FinTech and Customer Capital*

Bianca He
Chicago Booth

Lauren Mostrom
Chicago Booth

Amir Sufi
Chicago Booth & NBER

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Technological advancement in business practices over the last decade has been remarkable, and the financial services industry is no exception. The growth in the number of firms specializing in using financial technology to deliver financial services—the "FinTech" industry—has spurred a large body of research, which has been summarized by several recent excellent reviews (e.g., Agarwal and Zhang (2020); Allen, Gu and Jagtiani (2021); Berg, Fuster and Puri (2022); Seru (2020); Thakor (2020); Vives (2019)). The majority of the existing literature focuses on the manner in which FinTech firms utilize digital technology to improve the delivery, quality, and customer experience of financial services.

This essay complements this literature by presenting evidence that we believe is previously undocumented: FinTech firms spend far more resources on sales and marketing efforts than traditional financial firms. In the language of He, Mostrom and Sufi (2024), substantial investment in customer capital is an instrumental component of the FinTech business strategy. This essay demonstrates this robust pattern and offers a preliminary assessment of the economics behind why customer capital is so critical for FinTech.[1]

1 The Growth in FinTech

The baseline sample for the analysis includes U.S.-based firms in the Compustat data set with a GICS code in the financial sector (40) from 1997 to 2022. GICS codes were chosen for the financial industry definitions because they offer a more straightforward interpretation than NAICS in this setting.[2] Real estate firms (GICS code 4040) and mortgage REITS (GICS code 402040) are excluded from the analysis. The start point of the sample in 1997 is dictated by the availability of

*This essay has been prepared for the 2026 American Economic Association Papers and Proceedings. Xi Wang provided excellent research support. We are grateful to the University of Chicago Booth School of Business and the Fama Miller Center for financial support. Contact information: He: bianca.he@chicagobooth.edu; Mostrom: lmostrom@chicagobooth.edu; Sufi: amir.sufi@chicagobooth.edu.

[1]We refer the reader to He, Mostrom and Sufi (2024) for more details on theoretical motivation, data sources, and empirical framework underlying the idea that sales and marketing expense should be viewed as an investment in customer capital. That study focuses uniquely on non-financial firms, whereas this study focuses on the financial industry.

[2]For example, prominent FinTech firms such as PayPal Holdings Inc and Block Inc have a 2-digit NAICS code outside of 52, even though the GICS code system classifies both of them as financial firms. In general, the GICS classification separates financial firms into categories in a more intuitive manner than NAICS codes.

digitized SEC 10-K filings in Edgar, which are used to supplement the data collected by Capital IQ. The Compustat sample includes all firm-year observations in the financial sector with a few standard exceptions. We exclude firm-year observations with missing information on total assets, revenue, end of year stock price, or operating income before depreciation. We also exclude firm-year observations with a negative value of either revenue or total book assets. Finally, given the importance of matching with SEC filings, we drop any firm observation with no central index key (CIK), which is the main identifier used by the SEC. The beginning sample covers 25,324 observations.

Revenue is a key scaling variable in the analysis below, and revenue is more complicated for financial firms relative to non-financial firms. Throughout the analysis, the Capital IQ measure of revenue is used, which is defined precisely in the Capital IQ web interactive platform. Specifically, for most financial institutions, the Capital IQ measure of revenue is net interest income plus total non-interest income minus provision for loan loss reserves. For financial firms for which interest income is not a primary source of revenue, revenue is defined similarly to non-financial firms.

We define a firm-year observation as "FinTech" based on the text of Item 1 of the firm's 10-K SEC filing, processed with the help of Gemini 2.5 flash-lite. In the first, more narrow, classification of a FinTech firm, we ask Gemini to determine whether the firm *describes itself* as a "financial technology company", or using synonymous language.[3] In the second broader classification, we present Gemini with the definition of a FinTech firm from the Financial Stability Board, and ask it to determine whether the firm's business description is consistent with this definition.[4] Firms classified as FinTech according to both measures include well-known firms such as Block Inc (the parent of Square), Rocket Cos Inc, Coinbase Global Inc, and the buy-now-pay-later firm Affirm Holdings Inc.[5]

The left panel of Figure 1 shows the fraction of publicly-traded financial firms over time that are classified as "FinTech." For the narrow measure, the fraction of financial firms classified as FinTech increased dramatically from 2015 to 2022, reaching 10% by the end of the sample. For the broader measure, by 2022, over 20% of financial firms are classified as FinTech firms. The right panel shows the fraction of financial firms classified as FinTech according to the narrow measure, where firms are weighted by either revenue or enterprise value. When weighted by enterprise value, FinTech firms make up 11% of the publicly-traded firms in the financial industry by 2022.

