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Yongli Huang

Universität Innsbruck, Austria, yongli.huang@uibk.ac.at

Maximilian Schrieck

Universität Innsbruck, Austria, maximilian.schrieck@uibk.ac.at

Yiwen Gao

Colorado State University, United States, yiwen.gao@colostate.edu

Jason Thatcher

University of Colorado-Boulder, United States, jason.thatcher@colorado.edu

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Digital Platform Strategies and Profitability—The Role of Strategy Type and Chief Digital Officers

Research Paper

Yongli Huang¹, Maximilian Schreieck¹, Yiwen Gao², and Jason Thatcher³

¹ Universität Innsbruck, Department of Information Systems, Production and Logistics Management, Innsbruck, Austria

{yongli.huang,maximilian.schreieck}@uibk.ac.at

² Colorado State University, College of Business, Fort Collins, United States

yiwen.gao@colostate.edu

³ University of Colorado Boulder, Leeds School of Business, Boulder, United States

jason.thatcher@colorado.edu

Abstract. While companies in the IT industry—particularly the big tech companies—have profited from digital platform strategies, whether companies across industries also benefit from such strategies remains contested. Focusing on the S&P1500 companies, we show that digital platform strategies positively affect a company's profitability, albeit after a lag of several years. To further explore the relationship between digital platform strategies and profitability, we considered the impact of the type of digital platform strategy and the presence of a chief digital officer (CDO). First, the positive effect of a digital platform strategy is stronger for companies that implement the digital platform organically ("build strategy") rather than for companies that acquire a platform ("buy strategy"). Second, the presence of a CDO positively moderates the effect of digital platform strategy in the long but not in the short run. Overall, implementing digital platforms is not a quick-win strategy for companies, but it requires careful consideration.

Keywords: Digital platforms; platform strategy; chief digital officer, digital upper echelon

1 Introduction

Many companies employ digital platforms to create value by unlocking third-party developers' innovative potential (Cusumano et al., 2019a, Kretschmer et al., 2022, Panico and Cennamo, 2022). While some firms such as Alphabet/Google, Meta/Facebook, Apple, Tencent, and Alibaba have implemented successful digital platform strategies, there is mixed evidence of whether companies across a broader range of industries can realize the benefits of digital platform strategies. Previous work highlights the growth potential of digital platform strategies (e.g., Miller and Toh, 2020, Parker et al., 2017b) but also the challenges related to establishing a digital platform (e.g., Sandberg et al., 2020, Svahn et al., 2017). For example, opening internal systems to external third-party developers can lead to tensions within the companies. As a result, several leading companies abandoned their digital platforms, such as General Electric, which sold its digital platform Predix in 2018 (Edwards, 2018).

Existing studies on digital platforms have predominantly focused on value generation mechanisms (Parker and Van Alstyne, 2005), platform governance strategies (Schrieck et al., 2022), multi-platform integration strategies (Schrieck et al., 2023), failed platforms (Yoffie et al., 2019), the strategic role of the Chief Digital Officer (CDO) (Horlacher and Hess, 2016), and the optimal digital platform strategy (build vs buy) (Bughin et al., 2019). Despite these contributions, the management and IS literature still lack a comprehensive analysis of whether companies profit from digital platforms and under which conditions. Therefore, this study aims to address this gap by empirically investigating the impact of digital platform strategies on firm profitability. Hence, we pose the following research questions: *How do digital platform strategies affect a firm's profitability? Additionally, will the implementation of a build strategy and the presence of a CDO strengthen a firm's profitability?*

To address these research questions, we first hypothesize that a digital platform contributes positively to the profitability of companies because it unlocks the generative power of third-party developers (Tiwana, 2014) and leverages network effects (Parker and Van Alstyne, 2005). For a more nuanced understanding, we then consider whether companies implement the digital platform strategy organically ("build strategy") or through the acquisition of an existing digital platform ("buy strategy") (Cusumano et al., 2019b). We hypothesize that the effect of implementing a digital platform with a build strategy on a firm's profitability is stronger than that of a buy strategy because an internally developed digital platform will better align with the companies' overall digital infrastructure.

Finally, we consider the role of CDOs in implementing digital platform strategies because these strategies are often part of digital transformation agendas—which typically fall under the responsibility of the CDO (Singh and Hess, 2017). We draw on the upper echelons theory (Hambrick, 2007, Hambrick and Mason, 1984) and recent research on the CDO position (Tumbas et al., 2018a, Scuotto et al., 2022, Firk et al., 2021) and the digital upper echelons (Gao and Thatcher, 2021, Huang, 2024). Given the importance of the CDO for digital transformation, we hypothesize that a CDO will positively moderate the relationship between digital platform strategies and companies' profitability.

