The Impact of Covid-19 on family-owned firms versus non-family owned firms in the IT industry

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Family-owned businesses are historically significant in South Asia and continue to make up a large proportion of the Indian economy. More specifically, “family firms constitute 85 percent of total companies in India” (Sharma & Chalal, 2020). Similar numbers can be seen in Western countries and an estimated “80–90 percent of the US firms are family-controlled” (Sharma & Chalal, 2020). Yet, family-owned businesses in India seem interrelated with Indian family traditions and values and have an inherent unique structure that distinguishes them from a western organizational structure. Given that “the traditional form of firm ownership in India has been based on families”, it seems surprising that “in India study of family-owned businesses remains a black box” (Sharma & Chalal, 2020). Thus, given the lack of research regarding Indian family-owned firms, this essay aims to answer the question: Were family-owned businesses in India more or less resilient in comparison to non-family-owned businesses during the covid pandemic? To approach this question, this essay will use Sharma’s definition of family-owned businesses in her study ‘Family Business in India: Performance, Challenges and Improvement Measure’ as “one where at least 10 percent of the outstanding shares of the company are held by the founder and their descendent family members either directly or indirectly, through another family firm or fund which the family controls or owns and; the CEO or the Chairman of the company is a founder or his descendant” (Sharma & Chalal, 2020). As discussed later, this study hypothesizes that family firms will show better performance relative to non-family firms in their response to the pandemic.

Covid pandemic in India:

On March 25 of 2020, Prime Minister Modi announced a nationwide lockdown that was to last until April 14th. This lockdown was later extended to May 3. The economic effects were drastic as the unemployment rate massively spiked from 8.75% in March 2020 to 23.52% in April 2020 (Statista). Consequently, the Indian government announced a 22.5 billion dollar relief package (1% of GDP) to help “daily wage earners, small businesses owners, and low-income households” (CNBC, 2020). The policies were aimed towards food security and aiding farmers and rural workers, therefore, it would have more likely benefited the consumer goods or agricultural industry. After the lockdown was extended, an even bigger relief package worth 39 billion dollars was announced which was once again aimed at the poorest households, daily wage earners, and providing food security (Sharma, Talan, Jain, 2020)

Concerning the supply-side impact of the pandemic, the sudden shutdown of factories in China created a supply shock that particularly affected many Indian manufacturers from industries such as “automobiles, pharmaceuticals, electronics, chemical products” (Federation of Indian Chambers of Commerce & Industry, 2020). The inability to import essential raw materials for manufacturing ultimately led to a delayed export of Indian goods. Moreover, the high unemployment, drop in income levels and decrease in consumption had significant demand-side impacts on the economy. However, daily wage earners from the retail, consumer goods, entertainment, and tourism industry were most affected (FICCI, 2020). Through the “widespread fear and panic”, consumer confidence reduced and consumers began to delay consumption which would have further affected reduced employment and income levels (FICCI, 2020). Thus, it seems worthwhile to explore how these market shocks would have impacted different firm structures such as family and non-family owned firms.

Characteristics of a family-owned firm and their possible benefits/disadvantages:

Present studies have tried to prove correlations between firm performance and the degree of family ownership, management, and/or governance and explain them based on certain inherent characteristics. Understanding the inherent characteristics of the Indian family-owned business model will aid this paper’s study so that resilience or a lack of resilience shown by firms during the pandemic can be attributed to their possible sources. In a paper by Bhattacharyya highlighting distinguishing characteristics of family firms, he points out that “the single minded dedication of the CEO and the family ensures” business survival “through the toughest times (2017). Bhattacharyya also points towards a strong sense of loyalty in family firms within management and to the business. More specifically, “family, relatives and extended family have a strong feeling of trust and sincerity to the family that naturally construe as trust and sincerity to the business” (Sharma & Chalal, 2020). This corporate culture of trust can eventually promote efficiency, productivity, and innovation. Based on this, other researchers propose that concentrated family ownership paired with management within the family might lead to a greater incentive to maximize a firm’s value and profitability as management goals are more aligned with shareholder goals (Demsetz and Lehn, 1985). If the goals of ownership are aligned with that of management, this would resolve the principal-agent problem which can occur when the objectives of owners (principal) are not aligned with the objectives of managers (agent). Thus,

combining ownership and management could potentially lower agency costs (Demsetz and Lehn, 1985). Overall, a combination of "lower agency costs, long-term commitment to the business, farsighted investment, shared family aspirations, and values and better social relationships and corporate culture" can make the structure of family firms more competitive than non-family firms (Sharma & Chalal, 2020).

In contrast, the need to maintain family relationships could lead to workplace "family conflicts "and "family emotions" might hinder the ability to make optimal decisions (Sharma & Chalal, 2020. The higher probability of family conflicts has proven to lead to higher failure rates among family-owned firms (Pawar, 2009). Bhattacharyya highlights another characteristic of family-owned firms: "family relationship is the most important factor in determining the position a person holds in the business" (2007). Consequently, nepotism might result in management and leadership that is not the most optimal fit for the company as opposed to finding leadership from external sources. Moreover, as family members own a concentrated share of the company, "the controlling owner may expropriate private benefits at the expense of other shareholders" (Bole, Habuš, Koman, Prašnikar, 2017). Thus, shareholder expropriation would create a principal-agent problem between the family owners and general shareholders and owners may make decisions that are suboptimal for firm performance. Thus, these inherent characteristics of family-owned businesses likely lead to different performance results compared to non-family-owned firms.