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[3]The full text of all Gemini prompts are included in Appendix Table A1.

[4]The Financial Stability Board's definition of a FinTech company is: "Technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services." This definition is highlighted in survey pieces by Agarwal and Zhang (2020) and Thakor (2020).

[5]We do not believe there is an agreed-upon measure in the academic literature on whether a firm is "FinTech". In a seminal study, Buchak, Matvos, Piskorski and Seru (2018) classify a mortgage lender as FinTech if "it has a strong online presence and if nearly all of the mortgage application process takes place online with no human involvement from the lender."

2 FinTech Investment in Customer Capital

Table 1 shows the median, average, and revenue-weighted average sales and marketing expense to revenue ratio for non-financial firms, non-FinTech financial firms, and FinTech firms. The sample is limited to 2018 and afterward, when FinTech firms are prominent in the economy. FinTech firms spend substantially more on sales and marketing relative to non-FinTech financial firms across all measures and across both definitions of FinTech. Our preferred measure is the median sales and marketing expense to revenue ratio, given that it is less influenced by outliers. FinTech firms spend three times more on sales and marketing relative to non-FinTech financial firms. They spend slightly more than non-financial firms.

One explanation for these differences could be that FinTech firms are concentrated in certain segments of the financial sector. Table 2 shows that FinTech firms spend more on sales and marketing than non-FinTech firms across almost all industries of the financial sector. Banks classified as FinTech firms spend almost the same on sales and marketing compared to banks not classified as FinTech firms. But across all other segments—financial services, consumer finance, capital markets, and insurance—FinTech firms spend substantially more. The insurance industry is particularly striking, where FinTech insurance firms (often called InsurTech firms) spend 40 to 60% of revenue on sales and marketing compared to much more modest spending by non-FinTech insurance companies.

Appendix Table A2 shows the largest 30 companies by revenue as of 2022 that are classified as FinTech firms according to the narrow measure. Also shown is their sales and marketing expense to revenue ratio for 2022 and their industry code. The list includes older companies such as Visa and Mastercard in addition to younger firms such as Block Inc and Rocket Cos Inc. Two InsurTech companies are on the list: Selectquote Inc and Root Inc.

FinTech firms are on average much younger than non-FinTech financial firms; as of 2022, the median non-FinTech financial firm is 72 years old since initial establishment whereas the median FinTech firm is 23.5 years old. One explanation for the higher sales and marketing to revenue ratio of FinTech firms could be that they are simply younger, and younger firms must spend more aggressively on sales and marketing. Table 3 isolates the sample to financial firms as of 2022, and it splits financial firms into groups based on age since establishment. As the results show, FinTech firms spend more on sales and marketing for any given age group. For example, there are 13 FinTech firms (according to the broader definition of FinTech) that are between 30 and 40 years old as of 2022 for which we have sales and marketing information. This group includes WisdomTree Inc, Rocket Cos Inc, and Fleetcor Technologies Inc. The median sales and marketing expense to revenue ratio among this group is 9.0%, compared to only 1.5% for similarly aged non-FinTech financial firms.

To formally test the statistical robustness of the differences in the sales and marketing expense to revenue ratio, Table 4 presents coefficients from firm-level regressions of the ratio on an indicator variable for whether a firm is classified as a FinTech firm. Standard errors are double-clustered by firm and year, and year, sector, age, and size fixed effects are progressively included in the regression. Across all specifications, FinTech firms are shown to have a sales and marketing to expense ratio that is 6 to 10% more than other financial firms.[6]

FinTech firms' expenditures on sales and marketing also contribute to higher customer capital value, as demonstrated in the value paid for their intangible assets in acquisitions.[7] As shown in Figure 2, the median value of customer-related intangible assets (including core deposit intangibles) scaled by net sales is 0.03 for non-FinTech financial firms, compared to 0.41 for FinTech firms. If we restrict attention to only target firms that were public before being acquired, the median for non-FinTech financial firms is 0.03, compared to 0.16 for FinTech firms. Not only do FinTech firms invest heavily in customer capital, but this investment generates a valuable asset from the firm's perspective.

