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The Determinants of Financial Performance of FinTech Companies: A Logistic Regression Approach

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ABSTRACT

Purpose: The financial aspect is essential to ensure the success and sustainability of Fintech companies, which will reflect on the financial industry as a whole. Accordingly, this study aimed to identify the most effective variables from a possible set of indicators that affect the financial performance of 60 Fintech companies operating in several countries over the period (2020–2022).

Methods: The financial aspect is essential to ensure the success and sustainability of Fintech companies, which will reflect on the financial industry as a whole. Accordingly, this study aimed to identify the most effective variables from a possible set of indicators that affect the financial performance of 60 Fintech companies operating in several countries over the period (2020–2022).

Findings: The study adopted a logistic regression methodology to measure the determinants of financial performance of Fintech companies.

Implications: The study adopted a logistic regression methodology to measure the determinants of financial performance of Fintech companies.

Originality: The author suggests that Fintech companies should control their costs as much as possible in order to optimise their financial performance.

1. Introduction

FinTech is a relatively modern concept. It can be dated back to the first half of the nineteenth century (Nicoletti, 2017). The "FinTech" term was coined by Bettinger in 1972 in his "FINTECH: A Series of 40 Time-Shared Models Used at Manufacturers Hanover Trust Company." FinTech's popularity began in the early 1990s and was initially used as a reference to the "Financial Services Technology Consortium," a project launched by Citigroup to help technical collaboration efforts (Mohamed & Ali, 2019).

Despite extensive research, no universally accepted definition of financial technology (FinTech) has emerged in the academic literature. Some studies treat FinTech as synonymous with "innovations" or "modern technologies," whereas others focus on the startups enabling them.

The relevance of FinTech companies comes from Bill Gates' statement on financial institutions: "Banking is necessary; banks are not" (Nicoletti, 2021). A FinTech company is a financial start-up that uses innovative technology solutions to improve financial performance and improve applications, procedures, products, processes, business models, and ideas in the financial sector (Nicoletti, 2021). This newly emerging trend is closely tied to startups and firms offering cutting-edge financial services or products, often combining finance with information technology (IT) or leveraging the latest technological advancements (Mohamed & Ali, 2019).

Therefore, in order to qualify as a FinTech under this definition, a company must offer a financed solution with some extent of innovation and with a strategic focus (Ankenbrand *et al.*, 2018).

The total volume of global investments (venture capital, private investors, mergers, and acquisitions) in FinTech companies has witnessed a remarkable development, reaching $209.3 billion in 2022 and $52.4 billion in the first half of 2023 (KPMG, 2023). The growth and spread of FinTech companies can be attributed to several reasons (Burke, 2021):

- During the 2008 financial crisis, the financial industry began rebuilding itself by strengthening compliance, tightening regulations, and adopting innovative business models introduced by FinTechs (Arjunwadkar, 2018);

- The 2007 release of the iPhone, and subsequently smartphones, opened the door to mobile payment systems, especially in developing countries where average persons could not open bank accounts but possessed smartphones (Burke, 2021);
- Accumulated advancements in technology offered FinTech the opportunity to build infrastructure required to meet the changing demand for financial products and compete against incumbent banks (Burke, 2021);
- Consumer preferences for digital financial services allowed FinTech companies to outmaneuver the legacy financial system entrenched in obsolete programming languages and corporate organizations blocking quick change in banking models.
- FinTech firms have a "mindset" ready to question the "raison d'être" of financial institutions, products, and processes;
- FinTech usually aims to attract customers with products and services that are more user-friendly, efficient, transparent, and automatic than those available. (Dorfleitner *et al.*, 2017);
- FinTechs enhance competition in financial markets, provide services that traditional financial institutions do less efficiently or do not do at all, and widen the pool of users of such services (Barba Navaretti *et al.*, 2017).

Disruptors are fundamentally distinguished from incumbents across multiple dimensions: they are mostly smaller and younger companies that have fewer resources than traditional incumbents; while incumbents target sophisticated customers at the upper end of the market, disruptors start at the bottom; they offer simpler products of suitable functionality at low prices; and disruptors anticipate future customer needs and demands, whereas incumbents place a lot of emphasis on their existing customers. Finally, disrupters typically have a high risk appetite and little to lose, while traditional firms face a trade-off between innovation and the current success of their business (Braun & Schreiber, 2017). Its activity is based on unbundling, because it involves the unbundling of financial services packages and the separate selling of each service. The next step from this is to bundle the various services offered by startups into a comprehensive package of services (Tajimi, 2021).