Existing research on family ownership or management on firm performance:

Present findings on family ownership/management and performance shows mixed results depending on the definition of a family firm and the measure of firm performance used. Before delving into present research on the correlation between family ownership and firm performance, it is important to point out how Lee distinguishes between two ways in which family involvement in a firm can be observed: ownership and management (2004). In the former, "family members hold a substantial stake of firm assets" and in the latter, "family members [commonly] serve as the firm's CEO or fill other top management positions" (Lee 2004). Thus, the findings of studies will differ depending on whether they analyze firm performance in terms of the degree of ownership or management. Moreover, in addition to ambiguities in defining a family firm in terms of equity ownership or the degree of family management, studies differ in whether they use marketing and/or accounting measures. The former entails the use of Tobins' q

(TQ) which is defined as a "ratio of market value of equity plus book value of short-term and long-term debt to total assets" (Gupta & Nashier, 2017). The latter usually entails Return on Assets (ROA), defined as, the "ratio of earnings before interest and taxes to average total assets", as another financial measure of a firm's performance (Gupta & Nashier, 2017).

Gill and Kaur in their study on family firms find a positive relationship between family involvement in businesses and performance (2015). More specifically, they combined three factors to measure family involvement: "ownership, management and governance" to come up with a family composite variable (Gill and Kaur, 2015). After defining family involvement in terms of whether the CEO is a founding member or a descendant, the degree to which members on the board are part of the founding family, and whether family ownership makes up at least 10% of all the company's shares, Gill and Kaur find that family involvement in lead to "superior firm performance" when using market-based measures such as Tobin's Q (2015). Moreover, they find that a degree of family members, specifically, on the board is associated with improved firm performance when measured using the accounting measure of return on assets. Another study of US family-owned firms found that "family firms outperform their competitors [...] economically" as "family ownership and management tend to enhance cost efficiency and thus promote a higher return on investment" (Lee, 2004).

Some studies show mixed results within the study themselves depending on the measure of firm performance used. In Sharma and Chahal's study on the performance of family-owned firms compared to non-family-owned firms, they find mixed results depending on the measure of performance (2020). More specifically, when the study used market-based measures, such as Tobin's Q, they found that non-family firms tended to perform better than family firms. In contrast, there was no significant difference between family and non-family firms when accounting measures of return on assets and net income were used (Sharma & Chalal, 2020).

Other studies show that family firms are associated with lower performance levels. In a study conducted by Gupta and Nashier, they find that "both market and accounting performance decline with an increase in family ownership" (2019). They then explain that "family firms may suffer from cronyism, executive entrenchment, misaligned interests and family squabbles" and these factors may negatively affect firm performance when compared to non-family firms" (Gupta & Nashier, 2017). A study of Italian family firms, using total factor productivity as a measure of performance at the firm level, found that "family managed firms are about 3.5–5%

less productive than non-family-managed firms after controlling for sector [...], age, listing on the Stock Exchange, human capital, capital intensity, and ownership concentration" (Cucculelli, 2014). However, when "considering family-owned firms only, there is no difference in performance between outside managers and family managers" (Cucculelli, 2014). Similarly, Bhatt and Bhattacharya find that "having a higher proportion of family ownership, family representative directors and having professional CEO for family firms" did not show a statistical correlation with firm performance, suggesting that family management and performance are not necessarily related (2017).

Yet, all the possible explanations of how characteristics of family firms may lead to better or worse performance are only theories as the correlation is difficult to prove empirically. Thus, this paper will focus more on a comparison of financial data or family firms vs non-family firms, keeping in mind that the characteristics discussed earlier, such as family conflicts or higher trust, may explain the differences, however, cannot be proven with certainty. Still acknowledging the characteristics of family firms are important so future research can be conducted more in-depth and to study each independent variable like degree of ownership, degree of management, percentage of shares held by family members to provide insight into organizational behavior solutions and help firms maximize their performance. Moreover, none of these studies prove whether family firms were more or less resilient during economic shocks like the Covid-19 pandemic. Thus, this essay will aim to find a possible relationship between family ownership, using Sharma's definition discussed above, and firm financial performance using accounting-measures that will be explained below.

Method:

This study is particularly inspired by Sharma's study as she analyses companies listed in the National Stock Exchange of India Ltd. (NSE) 500 Index from the years 2014 to 2018. This paper uses the list of firms from the NSE 500 index only as a starting point. Within the NSE 500 index, all firms within the IT industry were selected to keep the industry sector as a constant variable. This was done to ensure a fair test as different industries faced different market shocks during the pandemic, such as different levels of consumer demand. Comparing companies across a particular industry would make the test fairer as these companies likely faced similar market shocks and challenges. Only companies that had data available for all years through 2019-2021

were selected and the rest were omitted from the data set. This process left a dataset of 24 IT firms. Data for all 24 firms were taken from the company annual reports, from the years 2019 to 2021derived from their respective websites. The annual reports were released on March 31st of each year. These firms were then classified as family-owned or non-family-owned using Sharma's definition of family firms as "one where at least 10 percent of the outstanding shares of the company are held by the founder and their descendent family members either directly or indirectly" (Sharma & Chalal, 2020). Given this definition, the shareholding pattern of each firm was observed to see if family members owned 10% or more shares, either directly or indirectly.

Measures of performance:

Solely accounting measures such as return on assets and current ratio was used to measure the financial performance of a firm. The current ratio is derived by dividing current assets by current liabilities. A current ratio greater than 1 indicates that a firm has more current assets than current liabilities. A low current ratio indicates a problem with liquidity and suggests that a firm may not be able to pay its short-term debts. A high current ratio indicates that a firm is more likely to be able to meet its short-term debts. The current ratio was chosen over other measures of liquidity, such as working capital, because it allows us to account for a company's size. Moreover, measuring liquidity in analyzing the impact of Covid-19 on a firm's performance due to the potential shock to sales and, therefore, current assets. If firms are less able to pay their debt obligations, this suggests a potential for bankruptcy in the future. Secondly, return on Assets (ROA) is a profitability ratio that was calculated by dividing Earnings before interest, tax, and depreciation (EBITDA) by a company's total assets. ROA values are between 0 and 1 and a higher ratio indicates the company is highly efficient in generating profit using its assets. A lower net income on the numerator or higher total assets would lead to a lower overall ROA value. The standalone balance sheet, rather than the consolidated balance sheet, was used to derive these ratios to isolate the performance of the parent company only, directly under the influence of family owners or management, rather than the performance of the subsidiary companies.