3 Why Do FinTechs Invest so Heavily in Customer Capital?

FinTech Firms Must Establish Trust and Credibility: Trust and credibility are central for financial firms. Clients share sensitive data, move money through the platform, and rely on the firm to keep their financial information safe. Because of this, users need to feel confident that the firm is stable and reliable. Banks and other incumbents have long used branches, prominent office locations, and visible infrastructure as costly signals of permanence and credibility. For example, a branch network, especially in central or high-traffic areas, reassures customers through its buildings, architecture, and location. In recent work, Chen, Hu and Ma (2025) document that 53% of bank advertisements appeal to building trust, and that banks emphasize trust when advertising loan products in local markets where they already possess substantial market share.

FinTech firms, by contrast, operate almost entirely online and therefore cannot draw on these traditional, location-based trust cues. Instead, they build credibility through sales, marketing, and branding. These investments create visibility in the digital environment and signal that the firm is stable and legitimate. In this sense, spending on sales and marketing is the online analogue of securing "prime real estate": rather than paying for a branch on a busy street corner, FinTechs pay

[6]Given that revenue may not be comparable between FinTech and non-FinTech financial firms, Appendix Tables A3 and A4 show that all key results are robust to the use of an alternative measure of customer capital investment, which is salaries paid to sales and marketing employees scaled by total salaries paid by the firm. This measure is independent of revenue, but not as closely linked to theoretical models as the sales and marketing expense to revenue ratio.

[7]Please see He, Mostrom and Sufi (2024) for more details on the purchase price allocation (PPA) data used in this section, and the classification of assets into customer-related intangibles. As before, the analysis in He, Mostrom and Sufi (2024) focuses uniquely on non-financial firms, whereas the analysis here focuses on the financial industry.

for attention, recognition, and prime web traffic to establish trust in a fully digital setting.

Figure 3 presents evidence on the specific sales and marketing strategies pursued by FinTech and non-FinTech financial firms. This evidence is based on answers provided by Gemini when reading the business descriptions of firms, exactly as described in He, Mostrom and Sufi (2024).[8] Consistent with the importance of establishing trust and credibility, FinTech firms are much more likely to mention the importance of brand value and advertising in their overall sales and marketing strategy compared to non-FinTech financial firms. The results for brand value are particularly striking: 54% of FinTech firms emphasize the importance of building a brand, whereas only 14% of non-FinTech firms emphasize brand value.

The need to establish trust and credibility is closely related to the idea that switching costs are particularly high in financial intermediation for both borrowers (e.g., Ioannidou and Ongena (2010)) and savers (e.g., Drechsler, Savov and Schnabl (2017)). FinTech firms may be particularly challenged in this regard, as evidenced by the fact that industry estimates of customer acquisition cost (CAC) are high in FinTech; for example, First Page Sage estimates that business to business Financial Services/FinTech has a CAC of $1200 to $1450, higher than any other B2B industry.

FinTech Firms Partner Vertically with Banks: It is well-known among policymakers and industry practitioners that banks and FinTech firms frequently enter into vertical partnerships in the production of financial services. These partnerships were the topic of a research report by CCG Catalyst in 2021[9] and a joint report by Synctera (a FinTech company) and Cornerstone Research in 2023.[10] In a survey of 290 bank and credit union executives conducted by Cornerstone in 2021, 65% of banks and credit unions entered into at least one partnership with a FinTech firm between 2019 and 2021; of those that did not, 37% said they planned to partner in 2022. Bank-FinTech partnerships are becoming a defining feature of this sector.

In a 2023 publication by the Federal Reserve Board of Governors, they highlight three main classes of bank-FinTech partnerships:[11]

- **Operational technology partnerships**, wherein a community bank deploys third-party technology to its own processes or infrastructure to improve efficiency and effectiveness.
- **Customer-oriented partnerships**, wherein a community bank engages a third-party to enhance various customer-facing aspects of its business, and the bank continues to interact directly with its customers.

[8] More specifically, based on a manual reading of 150 business descriptions from 10-K filings, He, Mostrom and Sufi (2024) classify five key sales and marketing strategies. Gemini is then asked to find evidence of whether the strategy in question is an important element based on the business description in its 10-K filing.

[9] The CCG Catalyst report is available at this link

[10] The Synctera and Cornerstone joint report is available at this link

[11] Federal Reserve Board of Governors, "Community Bank Access to Innovation Through Partnerships," October 2023. Available at `https://www.federalreserve.gov/publications/files/community-bank-access-to-innovation-through-partnerships-202109.pdf`

- **Front-end fintech partnerships**, wherein a bank's infrastructure is combined with technology developed by a fintech, with the fintech interacting directly with the end-customer in the delivery of banking products and services.

