

A Literature Review: The Impact of Digital Transformation on Financial Performance

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Abstract: In recent years, digital transformation (DT) has emerged as a significant driver of organizational change, promising to revolutionize business processes, enhance operational efficiency, and ultimately improve business success. This literature review examines the empirical evidence surrounding the impact of DT on financial performance (FP) across various industries and organizational contexts. The review synthesizes findings from empirical research to provide insights into the mechanisms through which DT influences key performance metrics such as profitability, revenue growth and return on investment (ROI). Through a comprehensive analysis of existing literature, this review aims to contribute to a deeper understanding of the complex relationship between DT and FP and to provide valuable implications for both scholars and practitioners seeking to navigate the digital landscape effectively.

Keywords: Digital transformation, Financial performance, Impact, Literature review

1. Introduction

Digital transformation (DT) has emerged as a pivotal force reshaping industries worldwide. According to a survey conducted by (Gartner 2017), 91% of the businesses surveyed were engaged in some form of digital initiative, and 87% of senior business leaders say digitalization is a priority. This paradigm shift involves the integration of digital technologies into all aspects of business operations, fundamentally altering how companies create value, interact with customers, and compete in the marketplace. The advent of technologies such as artificial intelligence (AI), big data analytics, blockchain, the Internet of Things (IoT), and cloud computing has revolutionized traditional business models, leading to enhanced operational efficiencies, improved customer experiences, and the creation of new revenue streams (Matarazzo et al. 2021). Companies across various sectors are increasingly adopting digital transformation strategies to stay relevant in a rapidly evolving digital economy (Montagner & Reich 2018).

While the strategic importance of DT is widely acknowledged, its impact on the FP of companies remains a topic of extensive debate. FP, which includes metrics such as profitability, revenue growth and return on investment (ROI) is a critical measure of a company's success and long-term viability. Despite numerous case studies and anecdotal evidence suggesting the potential benefits of digital transformation, empirical research presents a mixed picture. Some studies highlight significant financial gains, while others report marginal or even negative impacts. This inconsistency underscores the need for a comprehensive examination of existing literature to better understand how digital transformation influences financial outcomes.

This literature review serves as a vital contribution to the existing literature by analysing only publications that provide empirical evidence of impacts of DT on FP. The need for empirical research in this domain is driven by several factors: Firstly, the outcomes of DT initiatives can vary significantly across different organizations. Factors such as industry context, company size, organizational culture, and implementation strategy can influence the success and financial impact of DT efforts. This literature review can help identify the conditions under which DT is most likely to yield positive financial outcomes. Secondly, limitations and complexities in measuring the impact of DT on FP can be identified. Traditional financial metrics may not fully capture the benefits of digital investments, such as improved customer satisfaction, innovation capabilities, or market agility. Empirical studies can develop and utilize appropriate frameworks and metrics to assess the realistic impact of DT on FP. Thirdly, the benefits of DT may not be immediately apparent. Longitudinal studies are necessary to understand the long-term effects of digital initiatives on FP. Such research can provide insights into the lag between digital investment and financial returns, helping companies manage expectations and plan their digital strategies more effectively.

2. DT and Financial Performance

DT can be defined as 'the process of organizational or societal changes driven by innovations and developments of the information and communication technologies (ICT)' (Bockshecker et al. 2018). It also incorporates manifold changes imposed by ICT in organizations, such as the development or alternation of business models,

sales and communication channels, customer relationship management and the digitization of a firm's offerings (Haffke et al. 2016). Consequently, DT describes the radical transformation of the organization via the formation of new technologies. In this regard, it evokes a holistic perspective that primarily emphasizes the integration of digital technologies in the various elements of the organization, but also includes underlying digitization and digitalization concepts.