We compiled a unique panel dataset from the S&P1500 companies (2000-2020), identifying those companies that reported launching a digital platform strategy in their SEC filings. We manually coded digital platform strategies as build or buy strategies and integrated BoardEx data on CDO Presence. Our findings reveal that digital platform strategies yield positive effects in the long run, particularly after five and six years, with build strategies showing more significant benefits. While the presence of a CDO also positively influences outcomes in the long term, there is no immediate benefit, and initial years might even show a slight negative impact.

Our findings contribute to the conversation about drivers of effective digital platform strategies by analyzing the overall impact of digital platform strategies on firms' profitability and probing the effect of strategy types and the CDO position on whether organizations create profitability from digital platforms. We suggest that when seeking to generate profitability from digital platform strategies, firms must plan with at least a five-year horizon and consider appointing a CDO, giving them sufficient time to implement the strategy.

2 Background and Hypotheses

This study investigates the impact of digital platform strategies on a firm's profitability. Specifically, we aim to determine whether a build or buy approach leads to greater profitability and whether the presence of a CDO further enhances these outcomes.

2.1 Digital Platform Strategies and Profitability

Digital platforms refer to the "extensible codebase of a software-based system that provides core functionality shared by the modules that interoperate with it" (Tiwana et al., 2010). To support access to this functionality, digital platforms offer boundary resources—such as application programming interfaces (APIs), software development kits (SDKs), and developer portals (Ghazawneh and Henfridsson, 2013). Third-party developers then use these resources to create applications they make available to platform users. Examples of digital platforms include Google Android and Apple iOS, which support third-party developers of mobile applications (Förderer et al., 2018, Eaton et al., 2015), the Sony PlayStation that enables developers of video games (Cennamo et al., 2018), and the Microsoft Azure Platform that enables developers of business applications (Pauli et al., 2021).

Given that digital platforms create value in the IT industry, companies from non-IT industries have explored the applications of digital platforms. For instance, companies from the automotive manufacturing (Svahn et al., 2017), machine and equipment manufacturing (Sandberg et al., 2020), insurance (Riasanow et al., 2021), and farming (Perlman, 2017) industries have opened their core systems to establish digital platform ecosystems with third-party developers.

To unlock value from third-party developers, companies strive to build digital platform ecosystems populated by innovative third-party applications and services (Parker et al., 2016, Cusumano et al., 2019b, Kretschmer et al., 2022). Thus, the platform owner and third-party developers co-created value in the digital platform ecosystem (Hein et al., 2019). Digital platforms shift value creation from internal to external, thereby "inverting the firm" (Parker et al., 2017a) and establishing value co-creation. For example, Apple has established a flourishing ecosystem of third-party developers that provide applications for Apple's mobile operating system, iOS. In Apple's App Store, sales generated by third-party applications are estimated to be between 70 and 85 billion US\$ in 2021, with 60 billion US\$ distributed to third-party developers and the rest captured by Apple (Leswing, 2022). Thus, revenue generated by external third-party companies represents a crucial part of Apple's overall revenue and profitability.

Digital platforms create indirect network effects because an increasing number of users attract more third-party developers (Parker and Van Alstyne, 2005, Armstrong, 2006, Panico and Cennamo, 2022). These indirect network effects fuel value co-creation on the digital platform, allowing for more value capture by the platform owner. In sum, digital platforms enable companies to tap into the generative potential of third-party developers and capture a share of the co-created value. We hypothesize:

***Hypothesis 1:** A digital platform strategy positively affects a firm's profitability.*

A digital platform strategy can be implemented by internally developing a digital platform, acquiring a company that has already implemented a digital platform, or forming a consortium with other companies to build a digital platform (Cusumano et al., 2019b). In this study, we exclude the strategy of platform consortia because they have been a rare phenomenon even though they have been promoted as a strategy to compete with dominant established digital platforms (Hermes et al., 2020). Instead, we focus on the first two strategies, which we label the build and buy strategies following Cusumano et al. (2019).