Under the second and third classes of partnerships, "customer-oriented partnerships" and "front-end fintech partnerships," the bank effectively outsources its customer acquisition and customer service operations to the FinTech partner. This is consistent with our analysis of the text of business descriptions—as shown in Figure 4, 31% of FinTech firms indicate that their primary customers are households, rather than businesses or the government, compared to only 18% of non-FinTech firms. FinTech firms, as the farthest downstream producer in these industries, invest heavily in customer capital in order to lease this capital stock to upstream financial firms, primarily traditional financial service providers.

FinTech Firms Operate Platform Business Models: He, Mostrom and Sufi (2024) show that one of the strongest predictors of how much an industry invests in customer capital is the fraction of firms that describe their businesses as employing a platform-based business model in which profits are made from having users interact on the platform. Jullien and Pavan (2019) provide an intuitive theoretical justification for this result: firms can increase their profits by communicating information to customers that increases their expectation of take-up by the other side of the market. This is related to the broader idea that competitive environments that feature network effects in demand for a firm's output feature multiple equilibria (e.g., Katz and Shapiro (1985); Rochet and Tirole (2003)), and as such there are large profits to be made by convincing potential customers that a firm will have the largest market share.

Of course, almost all financial firms have some degree of a platform-based business model: banks bring together borrowers and savers, exchanges bring together buyers and sellers, and payment services companies bring together customers and merchants.

However, within these industries, FinTech firms are far more likely to emphasize the "platform" nature of their business model in their business descriptions. As shown in Figure 4, based on the business description provided by the firm in the 10-K filing, 75% of FinTech firms were classified by Gemini as using a platform business model, compared to only 16% of non-FinTech financial firms. By emphasizing the platform nature of their business, particularly centering their proprietary software, FinTech firms may be seeking ways to amplify the network effects nature inherent in their business, contributing to a high return on customer acquisition in these firms' investment decisions.

FinTech Firms Rely Heavily on Customer Data: Optimal spending on customer acquisition is likely higher in FinTech than for other non-FinTech firms given that customer data is a prominent source of value for these firms. FinTech is a primary example of the data economy (e.g., Farboodi, Mihet, Philippon and Veldkamp (2019); Farboodi and Veldkamp (2021)). Consistent with the finding of He, Mostrom and Sufi (2024) that firms with platform-based business models employ customer data as a central component of their sales and marketing strategy, FinTech firms heavily emphasize the acquisition and use of customer data. As shown in Figure 3, 51% of FinTech firms highlight this strategy in their business descriptions, compared to only 8% of non-FinTech financial firms. Data is crucial to the production of financial services, and FinTech is therefore an industry that fits well the insights of models such as Farboodi, Mihet, Philippon and Veldkamp (2019) in which data helps to improve the quality of a product.

An alternative mechanism by which data has been shown to be valuable to the firm is by enabling price discrimination (Dubé and Misra, 2023). As shown in Bergemann and Bonatti (2024), a platform-based business model has the potential to amplify these benefits of customer data, by using it to extract additional surplus from upstream suppliers of the platform. The platform's data on its customers is valuable to the upstream sellers, enticing them to compete to be featured on the platform.

In the FinTech context, many products such as loans and insurance policies are priced separately for each consumer, making this industry particularly predisposed to price discrimination. In addition, FinTechs' data on customers can be valuable to upstream partners, such as banks, traditional insurance companies, or merchants partnering with a payments firm. These upstream partners benefit from the use of such data, and therefore may be willing to accept less favorable terms in their transactions with FinTechs in order to enjoy the benefits of the data they've collected. Due to FinTechs' position in the production chain of financial services, customer data can benefit the firm in two ways: by enabling price discrimination downstream, and earning favorable terms in upstream transactions as well.

4 Conclusion

FinTech firms invest more heavily in customer capital relative to non-FinTech financial firms. Within the financial sector, FinTech firms primarily specialize in the furthest downstream component of the production process. They are primarily household-facing, rather than business-to business, and their collection and use of data about these customers is crucial to their overall strategy. FinTech firms' sales and marketing activities mainly take the form of advertising and developing the value of the brand, consistent with finding ways to increase trust and credibility among households who cannot observe their physical presence. They also place a particular emphasis in their filing text on the "platform" nature of their business model, which may suggest they are more intentional about exploiting the network effects in demand inherent in financial industries.