Recent studies on DT demonstrate the complexity of this phenomenon and its impact on fundamental elements of companies' value creation, such as business processes (Grab et al. 2019), technology infrastructure (Nwankpa and Roumani 2016), organizational culture (Pfaff et al. 2023), HR (Hegedűs 2020), products and services (Almaazmi et al. 2021), customer experience (Tolboom 2016), suppliers and partners (Fröhlich and Steinbiß 2020). Digital transformation is recognized as an obvious factor of business competitiveness in the modern business environment.

FP on the other hand, commonly measured through indicators such as revenue growth, profitability, return on investment (ROI), and market share, is a critical metric for evaluating the success of business strategies, including DT initiatives. Although having theoretically established that DT has an impact on FP, very few studies are able to investigate this empirically. There remains a paradox whether DT has a positive or negative impact on firm's FP. Despite having plethora of advantages DT does not guarantee profitability, because it incurs operating and integrating costs (Guo and Xu 2021). Some scholars claim that DT can have positive impact on FP when observed at a longer time span and given that high level of DT intensity is maintained (Gurumurthy et al. 2019, Mahssouni et al. 2023, Yonghong et al. 2023). Contrary to this, some authors argue that DT can have a degrading effect on company financials (Jardak and Hamad 2022, Bughin et al. 2019).

This underlines the need for a systematic literature review to explore and synthesize current research results on the impact of DT on FP of companies. By analysing empirical studies, this contribution aims to provide a holistic understanding of the relationship between DT and various FP metrics. Additionally, it seeks to identify gaps in the current literature and propose directions for future research, offering valuable insights for academics, practitioners, and policymakers.

3. Methodology

A systematic literature review (SLR) was conducted to explore the impact of DT on the FP of companies. The approach ensures a comprehensive, unbiased, and replicable review of existing literature and involves clearly defined stages: identification of relevant studies, selection of studies based on predefined criteria, data extraction, and synthesis of findings. The following research questions guide the literature review: What are the key factors of DT that influence FP? What financial outcomes are associated with DT initiatives?

A comprehensive search strategy was devised to identify relevant academic articles, books, reports, and other sources related to DT and FP. Multiple electronic databases such as Emerald insights, ScienceDirect, Scopus, and Google Scholar were searched using keywords such as 'Digital transformation,' 'Digital maturity,' 'Financial performance,' and 'Business performance and digitalization', 'ROI of digital transformation'. Boolean operators (AND, OR) and wildcards were used to refine and expand the search. Lastly the "snowball" method was used to identify appropriate academic sources by exploring the references of other relevant research. Next, articles were screened based on predefined inclusion and exclusion criteria to ensure their relevance to the research topic. To ensure the relevance and quality of the reviewed studies, the following inclusion and exclusion criteria were applied: Only peer-reviewed journal articles, conference papers and reputable industry or consulting reports, written in English and published after the year 2015 were considered, that focus on the impact of DT on FP. Next, quality assessment of the extracted data was performed. In order to do this, studies were assessed based on their robustness, sample size, relevance as well as quality and type of data.

4. Analysis of Empirical Studies Investigating the Impact of DT on Financial Performance

The SLR delivered a total number of 12 empirical studies from the years 2016-2024, that rely on self-reported data as well as quantitative data, econometric, regression models and a variety of data sources like financial databases and annual reports. Most studies are geographically concentrated, especially in China and Europe, while some target diverse global regions. Their industry focus varies, with some studies focusing on specific sectors like manufacturing, while others cover broader industrial bases. The studies cover varying time frames (e.g., 2009-2019 for Zhai et al. 2022, 2015-2019 for Mahssouni et al.), their sample sizes vary significantly, from 92 observations (Jardak et al. 2022) to 2566 (Liu et al. 2023). Varied indicators and indices are used to measure

the level or maturity of DT (e.g., DESI dimensions, custom indices, Likert scales) as well as different FP metrics (e.g., ROA, ROE, Tobin's Q, profit margin), complicating direct comparisons of results.