With a build strategy, companies implement a digital platform themselves, with or without the support of an IT supplier. For example, the German enterprise software vendor SAP built a cloud platform for business applications (Schreieck et al., 2022), and Cisco implemented an Internet of Things platform for data analysis on routers and opened it to third-party developers (Khanagha et al., 2022). Qualitative studies on digital platform strategies mainly focus on companies that built platforms organically. These studies, despite identifying challenges and internal tensions, show successful outcomes in the enterprise software (Sarker et al., 2012, Schreieck et al., 2022), automotive (Svahn et al., 2017), network and telecommunications (Khanagha et al., 2022), and process automation industries (Sandberg et al., 2020).

While little evidence exists on the effect of buy strategies, anecdotal findings suggest that a high upfront investment and integration challenges might impede the benefits for the acquiring company (Toppenberg et al., 2016, Baker and Niederman, 2014). The company's legacy systems make integrating an acquired digital platform difficult and limit its generative potential (Rolland et al., 2018).

By implementing digital platforms internally, companies control the platform architecture and can adapt it to the needs of the third-party developers in their industry. When third-party developers interact with the platform, they co-create value, part of which the platform owner captures. We hypothesize:

***Hypothesis 2:** The effect of a digital platform strategy on a firm's profitability is stronger when the strategy is implemented internally (build strategy).*

2.2 Moderating Role of the Chief Digital Officer Position

The upper echelons theory postulates that it is insufficient to interpret organizations as functional structures (Hambrick, 2007). Instead, individual top managers and the top management team significantly influence the organization. Various studies have empirically supported and refined the theory (Neely et al., 2020). As firms face increasing demands to digitize, the role of the upper echelons in formulating digital strategies has drawn greater attention from management and information systems (IS) scholars. We refer to the executives with IT-related responsibilities as their primary role in the firm as digital upper echelons (Gao and Thatcher, 2021, Huang, 2024).

In this study, we focus on the position of the CDO, which has become more widespread in recent years (Rickards et al., 2015, Singh and Hess, 2017). The CDO is typically tasked with managing "initiatives that explore and harness new digital technologies," that is, digital transformation initiatives (Singh et al., 2020, Davison et al., 2023).

As part of a broader digital transformation agenda, a CDO is expected to significantly impact the implementation of digital platform strategies.

Recent work has shown that firms who report transformation urgency and coordination needs tend to appoint CDOs (Firk et al., 2021) and that CDO presence may be linked to more innovation (Salas and Fernandez-Corrales, 2022). Furthermore, part of the job of CDOs is to navigate "tensions between the existing and emerging approaches to innovation with digital technologies" (Tumbas et al., 2018b). Digital platforms enable innovation, and a CDO's presence can help align the digital platform strategy with a firm's traditional business.

Due to their responsibilities, CDOs are crucial in implementing digital platform strategies. CDOs help create essential digital capabilities for successful digital transformation (Tumbas et al., 2018a, Vial, 2019). Digital platform strategies, a specific type of digital transformation, may benefit from the expertise CDOs bring. Therefore, we hypothesize:

Hypothesis 3. *The presence of a CDO positively moderates the effect of a digital platform strategy on a firm's profitability.*

3 Method

We conducted a quantitative analysis on the impact of digital platform strategies and the role of CDOs, using data from S&P1500 companies. To determine if a firm implemented a digital platform strategy in a given year, we analyzed filings submitted to the United States Securities and Exchange Commission (SEC) from S&P1500 companies using the Wharton Research Data Services SEC Analytics Suite, searching for keywords indicative of platform strategies. This search encompassed annual reports (10-K forms), quarterly reports (10-Q forms), and significant event reports (8-K forms), including their full texts and exhibits like press releases. Our methodology involved crafting an initial list of keywords from known digital platform strategy implementations, refined through iterative searches of the filings. This process identified 231 firms with digital platform strategies and narrowed them down to 161 that actually implemented them.

Additionally, we corroborated our findings with the ProgrammableWeb dataset of public APIs, using public API availability as a proxy for identifying platform strategies (Benzell et al., 2021). This approach assumes that a strategy not mentioned in SEC filings is not strategically significant to the company. With the 161 firms, we generated an unbalanced panel dataset from 2000 to 2020, resulting in 26,906 firm-year observations, incorporating financial information from Compustat, manual coding for type of platform strategy (Build vs. Buy), and CDO presence from BoardEx. We chose this timeframe because digital platform strategies became significantly more prevalent in the 2000s (Parker et al., 2016), a trend supported by our review of SEC filings from the S&P1500, where 99% of mentions of digital platform strategies occurred from 2000 onwards.