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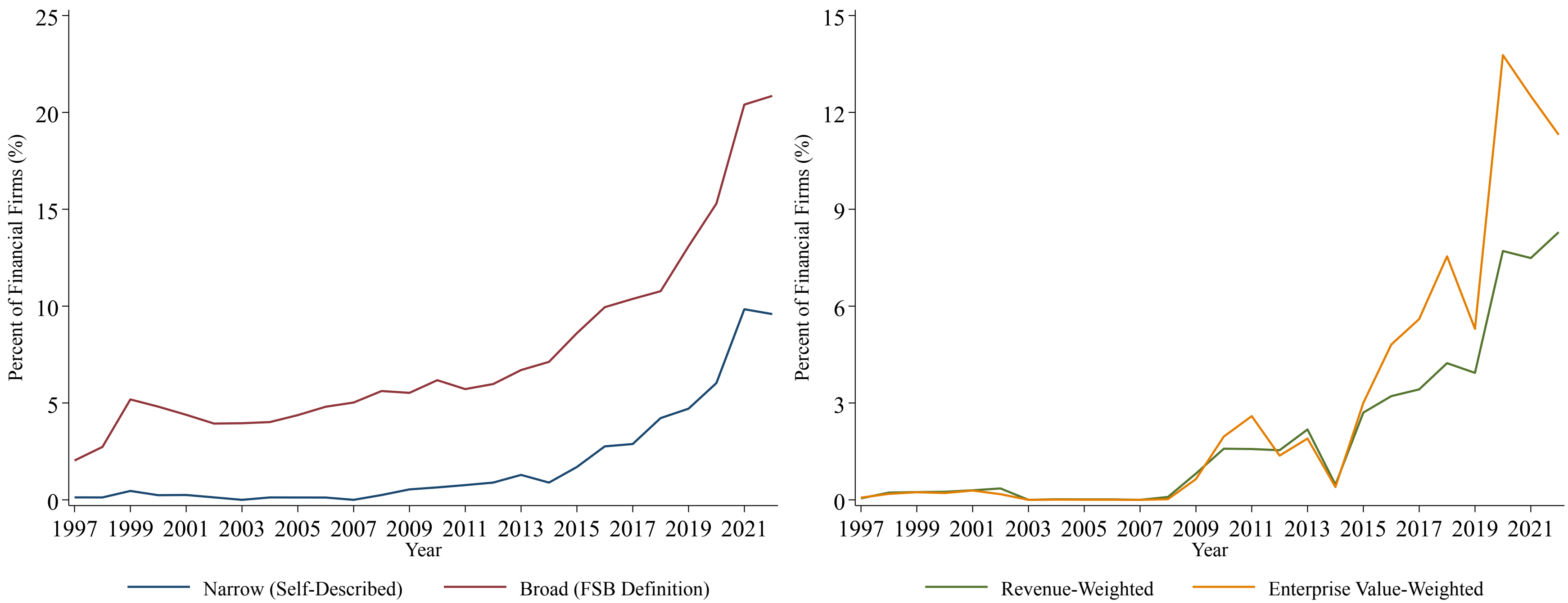
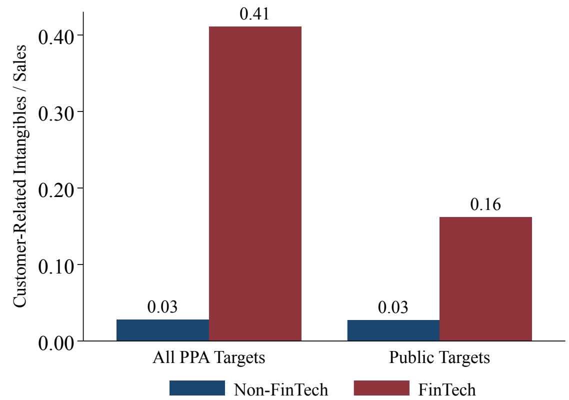
Figure 1: The Growth of FinTech Firms Over Time



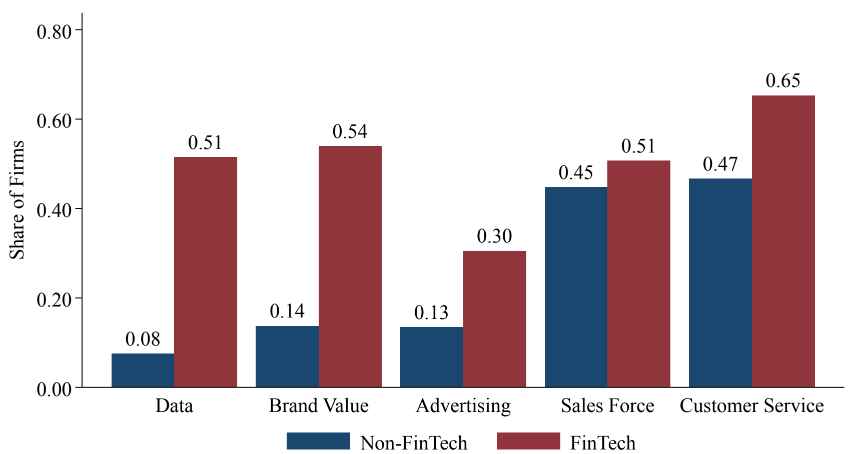
Note: The left panel shows the fraction of financial firms classified as FinTech over time, using both the narrow and broad definitions. The right panel shows the fraction of financial firms classified as FinTech (narrow definition), weighted by either revenue or enterprise value.

