S. (2015). SME innovation, exporting and growth: A review of existing evidence. *International Small Business Journal*, 33(1), 28-48. <https://doi.org/10.1177/0266242614550190>
- Markovic, S., Koporcic, N., Arslanagic-Kalajdzic, M., Kadic-Maglajlic, S., Bagherzadeh, M., & Islam, N. (2021). Business-to-business open innovation: COVID-19 lessons for small and medium-sized enterprises from emerging markets. *Technological Forecasting and Social Change*, 170, 120883. <https://doi.org/10.1016/j.techfore.2021.120883>
- Marvel, M. R., Lee, I. H. I., & Wolfe, M. T. (2015). Entrepreneur gender and firm innovation activity: A multilevel perspective. *IEEE Transactions on Engineering Management*, 62(4), 558-567. <https://doi.org/10.1109/TEM.2015.2454993>
- Mehta, P. H., Welker, K. M., Zilioli, S., & Carre, J. M. (2015). Testosterone and cortisol jointly modulate risk-taking. *Psychoneuroendocrinology*, 56, 88-99. <https://doi.org/10.1016/j.psyneuen.2015.02.023>
- Palvia, A., Vähämaa, E., & Vähämaa, S. (2015). Are female CEOs and chairwomen more conservative and risk averse? Evidence from the banking industry during the financial crisis. *Journal of Business Ethics*, 131(3), 577-594. <https://doi.org/10.1007/s10551-014-2288-3>
- Prabowo, R., & Setiawan, D. (2021). Female CEOs and corporate innovation. *International Journal of Social Economics*, 48(5), 709-723. <https://doi.org/10.1108/ijse-05-2020-0297>
- Reutzell, C. R., Collins, J. D., & Belsito, C. A. (2018). Leader gender and firm investment in innovation. *Gender in Management: An International Journal*, 33(6), 430-450. <https://doi.org/10.1108/GM-05-2017-0066>
- Strohmeyer, R., Tonoyan, V., & Jennings, J. E. (2017). Jacks-(and Jills)-of-all-trades: On whether, how and why gender influences firm innovativeness. *Journal of Business Venturing*, 32(5), 498-518. <https://doi.org/10.1016/j.jbusvent.2017.07.001>
- Sirén, C., Patel, P. C., Örtqvist, D., & Wincent, J. (2018). CEO burnout, managerial discretion, and firm performance: The role of CEO locus of control, structural power, and organizational factors. *Long Range Planning*, 51(6), 953-971. <https://doi.org/10.1016/j.lrp.2018.05.002>
- Ullah, I., Majeed, M. A., & Fang, H. X. (2021). Female CEOs and corporate investment efficiency: Evidence from China. *Borsa Istanbul Review*, 21(2), 161-174. <https://doi.org/10.1016/j.bir.2020.09.010>
- van de Wal, N., Boone, C., Gilsing, V., & Walrave, B. (2020). CEO research orientation, organizational context, and innovation in the pharmaceutical industry. *R and D Management*, 50(2), 239-254. <https://doi.org/10.1111/radm.12394>

- Van Vianen, A. E., & Fischer, A. H. (2002). Illuminating the glass ceiling: The role of organizational culture preferences. *Journal of Occupational and Organizational Psychology*, 75(3), 315-337. <https://doi.org/10.1348/096317902320369730>
- Vial, A. C., Napier, J. L., & Brescoll, V. L. (2016). A bed of thorns: Female leaders and the self-reinforcing cycle of illegitimacy. *The Leadership Quarterly*, 27(3), 400-414. <https://doi.org/10.1016/j.leaqua.2015.12.004>
- Wan, X., Liu, X., Du, Z., & Du, Y. (2021). A novel model used for assessing supply chain sustainability integrating the ANP and ER approaches and its application in marine ranching. *Journal of Cleaner Production*, 279, 123500. <https://doi.org/10.1016/j.jclepro.2020.123500>
- Wu, Q., Dbouk, W., Hasan, L., Kobeissi, N., & Zheng, L. (2021a). Does gender affect innovation? Evidence from female chief technology officers. *Research Policy*, 50(9), 104327. <https://doi.org/10.1016/j.respol.2021.104327>
- Wu, S., Zhang, H., & Wei, T. (2021b). Corporate social responsibility disclosure, media reports, and enterprise innovation: Evidence from Chinese listed companies. *Sustainability* 13(15), 8466. <https://doi.org/10.3390/su13158466>
- Xie, L., Zhou, J., Zong, Q., & Lu, Q. (2020). Gender diversity in R&D teams and innovation efficiency: Role of the innovation context. *Research Policy*, 49(1), 103885. <https://doi.org/10.1016/j.respol.2019.103885>
- Xie, Q. (2014). CEO tenure and ownership mode choice of Chinese firms: The moderating roles of managerial discretion. *International Business Review*, 23(5), 910-919. <https://doi.org/10.1016/j.ibusrev.2014.02.003>
- Yang, G., Bai, X., & Yang, S. (2021). Chief Executive Officer Proactive Personality and Acquisitions: A Fuzzy Set Qualitative Comparative Analysis of China's Listed Firms. *Frontiers in Psychology*, 12, 703678. <https://doi.org/10.3389/fpsyg.2021.703678>
- Zajac, W. (1995). Who shall govern? CEO/board power, demographic similarity, and new director selection. *Administrative Science Quarterly*, 40(1), 60-83. <https://doi.org/10.2307/2393700>
- Zeng, P., & Wu, Q., H. (2012). The influence of female executives' participation on technological innovation of enterprises: An empirical study based on GEM enterprises. *Scientific Research* (05), 773-781. <https://doi.org/CNKI:SUN:KXYJ.0.2012-05-017>