3.1 Variables

Profitability. We measured profitability for the S&P1500 as return on assets (ROA), defined as the ratio of net income and total assets (Mawati et al., 2017). ROA reflects the efficiency with which a company utilizes its assets to generate earnings. It offers a quantifiable metric of managerial efficacy and operational performance (Cho and Lee, 2019). We apply a time lag to profitability, our dependent variable. In general, it has been shown that the effect of IT investments has a long-term impact on firm profitability rather than short-term (Santhanam and Hartono, 2003, Brynjolfsson and Hitt, 1998). For example, lags of one to three years (Santhanam and Hartono, 2003) and one to seven years (Brynjolfsson and Hitt, 1998) have been studied. In particular, implementing a digital platform strategy requires time. Its effect on profitability depends on third parties that enroll in the emerging digital platform ecosystem, a process that takes time (Benzell et al., 2021). We implemented a time lag of one to six years based on timelines for platform implementation reported in qualitative studies (Khanagha et al., 2022, Schrieck et al., 2022, Sandberg et al., 2020). Because lagging reduces the number of available data points, shifting our data series back by one to six years caused our initial 26,906 observations for analysis to be reduced to 25,141, 23,487, 21,880, 20,300, 18,760, and 17,277, respectively.

Digital platform strategies. After identifying 161 firms from SEC filings that have implemented a digital platform strategy, we determined the year each firm implemented its digital platform. We then assigned a value of 1 to that year and to each subsequent year in the panel data for that firm; otherwise, the value is set to 0. For example, suppose a firm has panel data from 2000 to 2020 and implemented a digital platform strategy in 2018. That firm's digital platform strategy variable will be assigned a value of 1 from 2018 to 2020.

Buy and build strategy. In the next step, we distinguished build and buy platform strategies for the 161 firms. Drawing on Cusumano et al.'s (2019b) definition of the strategies, we manually searched firms' websites and online news for their platform launches. The build strategy is assigned a value of 1 if it is mentioned in the news that the firm developed their platform independently; otherwise, it is set to 0. We concluded that 126 firms had opted for a build strategy while 35 had applied a buy strategy.

The presence of a CDO. We extracted information on the presence of CDO of the S&P1500 companies from BoardEx and classified it as a binary variable. The presence of a CDO was indicated by either the job title containing the term "digit" or a role responsible for digital transformation as per the job description. Therefore, in our analysis, 'CDO presence' is assigned a value of 1 if a firm has a designated CDO position in a given year.

Control variables. We included control variables for top management team characteristics and firm-specific factors influencing decision-making and strategy. Digital Upper Echelons (DUE) Presence is a binary indicator for the presence of key digital officers (CDO, Chief Information Officer (CIO), Chief Technology Officer (CTO), Chief Information Security Officer (CISO)). Similarly, CISO Presence and CIO/CTO Presence are binary variables indicating the presence of these specific roles. We also controlled for firm characteristics: firm size (log of total assets plus one), leverage (ratio of

debt to equity), asset tangibility (ratio of net tangible assets to total assets), capital expenditure (capital expenditures to total assets ratio), R&D expenditure (R&D spending to total assets ratio), Tobin's Q (a valuation measure), and firm age (log of the difference between the current year and the year of the initial public offering plus one). Additionally, we considered industry factors like industry turbulence (entry and exit rates), market concentration (Herfindahl-Hirschman index), and industry growth (three-year total assets growth) that may affect digital platform strategies and profitability.

3.2 Panel Regression

To test the hypotheses, we used ordinary least squares (OLS) with clustered standard errors to estimate a linear fixed effect model. We included firm and year-fixed effects to control for time-invariant heterogeneity and time trends (Tsonas and Kumbhakar, 2014). We estimate the model in equation (1) to test Hypothesis 1 on the main effect of digital platform strategy on profitability and the model in equation (2) to test Hypothesis 2 on the effect of a buy and a build strategy on profitability. Then, we estimate the model in equation (3) to test Hypothesis 3 on the moderating effect of CDO.

