

# **The attitude of family firms toward digital transformation: From the organizational learning perspective**

## **Abstract**

Digital transformation has been recognized as a challenge and an opportunity for conservative family firms to develop and renew their strategies to survive and grow in the digital era. This study draws on the organizational learning perspective to examine the attitude of family firms toward digital transformation. More specifically, this study investigates whether family firms invest more or less in digital transformation than non-family firms, and how this effect is conditioned by governance factors, namely, board dependence and family involvement in ownership. The empirical results show that the attitude of family firms toward digital transformation is not significant, but the negative effect of family firms toward digital transformation would be augmented if taking higher board independence and family involvement in ownership. The results of this study enrich the literature on organizational learning perspective and extend the research of digital transformation in the context of family businesses.

**Keywords:** Digital Transformation, Organizational Learning, Family Business

## **Introduction**

The emergence of digital technologies, infrastructures, and platforms has fundamentally changed the way people live and work. Organization from almost all sectors and industries need to adopt cutting-edge technologies and invest in digital transformation (Jafari-Sadeghi, Garcia-Perez, Candelo, & Couturier, 2021; Nambisan, Wright, & Feldman, 2019). The concept of digital transformation is used to signify how businesses create and appropriate more value by utilizing digital technologies (Kane, Palmer, Philips, Kiron, & Buckley, 2015; Verhoef *et al.*, 2021), and it is not limited to high-tech or digital start-up companies. However, for the incumbent firms, exploration and exploitation of new digital technologies becomes the challenge for businesses today.

Family firms, supporting economic development worldwide, will be or are already affected by digitalization, but surprisingly they have not yet received much research attention. The strategic decision to adapting digital transformation largely depends on the family firms' exploratory and exploitative capabilities (Li, Hou, Liu, & Liu, 2012; Ceipek, Hautz, De Massis, Matzler, & Ardito, 2021). But the investment decisions of digital transformation are not easy, because the risk and uncertainty are high, and the outcomes are still unclear. To provide a systematic understanding of family firms' motivation toward digital transformation, more empirical research on family firms' motivation and decision-making process is necessary to advance the literature on digital transformation and family business (Li, Su, Zhang, & Mao, 2018; Nambisan, Wright, & Feldman, 2019).

Digital transformation has been viewed as an important opportunity for organizational learning and adaptation. In the process of digital transformation, firms generate new knowledge for developing new skills and capabilities to obtain competitive advantages (Zahra, Neubaum, & Larrenta, 2007; Chirico, 2008) and

promote entrepreneurial activities to renew their strategies and business models (Zahra, 2008). At the same time, digital transformation was also defined as organizational change that needs diversified knowledge-based to support its transition (Hanelt, Bohnsack, Marz, & Marante, 2021; Poole & Van de Ven, 2004). The exploratory nature of digital transformation emphasizes the importance of exploratory learning for new knowledge and possibilities (March, 1991; Ceipek *et al.*, 2021). But a family firm, controlled by a single family, often shows risk-averse and conservatism toward change (Miller, Le Breton-Miller, & Scholnick, 2008), implying that family firms have the tendency to discourage the investment of digital transformation.

To better understand the motivation of family firms on the digital transformation investment, this study draws on organizational learning and aims to provide a steppingstone in the literature of digital transformation and family business. The research questions of this study include how family firms respond to the challenge of digital transformation? whether family firms invest less in digital transformation than their nonfamily counterparts? how this effect is conditioned by board-level factors? This study conducts empirical analysis by collecting the data of firms' digital transformation investment from 2009 to 2020. According to the empirical results, the present study will discuss the findings and implications and dialogue with the literature of digital transformation and family business.

## **Literature Review**

### ***Organizational learning and digital transformation***

The recent explosion of digital transformation brought challenges to organizational strategy, structure, and management (Lanzolla *et al.*, 2020). Most examples of digital transformation feature firms that are small, young, or operate in

high-tech industries, but the adaption of digitalization is especially urgent for family firms in traditional industries, where the safer strategy is preferred over trying to be a pioneer (Westman & Bonnet, 2015). Digital transformation provides numerous opportunities for family firms to reinvent their products and processes, change their business model, and enter new markets. Meanwhile, digitalization implies that family firms need to make a change to adapt to the fast-changing environment and obtain legitimacy in the digital era. However, a change in strategy can fundamentally alter the knowledge, members, skills, and processes of an organization, and these alternations can in turn significantly influence a firm's value creation and performance (McGrath & Argote, 2001). Facing the challenge of digital transformation, family firms in traditional industries need a fresh look at how to utilize resources or produce products in new ways to participate in the digital economy.