Table 1: Analysed studies investigating impact of DT on financial performance

Author	Year	Title	Region	Sample	Time period	DT dimensions (input)	Financial performance metrics (output)	Data Source
(Barba-Sánchez et al. 2024)	2024	Effects of digital transformation on firm performance: The role of IT capabilities and digital orientation	Spain	246 answers from CEOs and owners of SMEs and Micro SMEs in the manufacturing sector	na	Digital orientation; Digital transformation; IT capability	Seven items addressing organisations' financial and non-financial results	Qualitative self-assessment
(Mahssouni et al. 2023)	2023	Dual Perspectives on Financial Performance: Analysing the Impact of Digital Transformation and COVID-19 on European Listed Companies	Europe	2179 cross-sectoral European Listed companies.	5 Years	Connectivity; Human capital; Integration of digital technology; Digital public services	ROA; ROE	Orbis database, DESI Index
(Zhang et al. 2023)	2023	The impact of digital transformation of manufacturing on corporate performance — The mediating effect of business model innovation and the moderating effect of innovation capability	China	255 Answers acquired from Senior and Middle level managers of Micro SMEs, SMEs and Large enterprises in the manufacturing sector.	5 Years	Exploitative DT; Explorative DT	Profit margin; Rate of return of sales; Operational costs; Market share	Qualitative self-assessment
(Liu et al. 2023)	2023	The Effect of Financial Digital Transformation on Financial Performance: The Intermediary Effect of Information Symmetry and Operating Costs	China	2566 cross-sectoral A-share listed companies	9 Years	Application of digital technology; Information system and digital platform; Data governance; Business and financial process reengineering; Smart finance	Tobin's Q; Operating Income; Operating Cash flow; Shareholding Ratio; Asset–Liability Ratio	Annual company reports, China Stock Market and Accounting Research database

Author	Year	Title	Region	Sample	Time period	DT dimensions (input)	Financial performance metrics (output)	Data Source
(Yonghong et al. 2023)	2023	The impact of enterprise digital transformation on financial performance — Evidence from Mainland China manufacturing firms	China	55 A-share listed manufacturing companies	7 Years	Digital IT architecture; Digital inputs; The extent to which digitalization is integrated with the industry	Inventory turnover ratio; Total asset turnover ratio	“Top 100 Value Creation of A-share Listed Companies in China’s Equipment Manufacturing Industry” report, Annual company reports
(Jardak und Ben Hamad 2022)	2022	The effect of digital transformation on firm performance: evidence from Swedish listed companies	Sweden	92 observations from 23 listed companies from the Media, Banking and Manufacturing sectors	4 Years	Digital marketing; Digital product experience; e-commerce; e-CRM; Mobile and; Social media.	ROA; ROE; Tobin’s Q	“Digital leader’s reports”, DataStream
(Zhai et al. 2022)	2022	Does digital transformation enhance a firm’s performance? Evidence from China	China	Accounting and financial data acquired from 9614 cross-sectoral A-share listed companies	10 Years	Digital technology applications; Business model innovations; Innovation capability	ROA; ROE; Cost (Production cost/Total revenue); Turnover; Leverage; Equity multiplier (total assets/shareholder equity)	Annual company reports, China Stock Market and Accounting Research database
(Teng et al. 2022)	2022	Research on the Relationship between Digital Transformation and Performance of SMEs	China	335 Answers acquired from executive of Manufacturing SMEs	na	Digital technologies; Digital skills; DT strategy	ROI; ROE; Increase in sales; Return on sales; Gross profit; Net profit	Qualitative self-assessment
(Guo und Xu 2021)	2021	The Effects of Digital Transformation on Firm Performance: Evidence from China’s Manufacturing Sector	China	2254 Listed manufacturing companies	10 Years	DT Intensity; Industrial DT maturity	Cost of obtaining unit revenues (operating cost + sales expense); ROA; Asset turnover rate; Asset-liability ratio; Equity concentration	Annual company reports, China Stock Market and Accounting Research database