$$Y_{i(t+1)} = \alpha_i + \tau_t + \beta_0 \text{DigitalPlatformStrategy}_{it} + X_{it} + \epsilon_{it} \quad (1)$$

$$Y_{i(t+1)} = \alpha_i + \tau_t + \beta_1 \text{BuildStrategy}_{it} + \beta_2 \text{BuyStrategy}_{it} + X_{it} + \epsilon_{it} \quad (2)$$

$$Y_{i(t+1)} = \alpha_i + \tau_t + \beta_3 \text{DigitalPlatformStrategy}_{it} + \beta_4 \text{CDOPresence}_{it} * \text{DigitalPlatformStrategy}_{it} + \beta_5 \text{CDOPresence}_{it} + X_{it} + \epsilon_{it} \quad (3)$$

where $Y_{i(t+1)}$ indicates profitability. β_0 , β_1 , β_2 and β_4 are coefficients of interest. β_0 indicates the impact of a digital platform strategy. β_1 and β_2 indicates the impact of a build strategy and a buy strategy. β_4 indicates the moderating effect of a CDO. X_{it} indicates the time-variant control variables. α_i and τ_t indicate firm fixed effect and year fixed effect, which considers the time-invariant omitted variable bias and variables changing over time for all the individuals, respectively. ϵ_{it} indicates the error term.

To ensure our findings' robustness, we used the Generalized Method of Moments (GMM) for parameter estimation, effectively addressing endogeneity issues from unobserved variables or reverse causality—challenges not fully met by fixed effects models and a number of cross sections where N is large (e.g., 161 firms) while the number of periods T (e.g., 21 years) is small as in this case (Hansen, 1982). GMM's use of instrumental variables minimizes bias, particularly in dynamic panel data, making it ideal for robustness checks and managing dynamic endogeneity (Chan et al., 1992). Followed by Arellano and Bover (1995) and Blundell and Bond (1998), we evaluate GMM's reliability by using serial correlation tests AR(1) and AR(2), which test for first-order and second-order serial correlation. The expected acceptance of the "no autocorrelation" null hypothesis for AR(2) confirms the validity of the model estimates. Moreover, we apply Sargan tests to validate the instrumental variables, aiming for higher p-values to verify their exogeneity.

We chose system GMM over differenced GMM for its enhanced ability to reduce biases from omitted variables, unobserved effects, measurement errors, and endogeneity, using instrumental variables to improve profitability estimates (Arellano and Bover,

1995, Blundell and Bond, 1998). To minimize bias and prevent overfitting, we employ the rule of thumb that the number of instruments should not be higher than the number of periods (Asongu and Nwachukwu, 2018) and collapsed instruments to a maximum of two lags for both transformed and level equations, permitting longer lags for transformed equations. Therefore, 13 variables in our study, such as CISO Presence, DUE Presence, CIO/CTO Presence, Firm Size, Leverage, Asset Tangibility, Capital Expenditure, R&D Expenditure, Tobin's Q, Firm Age, Industry Turbulence, Market Concentration, and Industry Growth were treated as instrumental variables.

4 Results

4.1 The Effect of Digital Platform Strategies

First, we analyzed the impact of digital platform strategies on a firm's profitability. Digital Platform Strategy is the variable of interest. As shown in Table 1, our analysis of the lagged results reveals a complex pattern that unfolds over time.

Table 1. Effect of a digital platform strategy on firm profitability.

DV	Profitability						
Lagged years	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Digital Platform Strategy	0.070	0.0681	0.015	0.014	0.039	0.052**	0.076***
CDO Presence	-0.003	0.018	0.052	0.049	0.052	-0.039	0.026
CISO Presence	-0.011	0.003	-0.004	-0.025	-0.046**	-0.045**	-0.0419*
DUE Presence	-0.018	-0.014	-0.018	-0.009	-0.001	0.028	0.052
CIO/CTO Presence	0.011	-0.005	0.014	0.017	-0.011	-0.021	-0.052
Firm Size	0.058**	-0.046**	-0.06***	-0.056***	-0.074***	-0.054***	-0.051**
Leverage	-0.000	-0.001	-0.012	0.000	-0.001	-0.003	-0.003
Asset Tangibility	0.003	-0.044**	-0.024	-0.015	-0.000	-0.012	0.014
Capital Expenditure	-0.073	-0.025	-0.065	-0.041	0.057	-0.089	-0.161
R&D Expenditure	-0.19***	-0.10***	-0.081	-0.000	0.008	0.008	0.003
Tobin's Q	-0.001	0.02***	0.02***	0.012***	0.004	0.004	0.004*
Firm Age	0.05***	0.042**	0.037**	0.033*	0.014	-0.009	-0.009
Industry Turbulence	-0.222*	-0.103	0.172*	0.236**	-0.078	-0.319***	-0.031
Market Concentration	-0.046	-0.047	0.64***	0.584***	0.103	0.259	0.652***
Industry Growth	0.122	0.072	0.066	0.086**	-0.014	-0.019	-0.021
Firm Fixed Effects				Yes			
Year Fixed Effects				Yes			
Observations	26906	25141	23487	21880	20300	18760	17277
Adj. R-squared	0.034	0.042	0.030	0.018	0.017	0.019	0.021

Notes: Significance levels: *p < 0.1, **p < 0.05, ***p < 0.01.