Hypothesis:

Overall, this paper hypothesizes that family firms would show better performance, especially in terms of the current ratio, whether this is observed as an increase in the current ratio or a lesser decrease in the current ratio relative to non-family firms. Moreover, this study also hypothesizes that while both family firms and non-family firms will show a reduced return on assets, non-family firms will show a greater decrease in their ROA. Firstly, for the current ratio, because family firms are less reliant on volatile stock market fluctuations to fund their operations and family members are less likely to withdraw their ownership in a company, this would provide family firms with a more stable asset and funding base and, therefore, even if their current ratio reduced, it would reduce less than non-family firms. Moreover, because family-firms tend to have larger ownership by a single party or manager, this would provide monetary incentives to improve performance. This stronger alignment of goals can reduce agency costs as family firms coordinate their response to market challenges and can be observed in improved firm performance.

In contrast, because family-firms are more reliant on concentrated family ownership to fund their operations, they might have greater risk because the one shareholder bears a larger proportion of the cost when profits are low or when the stock market is volatile. Thus, in the event that a family member does reduce funding through ownership, it would have a larger overall impact on a firm's total assets than if a shareholder with significantly less equity sells their common stock. Moreover, non-family firms may show better performance as conflicts in family firms are likely to cause decision-making inefficiency during economic hardships. These negative effects may work against the performance of family-firms and could potentially disprove the hypothesis. Nevertheless, if the hypothesis is true, the data would point to greater performance, in terms of the current ratio and return on assets, for family firms while the t-test will prove a statistical significance in the differences in firm performance between family firms and non-family firms.

In terms of the overall market impact of the pandemic, it can be assumed that with the sudden spike in unemployment in March and April, consumer purchasing powers would have decreased leading to lower consumer spending. This is likely reflected as reduced net incomes and profitability in a firm’s annual financial report. The reduction in net income, as total sales reduce, can be expected to lower both the return on assets ratio and current ratio. Similarly, lower sales could reduce accounts receivable and cash, lowering a firm’s current assets, and therefore,

its current ratio. At the same time, because of the sudden increased demand for information technology during online learning and work at home policies, this might have lead to improved sales within the IT sector. These effects are likely to be observable in both family and non-family firms. It would be interesting to see how these factors work against each other to affect companies' financial ratios.

Data Analysis:

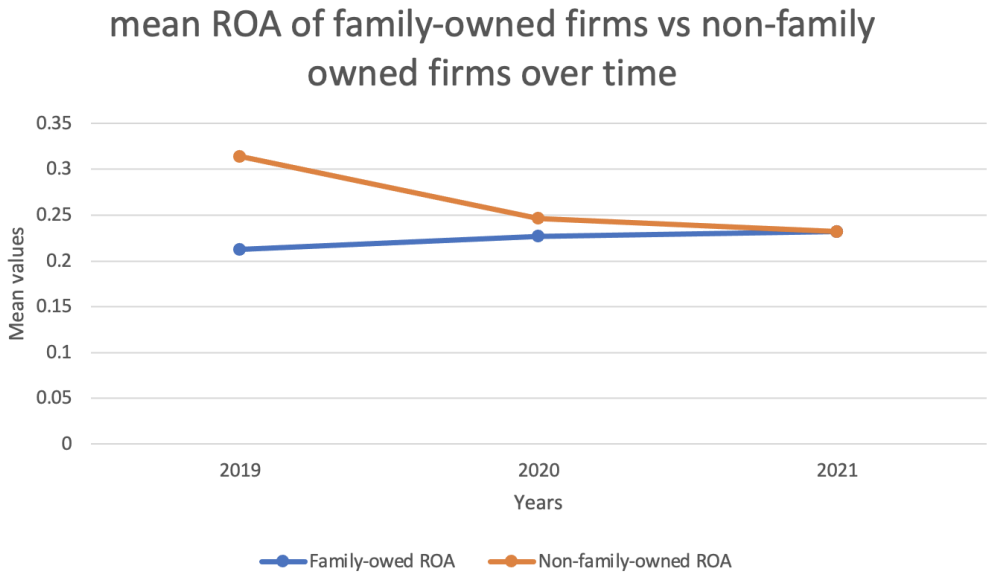

Figure 1: Graph showing the mean ROA of family firms vs non owned firms over time

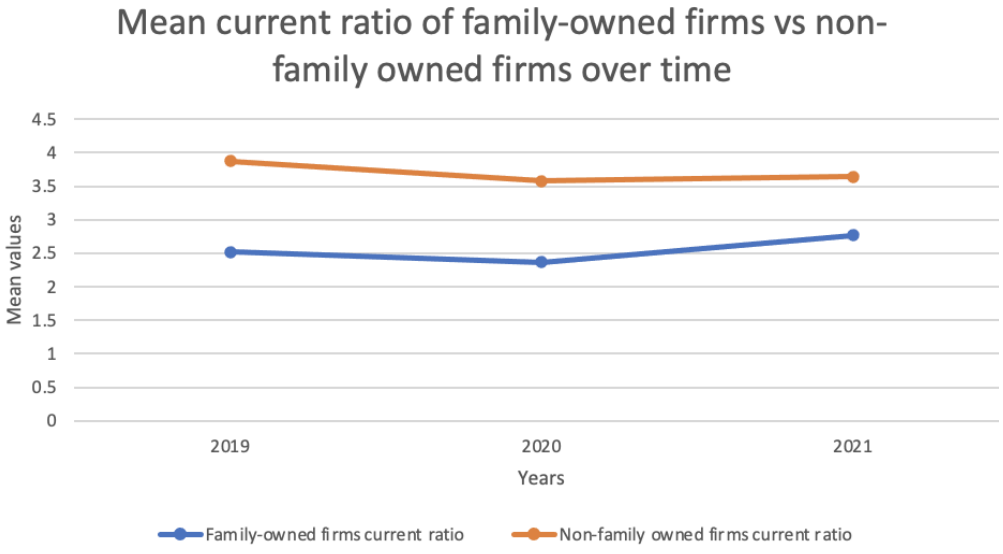

Figure 2: Graph showing the current ratio ROA of family firms vs non-family firms over time

