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Business Aviation: Utilization, Benefits, and Value

Tony Roberts

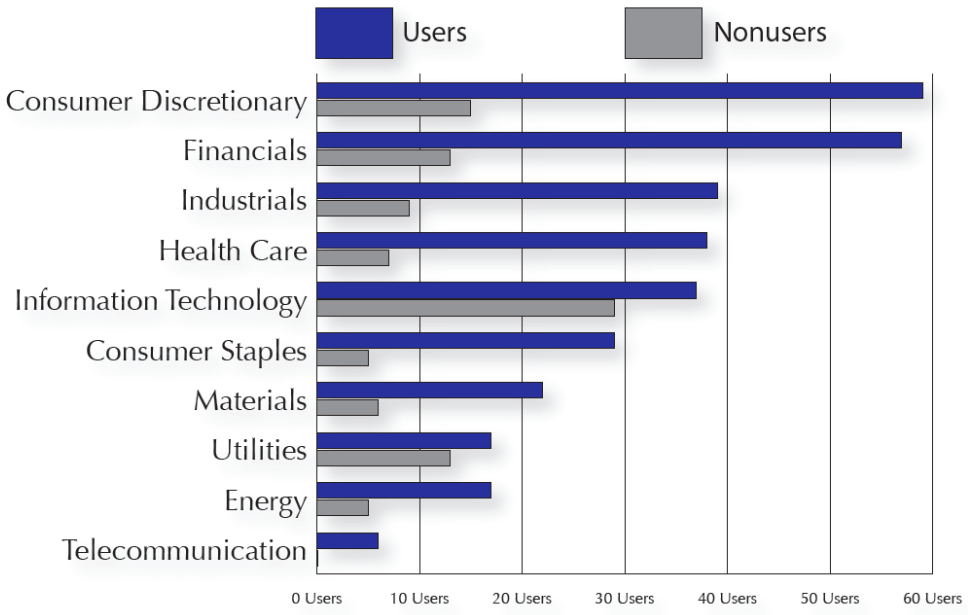
Abstract

In this study, I compare the performance of U.S. companies that use their own aviation transportation for business purposes (users) and those that use commercial transportation (non-users). I conduct qualitative analysis by interviewing CEOs and CFOs of various companies that are both users and non-users. Interviews of CEO's and CFO's coupled with numerical evidence are considered to determine advantages or disadvantages of business aviation. Data from the S&P 500 is used to calculate and provide explanation of how using business aviation affects the firms value, profitability, and asset utilization. Using both CAPM and Fama-French Three Factor model, I assess the expected returns of firms who are users compared to those who are not. Findings suggest that users have a competitive edge relative to non-users. I am able to conclude that business aviation is a tool and asset in assisting firms to run more efficient and maintain better relationships with clients. Firms who utilize business aviation receive many benefits while providing value to shareholders.

Business Aviation in the S&P 500

In an examination of the Standard and Poors 500 there are few differences between firms. These well-known firms have proven that they belong in an exclusive list of the 500 largest cap firms that are publicly traded in the United States market holding over 14 Billion dollars of market cap. While these firms have been set apart from the rest due do their success and current performance, each firm listed on the S&P 500 is doing everything possible to maintain its good standing, constantly looking for a competitive edge and increase its productivity and efficiency.

This paper analyzes the financial benefits of firms that use their own business aviation in the S&P 500 during the year 2012 and its relationship to profitability, shareholder value, and asset utilization. Each category is broken up into multiple measurements such as revenue growth, EBIT growth, market value growth, ROE, and ROA among many others. The previously mentioned measurements are used to compare firms who operate an aircraft for business purposes to those who do not. Those who do, whether it be via full ownership, fractional ownership, charter, or jet cards are considered *users* while those who do not are



labeled as *non-users*. Of all the firms in the S&P 500, 71% of the firms are considered to be users. The firms have also been classified into 10 Global Industry Classifications Standard (GICS) Sectors.