In the initial year of implementing a digital platform strategy (year zero) and the subsequent four years, we observed positive effects on firm profitability, though these were not statistically significant. However, by the fifth ($\beta=0.052$, $p<0.05$) and sixth years ($\beta=0.076$, $p<0.01$), the positive impacts became statistically significant, indicating an average increase in firm profitability of 5.2% and 7.6% in years five and six, respectively. This finding supports Hypothesis 1. In our robustness check, the relation-

ship between digital platform strategy and firm profitability showed statistically significant positive impacts from the beginning, with notable increases in profitability in year zero ($\beta=0.086$, $p<0.10$), the first year ($\beta=7.198$, $p<0.10$), the third year ($\beta=1.670$, $p<0.01$), the fourth year ($\beta=2.302$, $p<0.01$), and the fifth year ($\beta=12.237$, $p<0.10$). In addition, low p-values below 5% for AR(1) from year zero to year six and high p-values above 5% for AR(2) affirm the validity of the estimated model. Moreover, the high p-values from the Sargan test, namely 0.780, 0.884, 0.257, 0.760, 0.276, 0.321, and 0.131, confirm the validity of the instrumental variables. These results further substantiate Hypothesis 1, confirming digital platform strategies' positive effect on firm profitability.

4.2 The Effect of Build vs. Buy Strategies

Next, we analyzed the effect of implementing a digital platform with a build strategy vs. a buy strategy. As shown in Table 2, both the build and buy strategies positively affect firm profitability from year zero to year six. However, the positive impact of a build strategy is statistically significant in years five and six ($\beta = 0.0492$, $p < 0.10$; $\beta = 0.075$, $p < 0.10$), suggesting that a build strategy could enhance firm profitability by 4.92% in the fifth year and 7.5% in the sixth year. These findings underscore the beneficial effect of digital platform strategies, mainly through implementing a build strategy, thus supporting Hypothesis 2.

Table 2. Effect of build vs. buy strategy

DV	Profitability						
	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Lagged years							
BuildStrategy	0.0868	0.0810	0.0071	0.0138	0.0357	0.0492*	0.075***
BuyStrategy	0.0096	0.0205	0.0445	0.0127	0.0530	0.0677	0.0805
CDO Presence	-0.0017	0.0192	0.0505	0.0489	0.0516	-0.0387	0.0261
CISO Presence	-0.0111	0.0031	-0.0047	-0.0258	-0.0459**	-0.0455**	-0.0419*
DUE Presence	-0.0177	-0.0135	-0.0182	-0.0094	-0.0011	0.0291	0.0521
CIO/CTO Presence	0.0107	-0.0054	0.0148	0.0171	-0.0112	-0.0206	-0.0519
Firm Size	0.0572**	-0.0464**	-0.061***	-0.057***	-0.075***	-0.0540***	-0.052**
Leverage	-0.0001	-0.0009	-0.0116	0.0000	-0.0009	-0.0032	-0.0036
Asset Tangibility	0.0031	-0.0437**	-0.0243	-0.0146	-0.0002	-0.0118	0.0140
Capital Expenditure	-0.0732	-0.0250	-0.0655	-0.0419	0.0571	-0.0897	-0.1612
R&D Expenditure	-0.192***	-0.095***	-0.0806	-0.0003	0.0083	0.0080	0.0028
Tobin's Q	-0.0014	0.01***	0.018***	0.012***	0.0041	0.0038	0.0040
Firm Age	0.053***	0.0420**	0.0368**	0.0329*	0.0142	-0.0094	-0.0094
Industry Turbulence	-0.2222*	-0.1026	0.1723*	0.2356**	-0.0783	-0.3190***	-0.0314
Market Concentration	-0.0430	-0.045***	0.640***	0.584***	0.1022	0.2587	0.652***
Industry Growth	0.1219	0.0718	0.0656	0.0857**	-0.0138	-0.0191	-0.0207
Firm Fixed Effects				Yes			
Year Fixed Effects				Yes			
Observations	26906	25141	23487	21880	20300	18760	17277
Adj. R-squared	0.0342	0.0424	0.0293	0.0177	0.0172	0.0188	0.0206

Notes: Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

In the robustness check, the stronger positive moderating effect of the build strategy is further confirmed for year zero ($\beta = 0.094$, $p < 0.05$) and the fourth year ($\beta = 0.067$, $p < 0.05$). The below 5% p-values for AR(1) and above 5% p-values for AR(2) confirm

the model's validity. Additionally, the p-values from the Sargan test, which were 0.775, 0.004, 0.057, 0.360, 0.412, 0.379, and 0.264, respectively, verified the validity of the instruments.