In 2019, non-family firms seemed to perform better on both ratios in comparison to family firms, shown by the higher mean values 0.314 for return on assets (ROA) and 3.87 for the current ratio. In fact, non-family owned firms had a higher current ratio for all years, indicating greater liquidity and ability to meet their debt obligations and stay in business in the long run. Thus, the data on the graph alone proves the hypothesis. Both family firms and non-family firms experienced a slight dip in the current ratio in 2020. However, the mean current ratio of family-owned firms in the IT industry had an overall increase from 2.52 in 2019 to 2.77 in 2021. In contrast, the mean current ratio of non-family owned firms had an overall decrease from 3.97 in 2019 to 3.64 in 2021. A decrease in the current ratio would either be due to an increase in current liabilities or a reduction in current assets. Moreover, non-family firms had a higher standard deviation in the calculation of the current ratio for all years 2019 to 2021 (see Figure 8 in the appendix). The standard deviation in 2021 was 2.1, which was also the highest of all years. This suggests that the decreasing trend in the current ratio for non-family firms is not necessarily conclusive due to the high degree of variability. This high variability also suggests that the profitability of non-family firms was more volatile during market shocks.

Just like with the current ratio, in 2019, non-family firms performed better using the return on assets measure of profitability. This is shown through the 0.102 difference between the mean ROA of non-family firms (0.314) and family firms (0.212). However, in 2020 non-family firms showed a significant decrease in their mean ROA to 0.248 (Figure 1). In contrast, family firms had a slight increase in their mean ROA value to 0.227. Since the annual report was dated March 31st, 2020, the slight dip in financial performance may be attributed to India's first lockdowns in March. However, the annual reports might also have been created too soon to reflect the economic hardships of lockdown. With global supply shocks and reducing consumer demand, this would have led to a fall in net income and therefore reduced the ROA value. However, this does not explain why family firms experienced a slight increase in the mean ROA values and might suggest an inherent advantage in their organizational structure. The decreasing ROA trend for non-family owned firms and increasing ROA trend for family firms continues in 2021. Ultimately both groups end with the same mean ROA of 0.232 in 2021, once again proving the hypothesis (Figure 1). This may suggest that family firms were more resilient to market shocks during the covid pandemic and continued to produce high profitability using their

assets. However, to test if the variations of the current ratio and return on assets were due to chance, or are significant enough to continue to support the hypothesis, a t-test was later used.

Possible explanations for differences in the ratios:

Non-family firms may have faced a reduction in the current ratio because they were more reliant on the volatile stock market to raise capital. As shareholders withdrew their funding, non-family firms may have to borrow from other sources such as banks, increasing their current liabilities. The reduced funding by common stock could have also reduced current assets. This explains why the mean current ratio of family firms increased while that of family firms decreased. Additionally, a reduction in current assets, which would also lower the current ratio, could have stemmed from lower inventory levels due to global lockdowns and difficulties importing materials, or a reduction in sales. However, an increase in the current ratio, as shown by family firms doesn't necessarily suggest better performance if the source is inventory piling up and increasing current assets. As shown by the graph, the ROA of family firms increased each year from 2019 and 2021 while the ROA of non-family firms decreased between 2019 and 2021. The return on assets ratio could increase because of a decrease in total assets or an increase in net income. The increased ROA from family firms might stem from reduced agency costs, an alignment of goals, and a greater incentive to maximize profit, making management more efficient at generating profit with their assets. While none of the explanations are proven empirically and must be read with caution, they are reasonable theories of performance differences between family firms and non-family firms.

Testing Data significance:

To conduct the T-test, the data was reformatted to find the percentage change in the value of the current ratio or return on assets for each company from the year 2020 to 2021 (Figure 9 and 10 in Appendix). The dataset from the year 2019 could be left out from the t-test because the 2020 annual report was released on March 31 2020 and this was early enough that the effects of lockdown and high unemployment aren't likely to be observable on the companies' annual reports. Therefore, the annual reports released on March 2020 could be considered pre-pandemic and the annual reports released on March 2021 could be considered as during the covid pandemic. The t-test was conducted twice for the percentage change in ROA for family vs non

family firms from 2020 to 2021 (Figure 3) and the percentage change in the current ratio for family vs non-family firms from 2020 to 2021 (Figure 4).

The null hypothesis states the mean of the two samples (family-owned vs non-family owned) has no statistical relationship. More specifically, family-owned firms and non-family owned firms did not show different firm performances, measured in terms of current ratio and return on assets, pre-pandemic, and during the pandemic. The alpha value is 0.05 and since the p-value is not less than the alpha, for both the % change in ROA in the % change in the current ratio from 2020 to 2021, we fail to reject the null hypothesis. Thus, there was no statistical difference in the impact of covid-19 on family-owned businesses and non-family owned businesses, and the hypothesis discussed earlier is discredited.

t-Test: Two-Sample Assuming Unequal Variances		
	ROA % change	*ROA % change*
Mean	0.219926774	0.046571471
Variance	0.149120116	0.061009188
Observations	11	14
Hypothesized Mean Difference	0	
df	16	
t Stat	1.295205694	
P(T<=t) one-tail	0.106813339	
t Critical one-tail	1.745883676	
P(T<=t) two-tail	0.213626679	
t Critical two-tail	2.119905299	

Figure 3: T-test of the % change in ROA of family and non-family firms between 2020 and 2021.

t-Test: Two-Sample Assuming Unequal Variances		
	Current ratio % change	*Current ratio % change*
Mean	0.259515724	-0.034798652
Variance	0.990798297	0.051748675
Observations	11	14
Hypothesized Mean Difference	0	
df	11	
t Stat	0.961129817	
P(T<=t) one-tail	0.178569176	
t Critical one-tail	1.795884819	
P(T<=t) two-tail	0.357138352	
t Critical two-tail	2.20098516	

Figure 4: T-test of the % change in current of family non-family firms between 2020 and 2021.