Business Aviation Uses

First, a glimpse into what business aviation is, who uses it and, how it's used, will help generate a greater understanding as to its importance for this study. The National Business Aviation Association defines business aviation as any use of an aircraft that helps facilitate the conduct of business, that are not conducted by the military or the scheduled airlines. The aircraft may range from piston airplanes that are relatively small in size, to helicopters, or jets. The majority of users in this study are jet operators but also include helicopters. Though this study focuses on the S&P 500 it is interesting to note that fortune 500 companies fly only 3% of the United State's total business aircraft. The rest are small to mid-sized businesses in small communities across the nation where airline service is either vacant or very limited. NEXA Capital lists the following as Business Aircraft Utilization strategies, or what can be labeled as general uses of business aircraft:

- **Transportation of employees and executives** – The most common use of business aircraft is transporting the company's own employees. Businesses can maximize the efficiency of their human resources by better allocating their knowledge assets (the collective knowledge of an organization, including its best practices, and the wisdom and experience of its employees and executives). Strategies include facilitating strategic opportunities, exploring new markets, extending management control, and improving relations with customers, investors and the public. Moving specialist management, legal or financial teams may be necessary to close transactions, or in the case of some

companies, to move production, engineering and operations teams on a regular basis between company facilities.

- **Transportation of customers** – With increasing frequency, companies use business aircraft to transport their customers, differentiating themselves from competitors. Companies can create a sales environment en route or simply bring customers to key facilities to accelerate their comprehension, build stronger relationships, and ultimately close more sales transactions.
- **Transportation of suppliers** – Companies can accelerate or improve supply chain integration by transporting suppliers more efficiently via business aircraft. This may involve improving a supplier's understanding of production facilities, bringing multiple suppliers to customer meetings, or simply concluding supplier negotiations.
- **Transportation of cargo, parts, and mail** – This entails moving company cargo, machine parts, and mail between internal facilities and externally between suppliers, customers, and potential customers. Depending on volume, this practice can substantially reduce alternative overnight transportation costs. The direct shipment of parts to remote locations, or the delivery of emergency components to keep production flowing, are two examples of strategies deployed.
- **Transportation for humanitarian and charity missions** – This pertains to the benevolent applications of business aircraft, which can be very powerful tools to advance community service. Companies are community based and often use their assets to serve their local area. For example, many companies use their business aircraft to transport non-employee patients to distant treatment centers for emergency treatment. Humanitarian and relief efforts often focus on the delivery of trained medical personnel

and supplies to disaster areas sometimes only accessible by air using business aircraft.

- **Direct applications** – This utilization strategy includes using business aircraft as an aerial platform to accomplish a given task or simply as an incremental profit center. Aerial platform applications include site mapping, aerial photography, and many other direct uses. Some companies will charter their aircraft to third parties to enhance the financial performance of their flight departments.

Business Aviation Benefits – Qualitative Analysis

A bulleted list of benefits could easily follow but instead of merely outlining often times obvious, typical, and expected responses, I conducted a few interviews of CEO's, CFO's, and entrepreneurs about how business aviation has impacted their very own businesses.

The first interview held was with Mr. Robert Harris, founder of ChemDry and owner of over 20 other businesses. ChemDry was founded in 1977 and has over 5,000 franchises worldwide including all 50 states. It is currently the largest carpet cleaning franchise chain in the world. In 2006 it was acquired by Home Depot. Mr. Harris first began to operate in business aviation shortly after ChemDry was founded via use of a single engine piston airplane. He described travel before his acquisition as tedious and time consuming. Before owning his own airplane the company was doing seminars and trainings at different franchises throughout the U.S. at a rate of one every three days. He said travel entailed, waking up and traveling to the airport, going through security, waiting to board, then arriving at his destination late that night. The next day he would do the seminar for the majority of the day. Then head back to the hotel, sleep, wake up and travel, repeating that same cycle. After buying his first plane he was easily able to do 2 seminars a day which for his business was "phenomenal", he continued saying, "It justified the cost of doing business, the amount of time being way from home, there was