Despite the increasing research and managerial attention, digital transformation still suffers from a lacking widespread agreement on its definition and boundary (Warner & Wäger, 2019; Wessel et al., 2020). Some scholars viewed digital transformation as organizational change because this challenge comes from the changes in digital technologies, business models, and organizational structures (Hanelt, Bohnsack, Marz, & Marante, 2021; Hess, Matt, Benlianm, & Wiesböck, 2016; Poole & Van de Ven, 2004). Building on a well-established foundation, this study follows the concept of digital transformation as organizational change and defines it as the change of a firm's value creation and appropriation by adopting digital technologies (Verhoef *et al.*, 2021).

To respond the digital disruption, organizational learning is important for family firms to generate new knowledge and capabilities that are helpful to initiate organizational change. Also, new knowledge and capabilities accumulated give family

firms the opportunities to obtain competitive advantages and prevent the potential conservatism which comes from the dominance of a single controlling family of the firm (Chirico, 2008; Zahra, Neubaum, & Larrenta, 2007; Miller, Le Breton-Miller, & Scholnick, 2008). Also, exploratory learning could reduce the organizational inertia, which comes from the narrow and focused search within the firms' existing knowledge domains (Cyert & March, 1963). Furthermore, organizational learning increases strategic variety of firms by promoting innovative activities and renewing existing operations (Zahra, 2008).

The notion of exploration-exploitation is one of the frameworks commonly discussed in the organizational learning literature (March, 1991). Exploration encourages the pursuit of new knowledge by distant searching, risk taking, experimentation, and variation in organizations, while exploitation enhances efficiency and refinement by using and developing of knowledge already known (Levinthal & March, 1993: 105). Digital transformation is not just an incremental change but the combined effects of several digital innovations where it seems insufficient to exploit and fine tune existing knowledge to participate digital economy. Rather, digital transformation needs more exploration to replace or change existing rules of the game within organizations or ecosystems (Hinings, Gegenhuber, & Greenwood, 2018).

The concepts of exploration-exploitation are often addressed to predict firms' strategy in the context of family business (e.g., Brinkerink, 2018). Family firms have distinct characteristics which benefit for organizational learning. First, the strong social community of a family firm provides an open platform for organizational members to interact, communicate, and share knowledge. The greater internal communication and interaction contributes to promote learning and generate innovative ideas within the organization (Subramaniam & Youndt, 2005; Adler & Kwon, 2002; Tsai & Ghoshal,

1998). Family firms thus benefit more from having a strong social system. Furthermore, family firms' unique social capital can be viewed as a valuable resource to support and develop distinctive knowledge which is essential to facilitate innovation and create value to adapt fast-changing environment (Adler & Kwon, 2002; Nahapiet & Ghoshal, 1998). However, these unique characteristics are conducive for family firms' exploitative rather than exploratory learning where initiating digital transformation is needed.

Although the distinct characteristics benefit organizational learning, family firms have several characteristics potentially inhabiting the search for new knowledge to adapt to digitalization. First, if more family members actively involved in firms and cohere into companies' strategic directions over time, family firms' new knowledge search could be prevented by excluding outsiders. Because cohesion increases the loyalty and conformity of family members, which constrains the diversified source of learning to stimulate and promote digital transformation (Zahra, 2012). Next, the strong links with tradition and the past make family firms more conservative, path-dependent, and less open-minded to embracing digitalization than nonfamily counterparts (Gómez-Mejia *et al.*, 2007). Furthermore, new knowledge sharing and learning are also important for adapting to digitalization, but family rivalries and a lack of desire to learn limit the new technological capabilities building and thereby prevent the initiation of digital transformation (Zahra, Neubaum, & Larraneta, 2007). This study thus hypothesizes:

*H1: A family firm, compared with a nonfamily counterpart, invests less in digital transformation.*

### ***Moderating effect of board independence***

The board of directors is important for determining business strategies. To engage in digital transformation, family firms not only face unavoidably complex but also need to commit abundant resources and efforts, hence a detailed and rigorous evaluation is necessary. With no ties to family firms and other than their directorship, independent board members are better to perform their roles and charge with monitoring and advising managers to prevent opportunistic behaviors and avoid wealth appropriation by family managers (Balsmeier, Fleming, & Manso, 2017; Miller & Le Breton-Miller, 2006; Chrisman, Chu, & Litz, 2004).