Figure 2: Customer-Related Intangibles in PPA Transactions: FinTech vs. Non-FinTech Targets



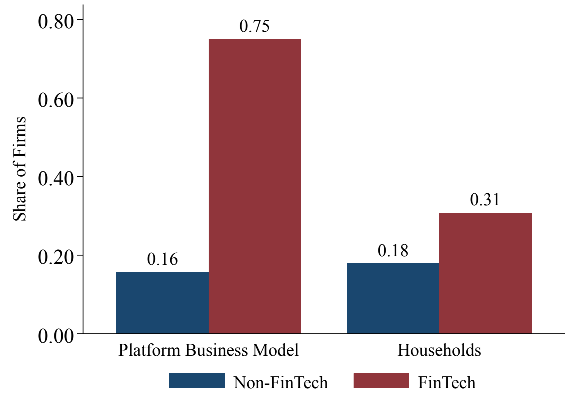
Note: This figure plots the median ratio of customer-related intangible assets to net sales for public target firms and all target firms, across FinTech and non-FinTech financial firms. Intangible assets are taken from purchase price allocation data and classified into customer-related categories following He, Mostrom and Sufi (2024). FinTech status is assigned using textual analysis of target business descriptions based on the FSB definition.

Figure 3: Sales and Marketing Strategies Emphasized by FinTech and Non-FinTech Firms



Note: This figure compares the fraction of FinTech and non-FinTech firms whose business descriptions highlight specific sales and marketing strategies.

Figure 4: Platform and Household Classifications by FinTech and Non-FinTech Firms



Note: This figure shows the share of firms classified as operating a platform business model or serving a household-oriented customer base. Classification is based on Gemini text analysis of business descriptions: Platform business model, indicating classification as a platform firm, and Households, indicating a household-focused customer base. Group means are reported for FinTech and non-FinTech financial firms.

Table 1: Sales and Marketing Expense to Revenue Ratio

	Panel A: Narrow Definition		
	Median	Mean	Weighted Mean
Non-Financial	0.036	0.202	0.047
Financial, Non-FinTech	0.013	0.034	0.040
FinTech	0.038	0.178	0.080
	Panel B: Broad Definition		
	Median	Mean	Weighted Mean
Non-Financial	0.036	0.202	0.047
Financial, Non-FinTech	0.013	0.023	0.037
FinTech	0.040	0.166	0.068

Note: This table reports the median, mean, and revenue-weighted mean of the sales and marketing expense to revenue ratio for non-financial firms, non-FinTech financial firms, and FinTech financial firms. The sample is limited to firm-year observations from 2018 to 2022.

Table 2: Sales and Marketing Expense to Revenue Ratio, by Financial Sector

	Narrow Definition		**Broad Definition**	
	Non-FinTech	FinTech	Non-FinTech	FinTech
Banks (401010)	0.013	0.015	0.013	0.013
	(N=421)	(N=6)	(N=419)	(N=8)
Finance Services (402010)	0.013	0.073	0.012	0.044
	(N=54)	(N=23)	(N=33)	(N=44)
Consumer Finance (402020)	0.066	0.130	0.059	0.130
	(N=24)	(N=14)	(N=18)	(N=20)
Capital Markets (402030)	0.005	0.040	0.000	0.068
	(N=149)	(N=10)	(N=123)	(N=36)
Insurance (403010)	0.008	0.656	0.002	0.424
	(N=95)	(N=3)	(N=83)	(N=15)

Notes: This table reports the number of firms and the median sales and marketing expense to revenue ratio by GICS code for FinTech and non-FinTech financial firms. The sample is limited to firm-year observations from 2018 to 2022.