Limitations of the study:

The study conducted should be interpreted and extended with caution due to certain limitations. The first limitation lies in the ambiguous classification of family firms and non-family firms as this solely depends on the definition used in the study. For example, if family firms were instead defined as those in which family members made up at least 10% of the board of directors, several of the firms classified as family-owned would then be classified as non-family owned. In this case, family-owned firms were defined in terms of management, instead of the ownership definition used in this essay. For example, in another study by Bhattacharya and Bhatt, family firms were not only identified not only based on "equity ownership of the family members", but also "the presence of family members on the board of directors" which this study did not (2016). Moreover, since this definition doesn't consider family firms to be one where the "Chairman of the company is a founder or his descendants", accordingly, Tech Mahindra would not be classified as family-owned because the chairman is the same as the founder (Sharma, 2020). Therefore, Bhattacharya and Bhatt would classify Tech Mahindra as a non-family firm. Other definitions require different degrees of family ownership. For example, Garćia-Ramos and Garćia-Olalla consider family-firms to be families indirectly or directly own at least 25% of the firm (2011). Zhou considers family ownership to exist where families have at least 5% shareholding (2012). Other studies, like that done by King and Santor, classify family firms as one where families have "control" by "holding 20 per cent or more of the firm's voting shares" (2008). This ambiguity defining family firms in terms of direct ownership, indirect ownership, voting rights, or management could lead to mixed results in analyzing the performance of family firms and would affect our interpretation of whether family firms performed better or worse than non-family firms.

Secondly, there are limitations to using return on assets and the current ratio as a measure of a firm's performance. While ROA is a good measure of a firm's ability to utilize its available assets and convert them to earnings, it does not account for intangible assets. This is particularly important in the information technology industry where intangible assets, such as patents on groundbreaking software, might greatly increase a firm's value. Moreover, return on assets does not account for borrowed capital which can also be used to generate profit. That being said, ROA is a useful indicator of firm performance when comparing companies of the same industry, as

this paper has done, as companies from different industries require different amounts of assets to operate. Secondly, concerning the current ratio as a measure of performance, perhaps the acid-test ratio would have been a better measure of liquidity as it divides quick assets by current liabilities rather than current assets. This eliminates the current assets like inventories and prepaid expenses that are less convertible to cash and therefore may be a more accurate representation of a company's true ability to meet its short-term debt obligations.

Moreover, given that the firms chosen for the dataset were taken from the NSE500 index, they were more likely to be the most profitable IT firms or large public firms with huge levels of assets. This means the firms chosen for the study don't represent how the average family firm or non-family firm might respond to covid-19 or other economic shocks. Perhaps smaller firms are more volatile and less able to absorb economic shocks due to a lower overall number of current assets and a lack of leverage with governments and banks for financial support. A study found that smaller firms were more "vulnerable in general to cyclical shocks" during the Great recession than "larger mature businesses" (Fort, Haltiwanger, Jarmin & Miranda, 2013). Moreover, because the firms listed on the NSE index are public, unlike private firms, they can compensate for a reduction in sales during Covid-19 by issuing common stock. This would not only increase their overall asset level, but it means they are more able to raise capital to support their short-term liabilities and costs using stockholder's equity and, therefore, they might be less susceptible to changes in market conditions compared to small and medium-sized companies. Given the importance of common stock and stockholders' equity to the firms used in the dataset, perhaps return on equity (ROE) might have been another valuable indicator of firm performance here as these companies are likely more reliant on selling common stock to raise capital for operations. ROE would help reveal how efficient family firms compared with non-family firms are at turning stockholder's equity and shareholder's investments into profits.

At the same time, larger companies may be more prone to sudden economic shocks due to stock market volatility. Given this, perhaps separating the data into quarterly reports would have been more informative as certain quarters had greater market volatility and economic slowdowns than others. For example, the share price on the NSE50 index drastically fell towards the end of January in 2021 from 14644.7 on January 20 to 13634.6 on January 29 (NSEIndia). Similarly, the return on assets ratio was likely lowest in April 2020, due to the sudden spike in unemployment, nationwide lockdowns, and decreased consumer confidence and spending. This

leaves room for future research to conduct a larger scale more extensive study that would analyze the short-term fluctuations in profitability (using ROA) and liquidity (using the current ratio) of family-firms and non-family firms.

Moreover, because the study was limited to companies within the Information Technology sector, the data may have not been representative of how the average family or non-family firm's performance, across different sectors, changed during the pandemic. The IT sector may have been more resilient to market shocks because of increased demand for information technology innovations and software as the world began to move online. The necessity of the IT industry during the Covid-19 pandemic could explain why the results of pre-pandemic and during the pandemic firm performance were not significant enough for analysis. For example, a study looking at stock market volatility during the Covid-19 pandemic found that "the idiosyncratic shock" was "positive for telecommunications, healthcare, and information technology firms" and firms in different industries had "differentiated the economic impact" (FRBSF, 2020). Similarly, a study looking at 'the impact of Covid-19 on the performance of firms on the Indonesian stock exchange', by Sunitha Devin, found different profitability ratios and liquidity ratios varied across industries (2020). More specifically, the sectors that "experienced a decrease in the liquidity ratio and profitability ratio" included the "property, real estate and building construction" industries (Devin, 2020). Perhaps studying the performance of family firms as compared to non-family firms in the tourism or consumer goods industry would have produced more significant results and proven a correlation between family ownership and performance. While Devin's study did not distinguish firm performance through categories of family firms and non-family, but only by industry, this creates a possibility for future research to separate the performance of family and non-family firms by industry sector to find a more significant trend in changing profitability and liquidity ratios.