Independent board members have several characteristics that are conducive to family firms investing in digital transformation. First, independent board members have human and social capital as well as connections with the external network, such as advanced industry expertise and monitoring capability (Hillman & Dalziel, 2003). Family firms can leverage independent board members' advanced industry expertise to identify valuable investments in digital transformation, thereby enhancing the possibility of success (Smith, Collins, & Clark, 2005)

Second, introducing digital disruption can substantially increase managerial complexity, thus a variety of management approaches to manage the family firms' digital transformation is needed. To overcome the challenge of digital disruption, family firm could leverage the business expertise and knowledge of independent board members to detect myopic views (Osma, 2008; Stevenson & Radin, 2009). Furthermore, the governance knowledge that independent board members possessed could increase family firms' capabilities to manage disruption and produce desirable outcomes of digital transformation (Chen, Lin, Lin, & Hsiao, 2016).

Finally, engaging in digital transformation need to commit a great number of resources, family firms could utilize the independent board members to monitor the

resource allocation effectiveness of the digital transformation (Desai, Kroll, & Wright, 2005). Using resources effectively enables firms to adapt to the dynamic environment and accelerate the speed of digital transformation. In light of these argument, this study proposes that the higher proportion of board independence positively moderates the relationship between family firms and digital transformation initiation.

*H2: In the presence of higher board independence, a family firm, compared with a nonfamily counterpart, invests more digital transformation.*

### ***Moderating effect of family involvement in ownership***

Family firms usually show the strong presence of maintaining family control by holding a large percentage of companies' equity (Zahra, 2012). Family involvement in ownership identifies the influence of the owning family on the firm. Higher family involvement in ownership gives the family to control the firm's strategies. Also, ownership encourages the participation of multiple generations in the firm and provides family firms an opportunity to learn and accumulate knowledge about the business. Embedding in the environment and the network of stakeholders, family firms have opportunity to gain knowledge and stimulate learning through interactions and building enduring relationships.

When a family has a higher proportion of ownership of the firm, the motivation to learn deeply would be higher than to learn broadly. High ownership implies that the companies' performance and the family wealth are intertwined, poor performance may lead to the loss of family wealth (Gomez-Mejia et al., 2007). To avoid the loss of family wealth, family firms have the motivation to maintain the status quo and learn deeply to exploit their strategies which are safer than exploratory learning. However, initiating digital transformation needs more exploratory learning which implies the higher risk of



failure. Therefore, family firms with higher family involvement in ownership discourage investment in digital transformation.

Furthermore, family firms are often managed by family members who have similar views to keep harmony in the family. Frequently interacting with networks and key stakeholders reinforces their relationship and shares similar views, the tendency of exploitative learning is reinforced (Levinthal & March, 1993). While the outsiders or dissident are usually excluded from the family firms, making it difficult to access a variety of networks and information (Tao & Zhao, 2019). With high family involvement in ownership, family firms are more inclined to initiate incremental change, not digital transformation.

*H3: In the presence of higher family involvement in ownership, a family firm, compared with a nonfamily counterpart, invests less in digital transformation.*

## **Method**

### ***Sample***

This study will start with the publicly listed family firms in traditional industry on Taiwan Stock Exchanges from 2016 to 2021 to construct the sample. The reason to exclude companies in financial industry comes from the different resource allocation strategy which is based on daily changes in the stock market. The high technology industry will also be excluded because the nature of high technology industry is closely related to digital transformation. The archival data will be collected from the Taiwan Economic Journal (TEJ) database and firms' annual reports, which are disclosed in the Taiwan Market Observation Post System (MOPS). Collecting Taiwan's companies' data from the TEJ have long been used in strategic research. The information of firms'

digital transformation strategies will be captured from firms' annual reports (Liu, Zhou, & Li, 2023).

### ***Dependent variable***

*Digital transformation.* According to the extant literature, digital transformation investment was considered a firm's commitment. However, digital investment was difficult to capture from firms' investments directly. This study thus follows prior research that captures a firm's vision of digital transformation as symbolic cues (Liu, Zhou, & Li, 2023). To capture a firm's vision of digital transformation, this study counted how many times the following keywords were mentioned in the firm's annual reports, including "digital transformation", "digital technology", "digital platform", "big data", "cloud platform", "cloud computing", "cloud services", "Internet of Things (IoT)", "intellectual technology", "machine learning", "blockchain" and "5G." However, the observation of meaningless, repeated, and industry-level issue would be excluded in this study.