Author	Year	Title	Region	Sample	Time period	DT dimensions (input)	Financial performance metrics (output)	Data Source
(Abou-foul et al. 2021)	2021	The impact of digitalization and servitization on the financial performance: An empirical analysis	USA & Europe	Financial data was acquired from OSIRIS data base and the data on DT was acquired using questionnaire for executives of the same 185 manufacturing companies	3 Years	Servitization; Digitalization	Revenue/Number of employees; Fixed assets turnover; Return on sales; ROI; General profitability of the firm; Market capitalization	Qualitative self-assessment
(Ragu Gurumurthy et al. 2019) Deloitte	2019	Uncovering the connection between digital maturity and financial performance	USA	1200 cross-sectoral organizations with a revenue of at least \$250 Mil	na	Flexible, secure infrastructure ; Data mastery; Digital savvy, open talent networks; Ecosystem management ; Intelligent workflows; Unified customer experience; Business model adaptability	Net revenue; Net profit	Qualitative self-assessment
(Joseph K. Nwankpa und Yaman Roumani 2016)	2016	IT Capability and Digital Transformation: A Firm Performance Perspective	USA	167 Answers acquired from CIOs, VPs of IT and IT executive of cross sectoral Medium and Large sized enterprises	na	IT Infrastructure ; IT business spanning; IT proactive stance	Profitability; Customer retention; ROI; Sales growth	Qualitative self-assessment

The comparative analysis of the studies on digital transformation (DT) and its impact on financial performance (FP) reveals a nuanced understanding of how various factors and contexts influence this relationship. In the following, the general approach, findings, and implications of each study are outlined to provide a cohesive overview.

Barba-Sánchez et al. (2024) examined the mediating roles of IT capabilities and digital orientation in the DT-FP relationship within 246 Portuguese manufacturing companies. Using qualitative surveys and multivariate analysis, they found that while DT significantly contributes to FP, its impact is heavily dependent on IT capabilities and digital orientation. Similarly, Nwankpa and Roumani (2016) focused on 167 US companies and discovered that DT mediates the influence of IT capabilities on FP (including profitability, customer retention, ROI, and sales growth) and innovation, underscoring the importance of IT capabilities in leveraging DT for better financial outcomes.

Mahssouni et al. (2023) utilized an econometric model to analyse financial data from 2179 listed European companies (2015-2019). They integrated financial variables (ROA, ROE) and non-financial variables from the DESI

index to capture DT maturity levels. Their findings revealed a 1% increase in digital capacities leading to a 58% improvement in FP, indicating a strong positive correlation. However, they also noted a negative relationship between the price-to-book value ratio and FP, hinting at the complexities of market perceptions.

In a study of 255 Chinese manufacturing companies over five years, Zhang et al. (2023) differentiated between explorative and exploitative DT modes. They found that both modes positively impact business model innovation and FP, highlighting the strategic value of tailored DT approaches. Teng et al. (2022) supported this by surveying 335 Chinese SMEs and finding positive correlations between specific DT dimensions ('Digital Technology', 'Digital Skills', and 'DT Strategy') and FP indicators (ROI, ROE, sales increase, Return on Sales, gross profit, and net profit).

Zhai et al. (2022) used extensive accounting data from Chinese A-Share listed companies (2009-2019) and demonstrated that DT enhances FP through better asset turnover, lower operating costs, and increased innovation success. Their textual analysis of annual reports showed that DT firms had a 0.33% better ROA compared to non-DT firms, translating to a 7.29% higher return. Liu et al. (2023) found similar positive correlations in Chinese companies, with DT improving FP by 1.1% and enhancing information symmetry while reducing operating costs.

Guo and Xu (2021) observed a U-shaped relationship between DT and FP in 2254 listed Chinese manufacturing companies (2010-2020). Their regression analysis indicated initial profitability dips post-DT implementation due to high costs, followed by increased profitability after five years, suggesting that DT benefits accumulate over time. Conversely, Jardak et al. (2022) found that DT negatively impacts FP in 23 listed Swedish companies, with high IT infrastructure investment costs outweighing benefits initially but positively influencing market valuation (Tobin's Q).