absolutely no way we could have done this commercially." In the case of Mr. Harris, not only were there numerous franchises but also they were often times located in places where there was no access to major regional airports. He was able to spend three times the amount of time with each franchise owner, which led to better relations and greater success. Mr. Harris often times would use the plane to shuttle top franchise managers to other franchises to oversee trainings. He said, "To them it was highly motivational to ride in a private jet and receive that type of treatment." There was an increase in productivity, and consequently he was able to open more franchises at a much quicker pace. With that much travel one is bound to confront challenges with dispatching or maintenance, but in the over 20 years that Mr. Harris has operated an airplane, only once has he faced that challenge, it was a flat tire. Yet in a matter of one hour the problem was resolved and he continued on his way. When asked about possible disadvantages of participating in Business Aviation he replied, "I couldn't think of any!" Instead he continued explaining advantages that often times go unseen. He said with TSA and security being at its highest level ever, it would be impossible to carry around the amount of samples and chemicals necessary. TSA wouldn't allow it and many times their products would get lost or damaged. Possibly the biggest benefit Mr. Harris saw was its flexibility and capability to do things quickly. He said, "Tomorrow I will fly to St. George in the morning, then to Catalina Island, and then in the evening to San Diego all in one day, traveling commercially, it would take four." He went on to say, "I can be in St. George (tomorrow) and get a call and someone in Seattle has a deal, I can go straight to Seattle! Try and get a flight and get to the airport and get there from St. George…. It allows you to not have to plan as far in advance…and it gives you the ability to make quick decisions and go and react, something you can't do commercially." While the success that Mr. Harris has achieved may be attributed to many different things, he proudly stated, "If there are 10

things that made my company grow, I would put the airplane in the top 5." Mr. Harris stated it best when he said, "When you're operating a big company, your biggest asset is your time."

The next interview was with Charles Hays, CEO of The Systems Group out of Arkansas. The Systems Group focuses on industrial construction and operates with maintenance steel mills, paper mills, and all other types of steel production products. They first started their business in 1970 and it wasn't until 20 years later when they first got into business aviation. They started off slowly chartering here and there and it wasn't too long after that when they realized that ownership was a necessity for the company. They quickly saw that the business opportunities in southern Arkansas were so limited that "if we were going to go where we wanted to go and do what we wanted to do, we were going to have to go where the market was." When they begun traveling in their own airplane Mr. Hays said, "We found ourselves discovering trips that we should have been making the whole time but were so limited before with commercial airlines that we weren't making them." He repeatedly praised the easy nature of business aviation and its timesaving's. Before, they were spending valuable time on the road when they really needed to be in the office. After their purchase, they were able to have meetings during their flights, and be back in the office the same day after making a quick business trip to see a client. Mr. Hays compared the business world to a race and commented on how by operating your own airplane; you were consistently ahead of the rest of the competition. He said, " I don't want to go somewhere after everything has already been picked over, it gave us a competitive edge by being the first ones on the scene." Not only that but he said, "Our customer started to see us as a serious contender in the market." He continued saying, "The ability to be talking with a client and have him ask, 'when do you think you could be here?' and being able to respond, well how

about this afternoon was powerful…. If we wanted to advance and grow we felt it essential to use business aviation because it was so much quicker."

Due to the recession and the economy downturn it caused The Systems Group to reassess and not use it as readily and often as they would have otherwise. They sold their airplane and are currently chartering on average two or so times a month. Although Mr. Hays doesn't currently feel that it is cost effective to own and operate his own airplane he did state, "at some point we will really really need to get back into business aviation."