4.3 The Moderating Effect of the CDO Position

Finally, we examined Hypothesis 3, which posits that CDOs positively moderate the relationship between a digital platform strategy and a firm's profitability. As demonstrated in Table 4, significant positive effects were found in the fifth ($\beta = 0.132$, $p < 0.10$) and sixth ($\beta = 0.166$, $p < 0.10$) years, indicating CDO presence could enhance profitability by 13.2% and 16.6%, respectively. However, the year zero to year two showed a nonsignificant negative impact from CDOs.

Table 3. The moderating effect of CDOs

DV	Profitability						
	(0)	(1)	(2)	(3)	(4)	(5)	(6)
Lagged years							
CDO Presence*Digital Platform Strategy	-0.125	-0.062	-0.024	0.026	0.005	0.132*	0.166*
CDO Presence	0.011	0.025	0.055	0.045	0.051	-0.045	0.016
Digital Platform Strategy	0.071	0.069	0.015	0.013	0.038	0.052**	0.075***
CISO Presence	-0.016	0.003	-0.005	-0.026	-0.046**	-0.046**	-0.042*
DUE Presence	-0.019	-0.014	-0.018	-0.009	-0.001	0.029	0.053
CIO/CTO Presence	0.011	-0.005	0.015	0.017	-0.011	-0.021	-0.053
Firm Size	0.058**	-0.046**	-0.061***	-0.057**	-0.08***	-0.054***	-0.051**
Leverage	-0.000	-0.001	-0.012	0.000	-0.001	-0.003	-0.004
Asset Tangibility	0.003	-0.044**	-0.024	-0.015	-0.000	-0.012	0.014
Capital Expenditure	-0.073	-0.025	-0.065	-0.042	0.057	-0.089	-0.161
R&D Expenditure	-0.19***	-0.09***	-0.081	-0.000	0.008	0.008	0.003
Tobin's Q	-0.001	0.016***	0.018***	0.012***	0.004	0.004	0.004*
Firm Age	0.053***	0.042**	0.037**	0.033*	0.014	-0.009	-0.009
Industry Turbulence	-0.221*	-0.102	0.172*	0.235**	-0.078	-0.319***	-0.032
Market Concentration	-0.046	-0.047	0.642***	0.584***	0.103	0.259	0.651***
Industry Growth	0.122	0.072	0.066	0.086**	-0.014	-0.019	-0.021
Firm Fixed Effects				Yes			
Year Fixed Effects				Yes			
Observations	26906	25141	23487	21880	20300	18760	17277
Adj. R-squared	0.034	0.042	0.030	0.018	0.017	0.019	0.021

Notes: Significance levels: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Our robustness tests echoed these findings, showing a negative effect in year zero ($\beta = -0.101$, $p < 0.10$) but positive effects in the fifth ($\beta = 0.072$, $p < 0.10$) and sixth ($\beta = 0.196$, $p < 0.01$) years. The p-values below 5% for AR(1) and above 5% p-values for AR(2) further affirmed the model's validity. Moreover, the Sargan test p-values from year zero to year six were 0.780, 0.004, 0.109, 0.397, 0.644, 0.523, and 0.012, confirming the validity of all instrumental variables. These results indicate that CDOs significantly contribute to the long-term success of digital strategies, supporting our hypothesis.

5 Discussion

To understand the impact of digital platform strategies on firm profitability, we found that these strategies offer long-term benefits rather than immediate profits. This aligns with case studies showing that incumbents take several years for digital platforms to gain adoption by partners and customers (Sandberg et al., 2020, Khanagha et al., 2022). Our research suggests organically building digital platforms is more advantageous than acquisitions, as it avoids complexities in integrating information systems (Baker and Niederman, 2014) and the difficulties associated with acquiring digital platforms (Toppenberg et al., 2016).

