

CEO's Entrepreneurial Orientation and Family Firm Performance: The Moderating Role of CEO Digital Literacy and Moderated-Moderation of Industry

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1. Introduction

Entrepreneurial Orientation (EO) has been studied as an organizational-level attribute and defined as an organization's strategic mindset characterized by innovation, risk-taking, and proactive behaviors and is generally considered to have a positive impact on profitability, growth, innovation, and market share (Covin & Slevin, 1991; Lumpkin & Dess, 1996; Miller, 1983, 2011; Rauch et al., 2009; Saeed et al., 2014). However, companies do not make decisions; instead, the individuals within these organizations are responsible for making decisions (Jones, 1991). As a result, scholars have started to focus on investigating these decision-makers' specific characteristics and traits. This shift is grounded in the influential Upper Echelons Theory, which suggests that top executives' characteristics and decisions significantly influence organizational outcomes (Hambrick & Mason, 1984). Accordingly, researchers have also started exploring the impact of individual EO (from top managers and mainly CEOs) on firm performance (Davis et al., 2010; Keil et al., 2017; Liu & Xi, 2022; Wang et al., 2021; Zhang et al., 2021). Individual Entrepreneurial Orientation (IEO) refers to an individual's focus on innovation, proactive competition response, and a willingness to take business risks; the essence of EO lies in the CEO's willingness to allocate resources toward innovative, proactive, and risky initiatives (Covin & Slevin, 1991; Keil et al., 2017; Liu & Xi, 2022; Miller, 1983; Zhang et al., 2021). Studies have shown a positive relationship between the CEO's IEO and firm performance due to their *willingness* to allocate resources for entrepreneurial activities (Keil et al., 2017; Liu & Xi, 2022; Liu et al., 2021; Wang et al., 2021; Zhang et al., 2021). While IEO impacts firm performance positively, willingness alone cannot guarantee success. Individuals should also be able to transform their willingness into actual successful behavior and, therefore, should also have the ability to do so (Chrisman et al., 2015). Thus, scholars explored the relationship between IEO and firm performance, considering various moderating factors like managerial power (Davis et al., 2010), transformational leadership behavior (Engelen et al., 2015), CEOs' self-transcendence (Cannavale et al., 2020) and leaders' psychological traits (Palmer et al., 2019).

One ability factor that is generally overlooked but should also be considered highly relevant, especially given the fast-changing technological environment, is the CEO's digital literacy. Digital literacy is a vital component of ability in today's rapidly changing and digitalizing business environment (Kane, 2019). Digital literacy is a complex set of cognitive and digital skills that empower managers to excel in a digital environment, facilitating optimal functioning and performance (Mohammadyari & Singh, 2015). Moreover, the ability of CEOs to utilize digital tools and technologies has become increasingly crucial for businesses in driving digital transformation (Fitzgerald et al., 2014). This is especially true for private family firms, where the CEO holds significant authority in decision-making (Hsu et al., 2013). Hence, the importance of a CEO's digital literacy becomes even more pronounced in these firms. Family firms constitute around 90% of all businesses and are responsible for over 50% of total employment worldwide (as reported by the World Bank). Therefore, the significance of a *CEO's digital literacy* cannot be overlooked.

This study posits that CEO IEO represents the willingness, and CEO digital literacy complements the ability. Therefore, CEOs with IEO and digital literacy are more willing and able to carry out their plans effectively than others. However, the impact of CEO digital literacy on the relationship between CEO IEO and family firm performance is likely to vary across industries, emphasizing the need to consider the specific industry context. While digital literacy is crucial for survival in technology-driven sectors, its significance may be less pronounced in other industries. Therefore, this research investigates the relationship between CEO IEO and family firm performance, examining the moderating effect of CEO digital literacy and the industry's moderated moderation role.

2. Research Gap

While previous research has explored the positive association between CEO IEO and performance, there is a gap in understanding how CEO digital literacy, as a moderating factor, influences this relationship. Moreover, the industry-specific nuances in this complex relationship remain underexplored. This study aims to fill this gap by providing insights into the nuanced interplay of CEO IEO, CEO digital literacy, and industry context in shaping family firm performance.