The last interview of the business aviation operators conducted was with Cache Valley Electric's CFO Brett Hugie. When asked how and why the company first arrived in the business aviation market he quickly broke down the history of the steel mill industry. He said that historically steel mills were located along the Mississippi river; so traveling back east was crucial. The mills were strategically placed in small rural communities, typically where farming was present, in order to guarantee hard working blue-collar employees. Consequently travel to these areas was extremely difficult and terribly time consuming because major airports and cities were located hours away. Not to mention that when the company was founded in 1915 they didn't apprize such commodities like fax, Internet, and other technologies that we take advantage of today. Being able to travel quickly back and forth and meet with clients was essential and often times priceless. It saved weeks if not months of time. The only other option was the postal service, but by the time the document arrived, revisions were made, then they were sent back and the other party made revisions etc etc too much time was wasted. Their costumers have now come to expect that face to face interaction and by conducting such travels their current customer relationships have never been stronger, "There is just no comparison to meeting someone and shaking their hand rather than setting up an impersonal conference call.". Mr. Hugie said, "The

airplane is gone every week, it isn't uncommon for us to suddenly decide to go visit a client. In a matter of 20 minutes we can be at the airport taxiing towards the runway."

From the perspective of the CFO, Mr. Hugie understands that, "Operating an aircraft is more expensive (compared to commercial flights) but savings on hotels, rental cars, and other expenses relieve that expenditure." When asked the effect that not operating an aircraft would entail he quickly responded, "Not having an airplane would be moving backwards for the company…our net worth would drop significantly without a flight department." One important feature that is subtly overlooked is the ability to transport valuable cargo. Mr. Hugie stated, "The way aviation has changed particularly with homeland security, has made it (business aviation) even more appealing and attractive and more efficient. Now you have to be at the airport an hour in advanced, at least. We take a ton of computers and equipment with us when we travel and to take that stuff through security, I dread it when we travel commercially because it's a lot of work!" Unlike with other company's, the economy hasn't hindered Cache Valley Electric's usage of the plane. Our interview was briefly interrupted by a phone call alerting him that the plane had just landed in Mobile, Alabama for a meeting. That was its third meeting that day and it was still only 2:30 P.M.

To conclude overviewing what is business aviation, we'll take a glimpse of its economic impact. According to data compiled by the General Aviation Manufacturers Association, business aviation:

- Directly supports more than one million jobs in the U.S. with a collective payroll in excess of $53 billion. Direct impacts, such as the sale and operation of an aircraft, multiply as they trigger transactions and create jobs elsewhere in the economy. Service industries such as hotels and catering also benefit from business aviation.

- Strengthens the country's balance of trade. In 2008, general aviation manufacturers generated $5.9 billion in new airplane export revenue. This was a 28 percent increase over 2007. These exports accounted for 44 percent of the total value of U.S. manufactured general aviation airplanes in 2008.
- Provides a lifeline to communities with little or no commercial airline service.
- Contributes lifesaving services to our communities through charitable and humanitarian flights. Helps thousands of businesses of all sizes to be more productive and efficient.

In total, these activities generate more than $150 billion in economic output as well as substantial, additional benefits.

Performance of Users and Non-Users – Quantitative Analysis

In this section, I identify certain indicators to compare firms that are users to those that are non-users. The indicators are broken down into 5 different categories, first being profitability. Profitability is broken up into four subcategories. Those being: Revenue Growth, Earnings Growth, EBIT growth and EBITDA growth. All were calculated by finding the difference between years (2012 and 2011) and dividing it by the previous years totals (2011) to find the amount of growth in the year 2012.

The next category is shareholder value. Within this there are three sub categories: Mean market value (MMV), Market Value growth, and return on equity (ROE). Market value was determined by the product of shares outstanding and current price. The growth was then calculated as previously mentioned above. ROE is found by taking Net Income/Total Equity.

Following shareholder value is asset utilization. This also is broken up into two sub categories consisting of average asset turnover and return on assets (ROA). Average asset

turnover (AAT) is simply Net Sales/Average Total Assets. ROA can be calculated by dividing Net Income by Total Assets.