Conclusion

Overall, while non-family firms within the IT industry showed higher performance, in terms of return on assets, and greater liquidity, in terms of the current ratio, for all years, the t-test shows there is no statistical difference between their performance pre-pandemic and during the pandemic. While the essay is mostly extended to highly profitable firms within the IT industry, it does also suggest that during recessionary business cycles there is no significant performance

difference between family firms and non-family firms. Future studies can be conducted more in-depth with independent variables like the degree of independent directors on the board, percentage of voting rights within family members, and degree of equity ownership by family members to analyze firm performance across industries. This would not only allow for a larger database that is more representative of a population but if these studies show a statistically significant correlation between family ownership and management and firm performance, this would provide insight into how certain organizational behavior and leadership characteristics can help a firm maximize performance, profit, and efficiency.

Appendix

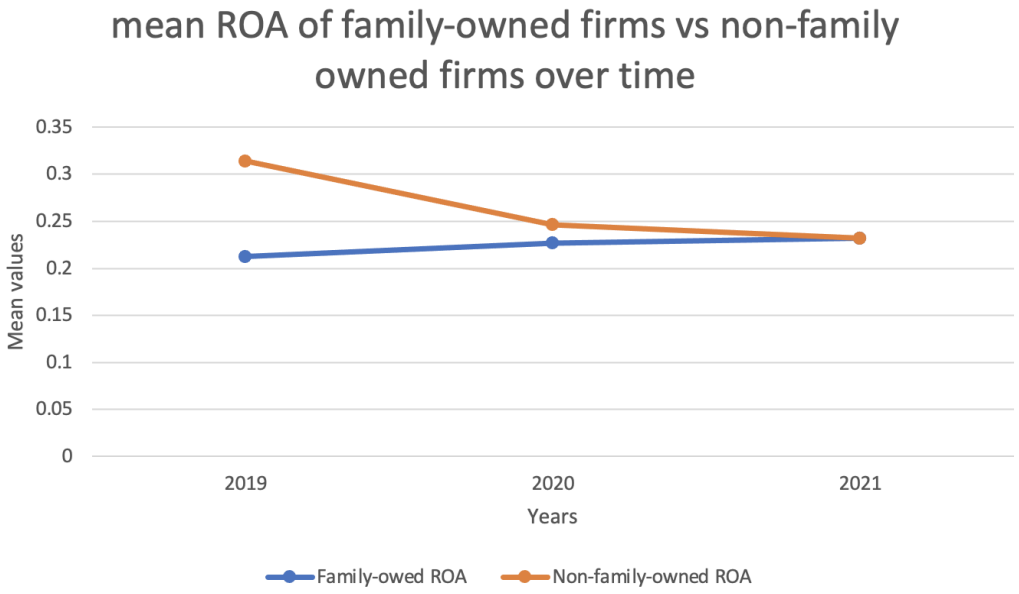

Figure 1: Graph showing the mean ROA of family-owned firms vs non-family owned firms over time

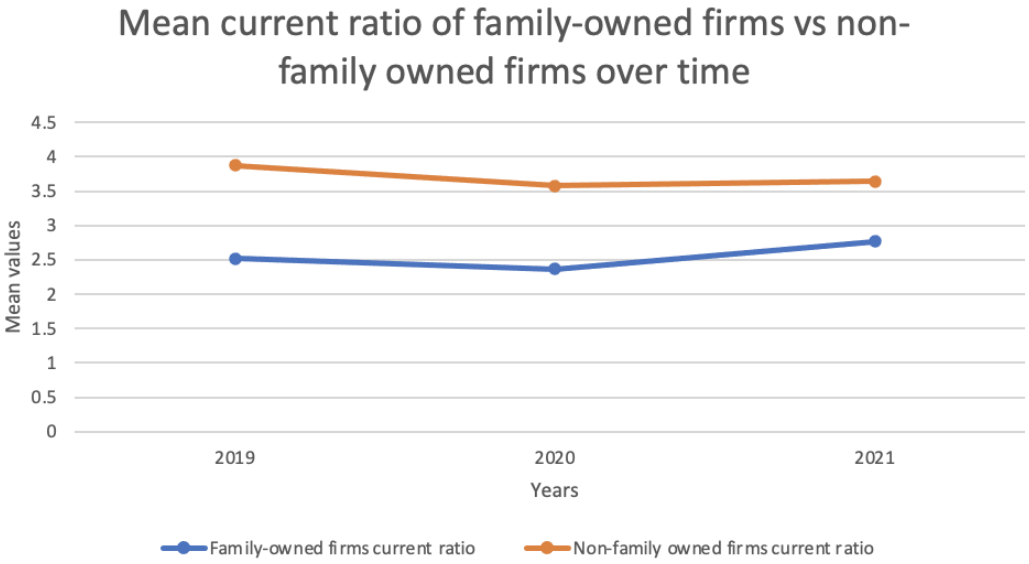

Figure 2: Graph showing the current ratio ROA of family-owned firms vs non-family owned firms over time

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P(T<=t) two-tail	0.357138352	
t Critical two-tail	2.20098516	

Figure 4: T-test of the % change in current of family-owned and non-family owned firms between 2020 and 2021.