Financial institutions are quickly looking for FinTech start-ups, and the ideas there have been developed as a route for better offers. While there are many different approaches, these incumbent-startup interactions can generally be categorized in three ways: building/replicating FinTech capabilities, investing in FinTech startups, and partnering with FinTech startups (Arslanian & Fischer, 2019). By engaging in strategic alliances, parties can frame market opportunities and leverage resources so both can reap benefits. Competitiveness, collaboration, and the ambidexterity approach of co-opetition offer a strategic menu to better deal with other companies from the financial industry and newcomers from the retail industry (Reyes-Mercado, 2021).

2. Literature Review

FinTech was the main focus of many researchers and academics interested in the financial industry; the novelty and complexity of this phenomenon have allowed them to analyze it thoughtfully from different perspectives: (Kerényi & Molnár, 2017) check the impact of FinTech companies on two main areas for financing: payment and loan. Their analysis of FinTech innovations shows that these technologies can significantly reduce transaction costs and enhance service efficiency. In lending, they highlight how crowdfunding has emerged as a major alternative financing source, particularly in high-risk market segments traditionally underserved by banks (Li *et al.*, 2017), and the effects of FinTech startup funding activities on the stock market returns of 47 incumbent financial institutions in the United States between 2010 and 2016. Using data on both the dollar volume of funding and the number of deals, they found a statistically significant positive relationship between the growth in FinTech investment activity and the stock return on the established retail banks. Bömer and Maxin (2018) developed a conceptual framework to explain the motivations behind FinTech firms' partnerships with traditional financial institutions. By analyzing 14 case studies of such collaborations, they demonstrated that these partnerships enable FinTech companies to access new markets, maximize profitability, and effectively commercialize innovative products. Their findings highlight the strategic value of cross-sector alliances in the evolving financial services landscape; in this regard, Suk Yoon *et al.* (2023) analyze how FinTech adoption affects bank performance across 91 countries (2014–2021). Using the Global Findex Database, the authors develop an AbFinTech GDP-adjusted measure of FinTech penetration and find it significantly improves bank performance, especially in less developed economies. Regression results reveal that the positive effect weakens as GDP per capita rises, highlighting FinTech's disproportionate impact in lower-income markets. Similarly, Kokh and Kokh (2020) examine the popular hypothesis that traditional banks in Russia risk becoming obsolete as FinTech firms dominate financial services. Through systematic comparative analysis, expert assessments, and logical evaluation, the research assesses banks' competitive positioning against FinTech competitors. Contrary to predictions of disruption, findings demonstrate that universal banks maintain market leadership across both product offerings and digital capabilities, suggesting their continued relevance in Russia's financial ecosystem. In the same country, Golubev and Ryabov (2020) examine the necessity for

traditional financial institutions in Russia to adopt FinTech solutions to remain competitive. The findings reveal that the financial sector is undergoing rapid transformation, evolving into technology-driven entities that enhance competitiveness through digital innovation and expanded customer-centric services. The research demonstrates that embracing FinTech enables firms to better meet evolving market demands and sustain relevance in an increasingly digital financial ecosystem.

Check FinTech-induced disruptions for traditional financial institutions in Asian markets. Using data from the Global FinTech Report (2013–2017) and Song *et al*. (2023), check out the competition and technology transition effects on the profitability of the commercial bank (2013–2017) and Song *et al*. (2023) check out the competition and technology transition effects on the profitability of the commercial bank using annual panel data of 46 listed commercial banks in China from 2012 to 2021 and constructing a two-way fixed-effects model. The results suggest that the competition in the early stages of FinTech development was negatively correlated with the profitability of commercial banks. FinTech had a more significant negative impact on small and medium-sized commercial banks in the short run. However, the role of FinTech for such banks will also grow in the future. A working paper conducted by Phan *et al*. (2018) issued by Bank Indonesia has examined 41 banks and data on FinTech firms, using multiple additional and robustness tests, and has concluded that the growth of FinTech firms negatively affects bank performance. Similarly, Zhao *et al*. (2022), examining the impact of financial technology innovation on Chinese banks' performance, utilizing both patent data and a FinTech development index, by employing a generalized method of moments (GMM) approach, reveals that aggregate FinTech innovation exerts statistically significant downward pressure on both bank profitability metrics and asset quality indicators (Parameshwar *et al*., 2019). Employing OLS regression analysis, the study reveals two significant findings: First, traditional institutions experience primary disruptions in savings mobilization and financial account penetration. Second, the study iden
tifies divergent GDP impacts from FinTech funding sources—venture capital and private equity investments demonstrate positive GDP contributions, whereas merger and acquisition activities exhibit negative macroeconomic effects.