The penultimate comparison strategy is to create two equity portfolios and compare the risk and return of each portfolio. Using the capital asset pricing model (CAPM) and the Fama-French three factor model we can create two portfolios, one strictly compiled of users and the other of non-users. We then can compare the theoretical appropriate required rate of return for these portfolios and see which would yield a higher return. The model for the CAPM is as follows

$$E(R_i) = R_f + \beta_i(E(R_m) - R_f)$$

Where moving from left to right, $E(R_i)$ is the expect rate of return, R_f is the risk free rate, β_i is estimate for the firm's systematic risk, and $E(R_m)$ is the expected return of the market.

For the Fama-French three factor model the following model was used

$$r = R_f + \beta_3(K_m - R_f) + b_s \cdot SMB + b_v \cdot HML + \alpha$$

Where $r = E(R_i)$, Rf is the same as above, $Km = R_m$, SMB is the small market capitalization minus the big factor, and HML is for high book-to-market ratio minus the low factor.

The last comparative strategy is comprised of two metric models that I've created. The first being mean returns and the second cumulative.

$$Mret = \alpha + \beta_1 \ln(Price) + \beta_2 Volume + \beta_3 Size + \beta_4 Spread + \gamma_1 User$$

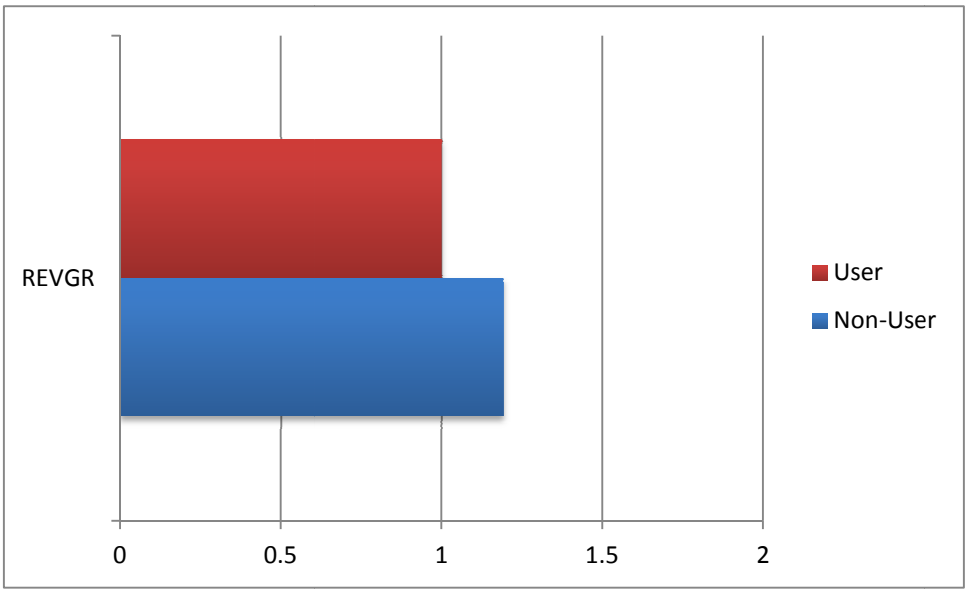
$$Cret = \alpha + \beta_1 \ln(Price) + \beta_2 Volume + \beta_3 Size + \beta_4 Spread + \gamma_1 User$$