Year	March 31 2019						
Firm Name	Earnings	Total Assets	Return on Assets	Current assets	Current liabilities	Current ratio	Family-owned
Affle (India) Ltd. (March 31)	703.12	935.85	0.75131698455949	543.71	455.12	1.1946519599	NO
Birlasoft Ltd.	3920	16638.14	0.23560325853731	9665.54	4445.17	2.1743915305	YES
Coforge Ltd.	6452	11213	0.57540354945152	8638.00	2196	3.9335154826	NO
Cyient Ltd.	5932	25,801	0.22991356924150	15,617	2,573	6.0695685969	NO
Firstsource Solutions Ltd.	5,355	23,717.59	0.22578179317544	7,152.42	822.14	8.6997591651	NO
HCL Technologies Ltd.	11747	37456	0.31362131567706	18707.00	6376	2.9339711417	NO
Happiest Minds Technologies Ltd.	662.8	4,118	0.16095582699919	3323.30	4,319	0.7694783393	YES
Infibeam Avenues Ltd.	1,949	29,938.69	0.06509970877149	4877.05	3,450.15	1.4135762213	YES
Infosys Ltd.	9761	78,930	0.12366653997212	46,223	15,430	2.9956578094	NO
Intellect Design Arena Ltd.	14850.23	137166	0.10826465742239	82545.18	37548.53	2.1983598292	YES
KPIT Technologies Ltd.	1032.98	12,387.49	0.08338896741793	5501.27	2,581.99	2.1306317995	YES
L&T Technology Services Ltd.	8105	32,258	0.25125550251100	22719.00	7,839	2.8982013011	NO
Larsen & Toubro Infotech Ltd.	14750.8	62,266	0.2369	48405.00	14,808	3.2688411669	NO
MindTree Ltd.	10645	41,790	0.25472601100741	27658.00	8,551	3.2344754999	NO
MphasiS Ltd.	7,694.33	42,777.06	0.17987047263182	19,509.45	9,231.15	2.1134365707	NO
Oracle Financial Services Software Ltd	12820.53	44,454	0.2884	25387.10	7,383	3.4387050895	NO
Persistent Systems Ltd.	5,805.36	24,888.72	0.23325265421443	14,395.49	2,504.56	5.7477121729	YES
Route Mobile Ltd.	9404.67	22,143.93	0.42470645454533	15,676.19	13,494.36	1.1616845852	YES
Sonata Software Ltd.	36,286	65,692	0.55236558485051	53,263	10,605	5.0224422442	YES
Tanla Platforms Ltd.	90.68	1052.46	0.08616004408718	570.47	305.54	1.8670877790	YES
Tata Consultancy Services Ltd.	39,506	99,500	0.39704522613065	79,032	18,896	4.1824724809	NO
Tata Elxsi Ltd.		114338.88	0.2536	100800.52	18,821.49	5.3556078716	NO
Tech Mahindra Ltd.	63,369	303,420	0.20884912003163	179,187	78,464	2.2836842373	YES
Wipro Ltd.	119,384	669,981	0.17819012777974	477,304	161,446	2.9564312525	YES
Mean			0.267430724			3.251847672	

Figure 5: Dataset of IT firms in 2019

Year	March 31 2020						
Firm Name	EBITDA - 2019-20	Total Assets	Return on Assets	Current assets	Current liabilities	Current ratio	Family-owned
Affle (India) Ltd.	888.27	2522.58	0.35212758366434	1,760.95	842.99	2.0889334393	NO
Birlasoft Ltd.	3919.2	16,725.11	0.23433029737921	8800.94	3202.81	2.7478807672	YES
Coforge Ltd.	7197	23461	0.30676441754400	9599	2931	3.2749914704	NO
Cyient Ltd.	4792	26727	0.17929434654095	14345	3896	3.6819815195	NO
Firstsource Solutions Ltd.	6288.88	23,656.34	0.26584332149436	5,054.42	1,204.66	4.1957232746	NO
HCL Technologies Ltd.	15292	53515	0.28575165841352	23,530	13941	1.6878272720	NO
Happiest Minds Technologies Ltd.	1,131	5,081	0.22262895829643	4,451	2,113	2.1063316297	YES
Infibeam Avenues Ltd.	2,167	29,214.98	0.07417427634727	4,088.90	2,320.50	1.7620771385	YES
Infosys Ltd.	10339	81,041	0.12757739909428	43,820	15,220	2.8791064388	NO
Intellect Design Arena Ltd.	748	15,226.32	0.04912546170052	8,404	5646.78	1.4882800463	YES
KPIT Technologies Ltd.	2,954	13,253.25	0.22288872540697	4,415.92	2,095.34	2.1074956808	YES
L&T Technology Services Ltd.	9,276	40,817	0.22725825023887	27,798	9,806	2.8347950234	NO
Larsen & Toubro Infotech Ltd.	15,519	83,167	0.1866	59,865	20,846	2.8717739614	NO
MindTree Ltd.	10898	51,565	0.21134490448947	32,534	13,237	2.4578076603	NO
MphasiS Ltd.	12050.5	55,123.63	0.21860860759714	25,665.57	12,182.95	2.1066794167	NO
Oracle Financial Services Software Ltd	15822.21	60,668	0.2608	39879.52	4,150	9.6085736107	NO
Persistent Systems Ltd.	4,929.54	26,615.72	0.18521159675560	14,556.01	3,249.21	4.4798612585	YES
Route Mobile Ltd.	9995.26	32,402.40	0.30847282917314	25,810.98	24,721.09	1.0440874573	YES
Sonata Software Ltd.	43,121	65,235	0.66101019391431	42,312	20,525	2.0614859926	YES
Tanla Platforms Ltd.	135.35	887.28	0.15254485618970	497.57	217.43	2.2884146621	YES
Tata Consultancy Services Ltd.	42,109	104975	0.40113360323886	79,194	24,026	3.2961791392	NO
Tata Elxsi Ltd.	25598.9	138,898.14	0.1843	120,120.26	21,737.24	5.5260125020	NO
Tech Mahindra Ltd.	57,261	303,220	0.18884308422927	180,431	57,138	3.1578109139	YES
Wipro Ltd.	126,592	653,064	0.19384317616650	457,133	164,438	2.7799717826	YES
MEAN			0.237519898			3.022253419	