### ***Independent variable***

*Family firm.* Multiple metrics could be used to define a family firm, including control, management, and ownership rights (Ali, Chen, & Radhakrishnan, 2007; Anderson & Reeb, 2004; Claessens, Djankov, & Lang, 2000). This study follows the definition of a family firm that is characterized by the fact that family members hold more than 10% of the voting shares and at least one family members serve on the board of directors or top management team (La Porta *et al.*, 1999; Wright & Kellermanns, 2011).

### ***Moderators***

Two moderators were included in this study. First, *family involvement in ownership* was included to capture the influence of the family. Family involvement in ownership was a continuous variable and was measured by the percentage of family members on the board (Revilla, Perez-Luno, & Nieto, 2016). Next, *board independence* was a continuous variable and was measured by the ratio of outside directors to total board members (Reeb & Zhao, 2013).

### ***Control variables***

This study controls for firm size and firm age as the two respective proxies of these determinants. In line with previous studies, *firm size* was measured by the natural logarithm of total employees, and *firm age* was captured by the number of years that a firm has been in existence (Dimitropoulos, 2020; Zhang *et al.*, 2012). A firm's profit ability and performance could affect the firm's investment decisions, this study thus controls for a firm's *performance (ROA)* and *net profit* in the previous year (t-1). *Board size* was also considered as a control variable to symbolize the degree of resource provision that could influence a firm's investment of digital transformation (Lu & Wang, 2018; Wincent *et al.*, 2009). This study controls *foreign institutional ownership* which may influence a firm's digital strategies. The measurement of *foreign institutional ownership* as calculated the ratio of shares held by foreign investors. The *industry dummy* was included to control the strategic behavior may vary across industries, it was coded 1 if the firm in the manufacturing sector and 0 otherwise. The *year dummies* from 2016 to 2020 were introduced to account for the presence of time effect, with 2016 being used as control.

### **Results**

Table 1 shows the description statistics and correlations for all variables of all model. Table 1 also presents the intercorrelations between the dependent variables, which are not high enough to incur the concern about multicollinearity. Furthermore, the highest variance inflation factors (VIF) was 2.45, far below the general cutoff value of 10 (Kutner, Nachtsheim, & Neter, 2004). Table 2 present the results of the hierarchical regression analysis.

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Insert Table 1 about here  
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Model 1 in Table 2 presents the effects of all control variables on digital transformation. Hypothesis 1 proposes that family firms, compared with non-family firms, initiate fewer investment on digital transformation. For Hypothesis 1, Model 2 in Table 1 shows that the impact of family firms on digital transformation investment is not significant ( $\beta = 0.147$ ,  $p = 0.724$ ), implying that Hypothesis 1 is not supported. Hypothesis 2 predicts that among family firms, firms with higher level of board independence are more likely to invest in digital transformation. The coefficient for board independence is negative and significant ( $\beta = -10.066$ ,  $p = 0.022$ ), which is inconsistent with the prediction of Hypothesis 2. Hypothesis 3 proposes that, among family firms, firms with higher family involvement in ownership are less likely to investment in digital transformation. The coefficient for family involvement in ownership is negative and significant ( $\beta = -0.295$ ,  $p = 0.033$ ), consistent with the prediction of Hypothesis 3.

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Insert Table 2 about here  
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## **Discussion**

The present study examines the family firms' attitude toward digital transformation and makes several contributions to the digital transformation and organizational learning literature. First, the findings of this study are conducive to the digital transformation literature by advancing the understanding of family firms' strategic reaction to digital transformation from the organizational learning perspective. This study emphasizes the effects of firm-level antecedents toward digital transformation rather than organizational consequences, which are the focus of extant research. By emphasizing firm-level antecedents, this study argues that family firms' investments in digital transformation are often constrained by family firms' distinct characteristics. The results reveal that the distinct characteristics of family firms are not decisive for exploratory learning through digital transformation but contextual factors.

Second, by shedding light on digital transformation investment in family firms, this study explores the importance of contingencies from corporate governance and proposes that family firms' strategic decision on digital transformation is conditioned by board independence and family involvement in ownership, respectively. Complementing existing literature for a better understanding of the family firms' learning, this study found that the negative side of the family firms on digital transformation investment would be augmented if taking higher board independence and family involvement in ownership into consideration. Generally, independent board of directors provide family firms with board capital, such as expertise, human and relational capital, and greater diversity of opinion that facilitate family firms' exploratory (Balsmeier, Fleming, & Manso, 2017; Hillman & Dalziel, 2003). However, family firms often choose board members from a narrow pool, such as family members or the person who has a connection with family members (Corbetta & Tomaselli, 1996;

Gabrielsson & Huse, 2005). Due to the close connection with family members, independent directors may have an incentive to make decisions that favor owning families rather than prioritizing other stakeholders' interests (Chen & Jaggi, 2000). This consideration is conducive for explaining the negative side of the family firms on digital transformation investment would be augmented by taking higher board independence.