Table 3: Sales and Marketing Expense to Revenue Ratio, by Firm Age

	Narrow Definition		**Broad Definition**	
	Non-FinTech	FinTech	Non-FinTech	FinTech
(0,10]	0.029	0.162	0.003	0.157
	(N=26)	(N=10)	(N=18)	(N=18)
(10,20]	0.006	0.123	0.004	0.138
	(N=72)	(N=17)	(N=64)	(N=25)
(20,30]	0.013	0.079	0.012	0.037
	(N=64)	(N=11)	(N=42)	(N=33)
(30,40]	0.017	0.124	0.015	0.090
	(N=53)	(N=3)	(N=43)	(N=13)

Notes: This table reports the median sales and marketing expense to revenue ratio for FinTech and non-FinTech financial firms as of 2022, grouped by age since establishment.

Table 4: FinTech Status and Sales and Marketing Expense

	(1)	(2)	(3)	(4)	(5)
Panel A: Narrow Definition					
FinTech	0.098**	0.099**	0.071**	0.071**	0.069**
	(0.018)	(0.018)	(0.017)	(0.017)	(0.016)
Observations	15,852	15,852	15,852	14,961	14,961
R-squared	0.045	0.050	0.150	0.160	0.177
	(1)	(2)	(3)	(4)	(5)
Panel B: Broad Definition					
FinTech	0.088**	0.089**	0.068**	0.059**	0.060**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Observations	15,852	15,852	15,852	14,961	14,961
R-squared	0.136	0.141	0.194	0.188	0.207
Year FE	No	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes
Age category FE	No	No	No	Yes	Yes
Size FE	No	No	No	No	Yes

Notes: This table reports coefficients from firm-level regressions of the sales and marketing expense to revenue ratio on FinTech indicator variables (narrow and broad definitions). Standard errors are double-clustered by firm and year.

Internet Appendix

Table A1: Questions Used for 10-K Analysis

10-K Item	Concept of Interest	Question
Item 1	FinTech (Self-Identified)	"# Instructions -You are a financial analyst specialized in covering the financial services sector. -Your task is to read the following business description from a firm's SEC 10-K filing and determine whether the firm explicitly describes itself as a 'financial technology company,' 'fintech company,' or equivalent language (such as 'technology-enabled financial services' or 'financial innovation platform'). -Note: General mentions of 'technology' or 'innovation' alone do not qualify unless explicitly connected to financial services delivery or business model transformation. # Requested Output -Answer with only one of the following words: Yes, No, or Unclear. # Business Description Text" {item1}
Item 1	FinTech (FSB Definition)	"# Instructions -You are a financial analyst specialized in covering the financial services sector. # Definition -The Financial Stability Board defines 'fintech' as: 'Technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on financial markets and institutions and the provision of financial services.' # Task -Read the following business description. Based solely on the above definition from the Financial Stability Board, please determine whether the firm qualifies as a fintech firm. # Requested Output -Answer with only one of the following words: Yes, No, or Unclear. # Business Description Text {item1}"

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Table A1 – continued from previous page

10-K Item	**Concept of Interest**	**Question**
Item 1	Brand value	"We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the specific factors that the firm spends resources on in their sales and marketing strategy. Based on your reading of the document, please use your best judgement to answer the following question: Is an emphasis on increasing brand value an important element in the firm's sales and marketing strategy? Please provide an answer that is only a single word, either yes or no. Here is the document:"
Item 1	Sales force	"We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the specific factors that the firm spends resources on in their sales and marketing strategy. Based on your reading of the document, please use your best judgement to answer the following question: Is an emphasis on a sales force or a sales staff an important element in the firm's sales and marketing strategy? Please provide an answer that is only a single word, either yes or no. Here is the document:"
Item 1	Advertising	"We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the specific factors that the firm spends resources on in their sales and marketing strategy. Based on your reading of the document, please use your best judgement to answer the following question: Is an emphasis on advertising an important element in the firm's sales and marketing strategy? Please provide an answer that is only a single word, either yes or no. Here is the document:"

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Table A1 – continued from previous page

10-K Item	Concept of Interest	Question
Item 1	Customer data usage	"We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the specific factors that the firm spends resources on in their sales and marketing strategy. Based on your reading of the document, please use your best judgement to answer the following question: Is an emphasis on obtaining and using customer data an important element in the firm's sales and marketing strategy? Please provide an answer that is only a single word, either yes or no. Here is the document:"
Item 1	Customer service	"We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the specific factors that the firm spends resources on in their sales and marketing strategy. Based on your reading of the document, please use your best judgement to answer the following question: Is an emphasis on customer service an important element in the firm's sales and marketing strategy? Please provide an answer that is only a single word, either yes or no. Here is the document:"
Item 1	Customers	"We are economists conducting research on the spending done by firms on sales and marketing. Your task is to read the following document and determine the extent to which the firm spends resources on marketing, advertising, product promotion, branding, customer service, sales force, and other closely related activities. Your task is to read the following document and determine the primary customers of the firm in question. Specifically, does the firm primarily market its products to households, businesses, or the government? Please provide an answer that is only a single word: households, businesses, or the government. Here is the document:"