Figure 6: Dataset of IT firms in 2020

Year	March 31 2021						
Firm Name	Earnings (EBITDA)	Total Assets	Return on Assets	Current assets	Current liabilities	Current ratio	Family-owned
Affle (India) Ltd.	462.46	3,027.73	0.15274149280153	1,406.76	877.15	1.6037849854	NO
Birlasoft Ltd.	5292.3	18330.65	0.28871316619978	11250.5	3091.23	3.6394897823	YES
Coforge Ltd.	7865	35134	0.22385723231058	21295	8425	2.5275964391	NO
Cyient Ltd.	4742	30389	0.15604330514330	18804	4634	4.0578334052	NO
Firstsource Solutions Ltd.	8,042.05	26,285.23	0.30595319120281	7032.23	2507.46	2.8045233024	NO
HCL Technologies Ltd.	19789	55,361	0.35745380321887	27714	10010	2.7686313686	NO
Happiest Minds Technologies Ltd.	2157.3	9,070	0.23786316776007	7,317	2,704	2.7063914780	YES
Infibeam Avenues Ltd.	1294.8	32730.2	0.03955979492945	7571	5638	1.3428520752	YES
Infosys Ltd.	11,823	93,939	0.12585826972822	48,282	17,622	2.7398706162	NO
Intellect Design Arena Ltd.	3,576	17,370.80	0.20586271213761	10064.88	5369.36	1.8745027340	YES
KPIT Technologies Ltd.	2209.44	14,167.09	0.15595581026167	6,611.97	1,904.62	3.4715428799	YES
L&T Technology Services Ltd.	7,891	48,201	0.16371029646687	33,139	10,107	3.2788166617	NO
Larsen & Toubro Infotech Ltd.	17838.03	99,877	0.17859997797290	75,740	23,217	3.2622647198	NO
MindTree Ltd.	16,567	63,606	0.26046284941672	45,732	15,922	2.8722522296	NO
MphasiS Ltd.	11103.62	59,441.06	0.18680050456704	30,522.37	11,237.46	2.7161271319	NO
Oracle Financial Services Software Ltd	16390.8	61875.63	0.2649	41340.46	3913.41	10.563794746	NO
Persistent Systems Ltd.	6,830.15	32,752.82	0.20853624207014	21,360.98	4,546.38	4.6984589937	YES
Route Mobile Ltd.	17564.86	58,939.68	0.29801417313429	48,906.89	23,249.68	2.1035511026	YES
Sonata Software Ltd.	40,710	78,254	0.52022899787870	56,338	18,879	2.9841622967	YES
Tanla Platforms Ltd.	163.96	993.12	0.16509585951345	579.76	325.63	1.7804256364	YES
Tata Consultancy Services Ltd.	46,546	109381	0.42554008465821	83,160	28525	2.9153374233	NO
Tata Elxsi Ltd.	36805.88	171,669.26	0.2144	139,136.93	26,446.42	5.2610875120	NO
Tech Mahindra Ltd.	68,470	333,747	0.20515540214593	200,202	59,613	3.3583614312	YES
Wipro Ltd.	150,709	657,363	0.22926297951056	453,795	181,324	2.5026747700	YES
MEAN			0.232107055			3.243097238	

Figure 7: Dataset of IT firms in 2021

YEAR - 2019	No. of firms	Mean ROA	Mean current ratio	St dev (ROA)	St Dev current ratio
Family-owned	11	0.21243967	2.520498181	0.151847022	1.544699897
Non-family owned	13	0.31396161	3.870681857	0.171571982	1.920344835
YEAR - 2020	No. of firms	Mean ROA	Mean current ratio	St dev (ROA)	St Dev current ratio
Family-owned	11	0.22664304	2.365790666	0.169430257	0.933221521
Non-family owned	13	0.24672339	3.577721902	0.074642822	1.993049077
YEAR-2021	No. of firms	Mean ROA	Mean current ratio	St dev (ROA)	St Dev current ratio
Family-owned	11	0.23220439	2.769310289	0.131510665	0.784502796
Non-family owned	13	0.23202469	3.643993888	0.082338214	2.100811291

Figure 8: Table comparing the mean ROA and current ratio values from 2019-2021

% change in current ratio and ROA for family owned firms from 2020 to 2021		
Family firms	Current ratio % ch	ROA % change
Birlasoft Ltd.	23.21%	32.45%
Infibeam Avenues Ltd.	-46.67%	-23.79%
Infosys Ltd.	-1.35%	-4.84%
Intellect Design Arena Ltd.	319.06%	25.95%
KPIT Technologies Ltd.	-30.03%	64.72%
Persistent Systems Ltd.	12.59%	4.88%
Route Mobile Ltd.	-3.39%	101.47%
Sonata Software Ltd.	-21.30%	44.76%
Tanla Platforms Ltd.	8.23%	-22.20%
Wipro Ltd.	18.27%	-9.97%
Happiest Minds Technologies Ltd.	7%	28%

Figure 9: % change in current ratio and ROA for family firms from 2020 to 2021

% change in current ratio and ROA for non-family-owned firms from 2020 to 2021		
Non-family firms	Current ratio % ch	ROA % change
Affle (India) Ltd.	-57%	-23%
Coforge Ltd.	-27%	-23%
Cyient Ltd.	-13%	10%
Firstsource Solutions Ltd.	15%	-33%
HCL Technologies Ltd.	25%	64%
Infosys Ltd.	-1%	-5%
L&T Technology Services Ltd.	-28%	16%
Larsen & Toubro Infotech Ltd.	-4%	14%
MindTree Ltd.	23%	17%
MphasiS Ltd.	-15%	29%
Oracle Financial Services Software Ltd.	2%	10%
Tata Consultancy Services Ltd.	6%	-12%
Tata Elxsi Ltd.	16%	-5%
Tech Mahindra Ltd.	9%	6%

Figure 10: % change in current ratio and ROA for non-family firms from 2020 to 2021

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