Third, given the importance of family firms for economic development in Taiwan, this study could deliver significant managerial implications about the appropriate corporate governance arrangements for promoting family firms' adaptation and gaining technology leadership for achieving Taiwan's ambition in the digital era.

The present study has several limitations and additional suggestions for future research. First, this study has followed previous research to capture a firm's attitude to digital transformation, but the measure may not comprehensively reflect a firm's digital transformation behavior. Future research could further measure a firm's substantial investment in digital transformation from financial statements if possible. Second, this study treats engaging in digital transformation as a firm's exploratory move in the digital era. However, a firm's exploratory behavior may demonstrate from other activities, for example, strategic alliances and joint ventures that are conducive for accessing new knowledge and facilitating organizational exploratory learning (Covin & Slevin, 1989; Zahra, 2005). Third, the findings of this study come from Taiwan family firms, the generalizability of the findings may be limited. More data from other contexts are needed for future research.

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**TABLE 1**  
**Descriptive Statistics and Correlation Matrix**

	Mean	Std.	1	2	3	4	5	6	7	8	9	10	11
1 Firm age	43.0799	13.8915	1										
2 Firm size (the number of employees)	5.8136	1.3500	0.1274*	1									
3 Prior performance (ROA <sub>t-1</sub> )	3.5590	7.5652	-0.0825*	0.1051*	1								
4 Net profit	15.6300	1.8997	0.0590*	0.1614*	0.0536*	1							
5 Board size	8.2303	2.3321	0.2238*	0.3606*	0.0415	0.0493*	1						
6 Foreign institutional ownership	9.0000	11.3674	0.0586*	0.2655*	0.1371*	0.1516*	0.2465*	1					
7 Industry dummy	0.7396	0.4390	0.1592*	0.2296*	0.0453	0.0608*	0.0993*	0.0191	1				
8 Digital transformation	1.5515	4.1524	0.1022*	0.1749*	-0.0006	-0.0851*	0.1449*	0.1696*	0.0401	1			
9 Family firm	0.9381	0.2411	0.1431*	0.0581*	-0.0212	0.0359	-0.0508*	-0.2024*	-0.0157	-0.0046	1		
10 Board independence	0.3295	0.1022	-0.1498*	-0.1281*	0.0602*	-0.2226*	-0.4353*	-0.0657*	-0.0164	0.0088	0.0111	1	
11 Family involvement in ownership	10.4250	12.0960	-0.0497*	0.0094	0.0386	-0.0002	-0.2190*	-0.2099*	0.0820*	-0.0392	0.1558*	0.0522*	1

Note:

1. N=1728

2. \* represents statistical significance (p<0.05)

3. Year effects(year dummy1-5) were omitted in Table 1

**TABLE 2**  
**Regression: Longitudinal data with random effect model**

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-2.451*	-2.546*	-3.005*	-0.672	-1.333
Firm age	0.014 <sup>†</sup>	0.014 <sup>†</sup>	0.014 <sup>†</sup>	0.016*	0.017*
Firm size (total number of employees)	0.387***	0.383***	0.368***	0.371***	0.357***
Performance (ROA <sub>t-1</sub> )	-0.019	-0.019	-0.019	-0.020	-0.020
Net profit <sub>t-1</sub>	-0.033	-0.035	-0.027	-0.031	-0.024
Board size	0.066	0.068	0.088 <sup>†</sup>	0.070	0.092 <sup>†</sup>
Foreign institutional ownership	0.049***	0.050***	0.051***	0.053***	0.053***
Industry dummy	-0.002	0.004	-0.013	-0.060	-0.072
Year dummies	Included				
Family firm		0.147	0.116	-2.025 <sup>†</sup>	-1.850 <sup>†</sup>
Board independence			0.987		1.022
Family involvement in ownership				0.020 <sup>†</sup>	0.019
Family firm X Board independence			-10.066*		-9.236*
Family firm X Family involvement in ownership				-0.295*	-0.267 <sup>†</sup>
<i>R</i> <sup>2</sup>	0.089	0.090	0.093	0.092	0.095
<i>Wald chi2(12)</i>	168.41***	168.45***	174.56***	173.3***	178.52***

*Note:*

1. N=1728

2. <sup>†</sup>  $p < 0.1$ ; \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$