Regarding FinTech companies' solvency, Hommel and Bican (2020) examine how FinTech start-ups' characteristics shape their financing choices during the first three post-incorporation years. Examining the determinants of long-term debt financing, their study reveals that unregulated FinTech startups exhibit significantly greater reliance on long-term debt. The property structure, owner's characteristics, and specific FinTech activity affect the source of funding (Carbó Valverde *et al*., 2022). Using panel data and survival analysis on the full population of FinTech startups in Spain from 2005 to 2017, this study explores both financial and operational determinants of profitability, with particular emphasis on the factors influencing time-to-break-even among FinTech startups. The findings reveal that most FinTech startups remain unprofitable within their first three years of operation. However, larger, solvent firms, particularly those founded by solo entrepreneurs and nurtured within incubator or accelerator programs, demonstrate a higher likelihood of achieving profitability and long-term survival. Furthermore, Holtfort *et al*. (2021) explore the drivers of FinTech evolution across countries and continents with varying levels of FinTech activity, examining how economic, technological, legal, and cultural factors influence FinTech entrepreneurship. Using a generalized linear mixed model (GLMM) to assess the statistical significance of these factors from 2000 to 2017, the results indicate that gross domestic product (GDP), regulatory burden, government technology procurement, and the degree of individualism in society are key determinants of FinTech startup activity. Meher *et al*. (2024) aimed to develop stock forecasting models for India's top three FinTech companies, Policy Bazaar, Paytm Ltd., and Niyogin Ltd., using a Random Forest approach with high-frequency data from 1 October 2022 to 30 September 2023. The results demonstrate that the Random Forest model delivers highly accurate predictions, indicating its strong efficacy in forecasting stock performance for FinTech firms.

Existing research has predominantly examined the expansion of financial technology and the dynamics between FinTech firms and traditional banks, particularly how FinTech market positioning affects the financial performance of incumbent institutions. However, these studies have largely overlooked a critical aspect: the financial performance of FinTech firms themselves and the key factors influencing their profitability. Building on this gap, this study addresses this critical research gap by examining the financial sustainability of FinTech companies, which is fundamentally tied to their financial performance. To enhance their long-term viability, FinTech firms must adopt strategies that maximize profitability, optimize asset utilization, and enforce rigorous cost control—measures essential for strengthening their financial position and delivering value to stakeholders. However, FinTech ventures, like all businesses, remain vulnerable to failure. Key challenges include an inability to secure follow-on funding and the pitfalls of overexpansion driven by premature success, underscoring the need for balanced growth and sustainable financial practices (Arjunwadkar, 2018). These factors contribute to the high failure rate, with approximately three-quarters of financial technology startups failing within two decades (Luizazhou, 2024).

This study seeks to identify the most influential variables from a set of potential indicators affecting FinTech companies' financial performance using a logistic regression model.

3. Materials and Methods

The logistic regression model is a widely used classification technique that predicts binary outcomes by estimating the probability of an event occurring. Unlike linear regression, which produces continuous outputs, logistic regression constrains predicted values to the interval between zero and one (Abid, 2022). It is used where data is dichotomous or binary (0 or 1).

We have chosen ROE (Return on Equity) as the dependent variable, which reflects the financial performance of FinTech companies. The dependent variable is predicted in the form of the probability of failure and valued between 0 and 1. That is either 1 for a good FinTech company (ROI value >= Median) or 0 for a poor FinTech company (ROI value < Median).

The present study data was collected from 60 FinTech companies operating in several countries (United States, Japan, Australia, Netherlands, Canada, China, Germany, Brazil, Hong Kong, Cayman Islands, Uruguay, Thailand, Taiwan, Kazakhstan, India, and the United Kingdom) over the period 2020-2022 based on the Yahoo Finance database.

The study examines the efficiency of ratios as predictive variables of financial performance; table 1 shows the eight independent variables (financial ratios) and the dependent variable as a dichotomous variable.