The presence of CDOs enhances the positive long-term effects of digital platform strategies on profitability. This finding confirms work that shows that CDOs, who often spearhead digital innovation (Tumbas et al., 2018a), can significantly influence profitability (Kohli and Melville, 2019). However, indications suggest that a CDO's presence might negatively impact in the short run. Misalignment between CDO initiatives and the firm's core needs or undue time pressure on CDOs could dampen the potential long-term positive impact. Confirming this will require qualitative studies on digital platform strategy implementation in companies with and without a CDO.

Implications for theory. Our findings add to the literature on digital platforms and digital upper echelons, offering insights into the debate on the value of digital platform strategies for companies. On the one hand, the management and IS literature provides theoretical foundations and anecdotal evidence of the success of digital platform strategies (Wang, 2021, Parker et al., 2017a, Sandberg et al., 2020, Khanagha et al., 2022). On the other hand, many examples of failed platforms have been reported. In particular, for established companies from traditional industries, the struggle to develop digital platforms has become evident (e.g., Alstynne et al., 2016, Yoffie et al., 2019).

Up to now, the management and IS literature lacks a comprehensive analysis of the potential of digital platform strategies for companies in general and not just for the big tech companies and digital startups. We contribute to this gap by confirming that the "inverting-the-firm" effect (Parker et al., 2017a) of digital platforms contributes to a firm's profitability in the long term, particularly for firms that employ a build strategy rather than a buy strategy. We show that to establish a digital platform strategy successfully, it is not enough to acquire a digital platform; instead, the transformation has to be driven by internal actors.

We offer new insights into the role of CDOs in the success of digital platform strategies, complementing existing scholarship focused on platform characteristics—such as architecture (Tiwana et al., 2010), openness (Zhang et al., 2022, Benlian et al., 2015), and boundary resources for developers (Ghazawneh and Henfridsson, 2013)—and platform owner attributes like organizational identity (Lindgren et al., 2015) and capabilities (Helfat and Raubitschek, 2018, Schrieck et al., 2021). We highlight the significance of CDOs in executing digital platform strategies. Future studies could explore how executive traits, technical systems, and reporting structures impact a firm's profitability, as well as CDOs' influence on firm innovativeness (Salas and Fernandez-Corrales, 2022), where initial findings suggest a positive impact, could offer valuable perspectives for future research.

Future research should examine the dynamics between CDOs and traditional digital leadership roles, such as CIOs and CTOs, during digital platform implementation (Lorenz and Buchwald, 2023). Traditional roles may have goals differing from CDOs, while CISOs may have unique security concerns. A detailed study using both quantitative and qualitative methods could provide insights into how these roles impact the success of digital platform strategies.

Implications for practice. Our research provides insights for companies considering digital platform strategies. First, digital platforms often require time to yield benefits, necessitating patience. Second, firms adopting a build strategy should assess their leadership's digital expertise and consider appointing a CDO to address gaps while managing potential conflicts among multiple digital leadership roles. Third, acquiring digital platforms can accelerate ecosystem development but may present integration challenges. Additionally, joining an existing platform ecosystem, as an alternative strategy outlined by Cusumano et al. (2019b), allows companies to gain platform ecosystem experience and buy time for developing their own platforms, albeit at the risk of dependence on the ecosystem's orchestrator. These considerations highlight the nuanced decision-making process in effectively leveraging digital platform strategies.

Limitations. Our study has limitations, primarily in identifying digital platform strategies. We focus on those mentioned in SEC filings, assuming strategic importance leads to disclosure, but companies might not disclose all strategies. Additionally, we identify the first occurrence of a strategy without considering subsequent platforms. Future research could explore a detailed timeline of strategies, including success metrics and the impact of digital leadership roles beyond CDOs, such as digital middle management and roles like CISOs and Chief Data Officers. Broader sources like press releases or executive surveys could capture a wider range of strategies.

6 Conclusion

While digital platforms have made inroads into many industries, from banking to manufacturing to farming, it is still unclear to what extent these companies can benefit from these platforms. Drawing on the S&P 1500 companies, we show that digital platform strategies contribute to a firm's profitability in the long run, and the positive effect is higher for the build strategy, that is when the firm implements the platform internally. Next, we show that the emerging position of the CDO has a positive moderating effect on the firm's profitability. In sum, our study shows that companies seeking to realize profitability from a digital platform strategy must take at least a five-year perspective and consider appointing a CDO, giving them sufficient time to implement the strategy.

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