Abou-Foul et al. (2021) explored the role of digitalization in enabling servitization and enhancing FP in 185 manufacturing firms in the USA and Europe. Their analysis showed that digitalization and data-driven solutions significantly improve FP and market offerings. In a broader scope, Gurumurthy et al. (2019) analyzed 1200 US-based companies, revealing a direct positive correlation between DT maturity and FP. Companies with higher DT maturity levels exhibited substantial growth in net revenue, net profit, sales from new products/services, and customer lifetime value, while also reducing costs for new product launches and customer acquisition.

Lastly, Yonghong et al. (2023) studied 55 listed Chinese manufacturing companies (2013-2020) and concluded that while DT positively impacts FP, there is an initial lag. Their multivariate model showed that profitability performance decreases initially, but as DT deepens, improvements in net sales margin, total asset return, inventory turnover, and asset turnover rates become evident.

In summary, while the studies show a general consensus on the positive impact of DT on FP, the extent and immediacy of these benefits are influenced by factors such as IT capabilities, digital orientation, the nature of the industry, and the maturity level of DT implementation. The temporal aspect is particularly critical, as initial costs and investments may obscure the immediate benefits, which tend to accrue more significantly in the long term. These study findings collectively underscore the complexity of the DT-FP relationship, necessitating a strategic and well-supported approach to digital transformation.

5. Discussion of Limitations

Most analysed studies are geographically concentrated, especially in China and Europe, with fewer studies covering diverse global regions. This limits the generalizability of findings across different economic contexts.

The industry focus varies, with some studies focusing on specific sectors like manufacturing, while others cover broader industrial bases, which can lead to sector-specific insights that might not apply universally. Qualitative surveys (e.g. Teng et al. 2022, Barba-Sánchez et al. 2024, Nwankpa & Roumani 2016) rely on self-reported data, which can introduce bias and limit the accuracy of FP assessments. While many studies establish correlations between DT and FP, causality is often implied rather than rigorously tested, leaving room for alternative explanations (e.g., firms already performing well are more likely to invest in DT). Moreover, there is a lack of a longitudinal studies observing the long-term impact of DT on FP. IT investments could take years to materialize and to be captured by performance indicators. Even though a series of studies inherit longitudinal data, they cover varying time frames (e.g., 2009-2019 for Zhai et al. 2022, 2015-2019 for Mahssouni et al. 2023), making it challenging to compare results across different economic cycles and technological advancements. All studies use varied indicators and indices to measure DT (e.g., DESI dimensions, custom indices, Likert scales), leading to inconsistencies in how DT's impact is quantified. Studies such as from Zhang et al. and Barba-Sánchez et al. explore mediating factors like business model innovation and IT capabilities, but more comprehensive models

are needed to understand the complex interplay between DT and various organizational dimensions. Other studies, such from Guo et al. 2021 and Jardak et al. 2022 rely on text analysis of annual firm reports to gain insights into company DT measures. Critical digital actions are never disclosed in these reports, therewith their validity stays ambiguous and needs further verification.

6. Conclusion

In conclusion, this SLR painted a comprehensive picture of the DT-FP relationship. While the positive impact of DT on FP is evident, the extent and timing of this impact are influenced by a variety of factors. Initial costs and market perceptions also play critical roles in shaping the outcomes. Therefore, companies aiming to leverage DT for financial improvement must adopt a holistic approach that considers these mediating factors and prepares for the potential initial costs and time-lagged benefits. By doing so, they can better navigate the complexities of DT and achieve sustainable financial success. The limitations discussed highlight the need for more geographically and sectorally diverse research, standardized measurement approaches, and longitudinal studies to better capture the dynamic effects of DT on FP. Addressing these limitations will provide a clearer understanding of how and when DT investments yield tangible financial benefits.

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