Table 1: Proposed Variables

Variables	Measures	Sources
Dependent Variable		
GOOD (coded as 1) POOR (coded as 0)	ROI value ≥ Median ROI value < Median	(Tudose *et al.*, 2022); (Le Thi Kim *et al.*, 2021); (Viet Ha Hoang *et al.*); (Bagh *et al.*, 2023); (Tarigan *et al.*, 2019)
Independent Variables		
Size	Ln(Assets)	(Lassala *et al.*, 2021); (Linawati & Halim, 2017); (Viet Ha Hoang *et al.*); (Ali Mirza & Javed, 2013); (Muhammad Kamran *et al.*, 2015); (Anggreini & Santoso, 2022)
Current ratio	Current assets / Current liabilities	(Tudose *et al.*, 2022); (Podhorska & Siekelova, 2019); (Viet Ha Hoang *et al.*); (Hartuti *et al.*, 2022)
Leverage ratio	Total liabilities / Owner's equity	(Le Thi Kim *et al.*, 2021); (Devi *et al.*, 2020); (Lehenchuk *et al.*, 2023); (Razak *et al.*, 2020); (Yunus *et al.*, 2020); (Siahaan *et al.*, 2023)
Maturity	Ln(Age)	(Lassala *et al.*, 2021); (Viet Ha Hoang *et al.*); (L *et al.*, 2020)
Risk ratio	Total liabilities / Total assets	(Lassala *et al.*, 2021); (Affes & Jarboui, 2023); (Setyo Lestari, 2021)
Cash ratio	Liquidity / Current liabilities	(Podhorska & Siekelova, 2019); (Tehrani *et al.*, 2012)
Gross profit ratio	Gross profit / Revenue	(Malini & Banu, 2019); (Fikri *et al.*, 2020); (Mudjiyono & Adi Wicaksono, 2022)
Net profit ratio	Net profit / Revenue	(Malini & Banu, 2019); (Fikri *et al.*, 2020); (Mudjiyono & Adi Wicaksono, 2022)

The logistic regression equation is estimated by using the maximum likelihood estimation for classifying the financial performance:

Where: (Shahan Ali, Mubeen, Lal, & Hussain, 2018)

Y= log(P/1−p) and 'p' is the probability that the outcome is GOOD

$$Yit = \alpha 1 + \alpha 2SIZE + \alpha 3CR + \alpha rLR + \alpha 5MAT + \alpha 6Risk + \alpha 7Cash + \alpha 8GPR + \alpha 9NPR + uit$$

Table 2: Descriptive Analysis

Variables	Size	CR	LR	MAT	Risk	Cash	GPR	NPR
GOOD FinTech Companies (N=31)								
Mean	16.87	6.58	1.12	2.97	0.22	2.58	0.51	0.26
Std	2.61	9.86	2.30	0.92	0.25	5.69	0.27	0.13
POOR FinTech Companies (N=29)								
Mean	15.50	24.53	2.07	3.11	0.28	10.07	0.50	-0.15
Std	2.44	50.94	7.22	0.87	0.38	24.20	0.25	0.45
GOOD and POOR FinTech Companies								
Mean	16.21	15.25	1.58	3.04	0.25	6.20	0.50	0.06
Std	2.60	36.91	5.26	0.89	0.32	17.56	0.26	0.39

Source: Prepared by the author based on SPSS output

Table 2 compares financial metrics between GOOD and POOR performing groups. The GOOD group shows a slightly larger firm size and lower leverage, suggesting more stable financial health. In contrast, the POOR group has higher current ratios and cash holdings but with extreme variability, indicating inconsistent liquidity management. The clearest difference is in profitability—the GOOD group maintains a positive net profit ratio, while the POOR group averages a loss. High leverage and erratic liquidity appear linked to poor performance, whereas consistent profitability defines the GOOD group. Other metrics, like gross profit ratio and maturity, show little difference between the two. Overall, the results suggest that strong profitability and controlled debt levels are key to financial success, while excessive cash or unstable liquidity may signal inefficiency.

Table 3: Pearson Correlation Matrix

	Size	CR	LR	MAT	Risk	Cash	GPR	NPR
Size	1	-0.206	-0.199	0.334**	-0.426**	-0.248	-0.001	0.392**
CR	-0.206	1	0.110	0.334**	0.068	0.884**	0.099	-0.111
LR	-0.199	0.110	1	0.240	0.412**	-0.150	0.020	-0.030
MAT	0.334**	0.334**	0.240	1	0.045	-0.170	0.060	0.293*
Risk	-0.426**	0.068	0.412**	0.045	1	-0.050	0.004	-0.142
Cash	-0.248	0.884**	-0.150	-0.170	-0.050	1	0.082	-0.096
GPR	-0.001	0.099	0.020	0.060	0.004	0.082	1	0.069
NPR	0.392**	-0.111	-0.030	0.293*	-0.142	-0.096	0.069	1

Source: Author calculation using SPSS

Note: (*) indicates significance at a 5% level, (**) indicates significance at a 1% level.