3. Theories Used

This study builds upon the Upper Echelons Theory (UET), which posits that the characteristics and decisions of top executives, especially the CEO, significantly influence organizational outcomes (Hambrick & Mason, 1984). This study emphasizes the pivotal role of the CEO in decision-making within family firms, aligning with the principles of UET. By focusing on the individual attributes of the CEO, specifically IEO and digital literacy, the study sheds light on the crucial role of the CEO in shaping the relationship between IEO and family firm performance in this technological business world.

4. Research Method

The study will employ a combination of questionnaire data and financial statement data. The study will use a seven-point Likert scale to measure CEO IEO, which includes three dimensions: innovativeness, proactiveness, and risk-taking, as proposed by Bolton (2012). The CEO's digital literacy will be measured using a five-dimensional construct introduced by Vuorikari et al. (2016), which is also in line with the work of Zahoor et al. (2023). The construct includes information literacy, interaction and collaboration, digital content creation, safety, and problem-solving. To measure firm performance, the study will use a seven-point Likert scale, ranging from 1 (very low) to 7 (very high), to evaluate the company's performance relative to their counterparts in the industry. The evaluation will encompass several dimensions: profitability, sales growth, market share, and innovation, in line with Liu and Xi (2022). The study will also consider the moderated moderating role of industry in the relationship between CEO EO, digital literacy, and firm performance. Next to the common industry classifications, in line with Liu et al. (2021) and Qureshi et al. (2020), CEOs shall be asked to categorize their firm as technology-driven or not. If a firm qualifies as technology-driven, it will be given a score of 1; otherwise, it will be 0. The collected data will be analyzed primarily through regression analysis to examine the impact of the CEO IEO on family firm performance, the moderating role of CEO digital literacy, and the moderated moderation of industry.

5. Contribution to Research

This study significantly advances existing literature in several key dimensions. Firstly, it enhances our understanding of IEO and digital transformation by shedding light on the crucial role of *CEO digital literacy* in shaping the relationship between IEO and family firm performance. The emphasis on individual attributes, specifically CEO IEO and digital literacy, underscores the pivotal role of executive decision-makers in organizations, aligning with the upper echelons theory. Secondly, the research introduces a unique perspective within entrepreneurship literature by framing CEO IEO as a manifestation of willingness and CEO digital literacy as a demonstration of ability. This conceptual framework proves particularly insightful in the context of family firms, where resource constraints amplify the importance of the CEO's mindset and skill set, especially given the perpetual technological advancements. Moreover, the study expands its scope by integrating the industry dimension, recognizing the nuanced nature of the willingness-ability paradigm across diverse industries. Thus, the research contributions aim to enhance the theoretical and practical understanding of the complex dynamics encompassing the individual EO, the CEO's digital literacy, the industry, and the performance of family firms.

6. Contribution to Practice

The findings will provide valuable insights for family firms, policymakers, and business consultants. For family firms, the emphasis on CEO digital literacy and entrepreneurial orientation highlights the importance of investing in CEO development programs that enhance digital skills and foster an entrepreneurial mindset. Family firms can benefit from providing their CEOs with the technical and practical skills to efficiently utilize technology, access information, and apply it effectively, enabling them to work with digital technologies. For Policymakers, findings will provide insights into the significance of promoting digital literacy and entrepreneurial orientation among family firms. This understanding can inform the development of policies and programs that support family firms in enhancing their CEO's digital literacy and entrepreneurial orientation, ultimately contributing to their competitiveness and growth. By aligning policies with the study's results, policymakers can create an environment conducive to developing family firms in technology-driven industries. Business consultants can leverage the study's findings to develop tailored strategies that align with their clients' CEO characteristics, mainly focusing on digital literacy and entrepreneurial orientation. By considering the conclusions of this study, consultants can provide valuable guidance to family firms, ultimately enhancing their performance and competitiveness in the market.

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