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Table A1 – continued from previous page

10-K Item	Concept of Interest	Question
Item 1	Platform business model	"We are economists conducting research on the underlying business models used by firms. One business model involves building a platform on which individuals or other entities interact. A platform business model involves profiting from a platform that allows two or more groups of users to interact. Your task is to read the following document and answer the following question: Is such a platform part of the business model of the firm? Please provide an answer that is only a single word, either yes or no. Here is the document:"

Table A2: Top 30 FinTech Firms by Revenue, 2022

Company Name	GICS Industry	Sales & Marketing / Revenue
VISA INC	402010	0.046
PAYPAL HOLDINGS INC	402010	0.082
MASTERCARD INC	402010	0.035
BLOCK INC	402010	0.117
NASDAQ INC	402030	0.008
ROCKET COS INC	402010	0.157
COINBASE GLOBAL INC	402030	0.162
TOAST INC	402010	0.117
PROG HOLDINGS INC	402020	0.006
BREAD FINANCIAL HOLDINGS INC	402020	0.081
GREEN DOT CORP	402020	0.206
ROBINHOOD MARKETS INC	402030	0.073
AFFIRM HOLDINGS INC	402010	0.395
MONEYGRAM INTERNATIONAL INC	402010	0.030
LENDINGCLUB CORP	402020	0.156
ENOVA INTERNATIONAL INC	402020	0.382
OPORTUN FINANCIAL CORP	402020	0.128
UPSTART HOLDINGS INC	402020	0.405
SELECTQUOTE INC	403010	0.634
MARQETA INC	402010	0.005
PAYONEER GLBL INC	402010	0.300
CUSTOMERS BANCORP INC	401010	0.004
LIVE OAK BANCSHARES INC	401010	0.021
PAYMENTUS HOLDINGS INC	402010	0.147
CURO GROUP HLDGS CORP	402020	0.073
TRICO BANCSHARES	401010	0.009
ATLANTICUS HOLDINGS CORP	402020	0.162
S&T BANCORP INC	401010	0.015
ROOT INC	403010	0.152
AMERANT BANCORP INC	401010	0.038

Notes: This table lists the 30 largest FinTech firms (narrow definition) by revenue in 2022, along with their sales and marketing expense to revenue ratio and their GICS financial sector.

Table A3: Alternative Customer Capital Measure

	Panel A: Narrow Definition		
	Median	Mean	Weighted Mean
Non-Financial	0.190	0.214	0.188
Financial, Non-FinTech	0.086	0.105	0.128
FinTech	0.181	0.184	0.215
	Panel B: Broad Definition		
	Median	Mean	Weighted Mean
Non-Financial	0.190	0.214	0.188
Financial, Non-FinTech	0.080	0.094	0.124
FinTech	0.176	0.193	0.186

Notes: This table reports the median, mean, and revenue-weighted mean of the salaries of sales and marketing employees scaled by total salaries paid by the firm. The sample is limited to firm-year observations from 2018 to 2022.

Table A4: FinTech Status and Alternative Customer Capital Investment

	(1)	(2)	(3)	(4)	(5)
Panel A: Narrow Definition					
FinTech	0.086**	0.085**	0.031**	0.029**	0.029**
	(0.010)	(0.010)	(0.009)	(0.009)	(0.009)
Observations	6,291	6,291	6,291	6,077	6,077
R-squared	0.051	0.052	0.380	0.383	0.387
	(1)	(2)	(3)	(4)	(5)
Panel B: Broad Definition					
FinTech	0.100**	0.100**	0.057**	0.055**	0.055**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Observations	6,291	6,291	6,291	6,077	6,077
R-squared	0.222	0.223	0.428	0.426	0.430
Year FE	No	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes	Yes
Age category FE	No	No	No	Yes	Yes
Size FE	No	No	No	No	Yes

Notes: This table reports coefficients from firm-level regressions of the salaries of sales and marketing employees to total salaries ratio on FinTech indicator variables. Standard errors are double-clustered by firm and year.