The correlation matrix highlights several significant relationships among the financial variables. Larger firms tend to have lower risk but higher market performance and profitability, while firms with stronger liquidity positions also hold more cash. Higher leverage is associated with increased risk, and better market performance aligns with improved profitability. These findings suggest that firm size, liquidity, and leverage play important roles in financial stability and performance. Table 3 shows that the variables CR and Cash are highly correlated with each other. These variables may negatively affect the predictive quality of logistic regression models, which is why we decided to exclude them from the analysis.

Table 4: Logistic Regression Results

Variable	B	Std. Error	Wald Test	Sig.	Exp(B)
Size	0.041	0.188	0.047	0.828	1.042
Leverage Ratio	0.025	0.079	0.098	0.754	1.025
Maturity	1.151	0.547	4.428	0.035	0.316
Risk Ratio	0.388	1.302	0.089	0.766	1.474
Gross Profit Ratio	0.371	1.478	0.063	0.802	1.449
Net Profit Ratio	10.266	2.930	12.272	0.001	2.700
Intercept	1.284	3.062	0.176	0.675	3.612
Cox-Snell R2 = 0.464 Nagelkerke R2=0.619 -2 Log likelihood=45.698 Hosmer and Lemeshow Test = 8.301 (Sig =0.405> 0.05) Omnibus Test=37.413 (Sig =0.000< 0.05)					

Source: Prepared by the author based on SPSS output.

4. Discussion and Conclusion

The results of table 4 show that only two variables (maturity and NPR) are statistically significant; therefore, it can be said that at a confidence interval of 95%, a 1% increase of the maturity ratio determines an increase of the odds ratio for a FinTech company to have a financial performance of 0.316%. More precisely, the maturity factor positively impacts the financial performance of FinTech companies, particularly in early and pre-seed stages. The extended time to maturity allows startups to navigate economic uncertainty, recover losses, and optimize their valuation. This aligns with the findings of McKinsey and Company (2023). Similarly, at a confidence interval of 95%, a 1% increase of the net profit ratio determines an increase of the odds ratio for a FinTech company to have a financial performance of 170%; the more a FinTech company controls its costs, the more it will positively impact its financial performance.

Thus, these two indicators are the most important indicators that determine the financial performance of the FinTech companies studied.

For the quality of the estimated model, according to the Hosmer-Lemeshow test (Hosmer & Lemeshow, 1989), the H0 hypothesis was accepted in the case of 8 degrees of freedom with a chi-square value of 8,301 and p = 0.405 > 0.05. The model parameters demonstrate strong discriminatory power, as evidenced by their deterministic properties. Furthermore, the Omnibus Test confirms the overall statistical significance of the logistic regression model at the level of "0.01"; the degree of freedom was calculated as 6, and the chi-square value as 37,413.

Consistent with this, the Negelkerke R^2 statistic table was found as '0.619'. This shows that the variables used in the logistic model explain the model as "61.9%"; the LR model has a very good percentage. The Cox and Snell R^2 values were also found to be 0.464." The model demonstrates strong explanatory power, as evidenced by the high goodness-of-fit measures, indicating its statistical and economic significance. The -2Log likelihood value is "45,698." The higher this value, the better it works.

The analysis of the companies' observation and estimated performance proves that the accuracy of our logistical regression model, table 5, suggests that the model is 88.3%, providing an accurate prediction of financial performance; the result predicts 82.8% of poor FinTech companies and 93.5% of good FinTech companies accurately.

Table 5: Financial Performance Classification

Observed	Predicted			
	Poor FinTech	**Good FinTech**	**Total**	**Percentage Correct**
POOR FINTECH	24	5	29	82,8
GOOD FINTECH	2	29	31	93,5
Total	26	34	60	88,3

Source: Prepared by the author based on SPSS output

Therefore, this study aimed to identify the most important financial indicators that can affect the financial performance of FinTech companies using a logistic regression model, where a sample of financial indicators was proposed. The study found that the maturity of the FinTech companies and the net profit ratio are the most important factors affecting

the performance of the FinTech companies studied, and accordingly, FinTech companies are categorised into good and poor companies. Based on the findings, it can be said that the maturity of FinTech companies indicates that they have surpassed the early stage of funding, and this is contingent on their ability to convince investors with their innovative business models, on the one hand, and their ability to control costs, on the other hand. This result is consistent with the findings of (Jinasena *et al*., 2023), (Hommel & Bican, 2020), and (Giaretta & Chesini, 2021).

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Authorship Contribution

The researcher collected data, analysed it, interpreted the results, and provided recommendations.

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Declaration

Author hereby declare that this research paper is an original work conducted by the author. All sources and references have been properly acknowledged, and the work has not been submitted or published elsewhere.

Conflict of Interest

The author declares that they have no conflict of interest regarding the publication of this paper.

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