Empirical Results

Profitability

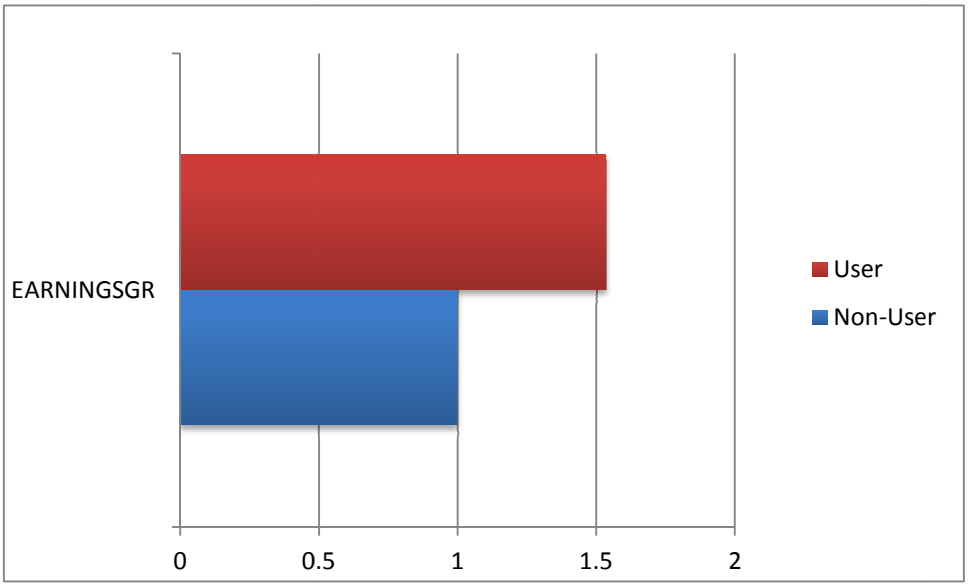
Resuming the previous order that was established in the study methodology and definitions sections we will review the results that were found. Please note that the following figures have all been normalized to a value of one.

Figure 1. Revenue Growth 2012



When scaled to a factor of one the results the non-user was 1.19183. The non-users grew at a 19 percent greater rate than users. Revenue growth is generally a good indication of a company's ability to sustain earnings. The t-value is 0.42, therefore shows little differential significance.

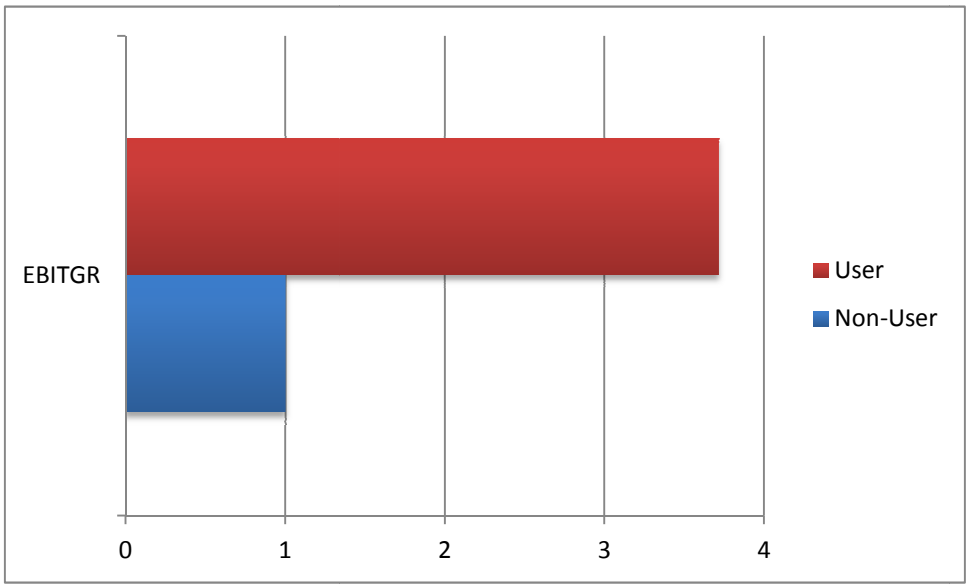
Figure 2. Earnings Growth



For earnings growth, users outperformed non-users. For every dollar a non-user would have earned, a user would have earned .53 cents more in the year 2012 alone. This category appears

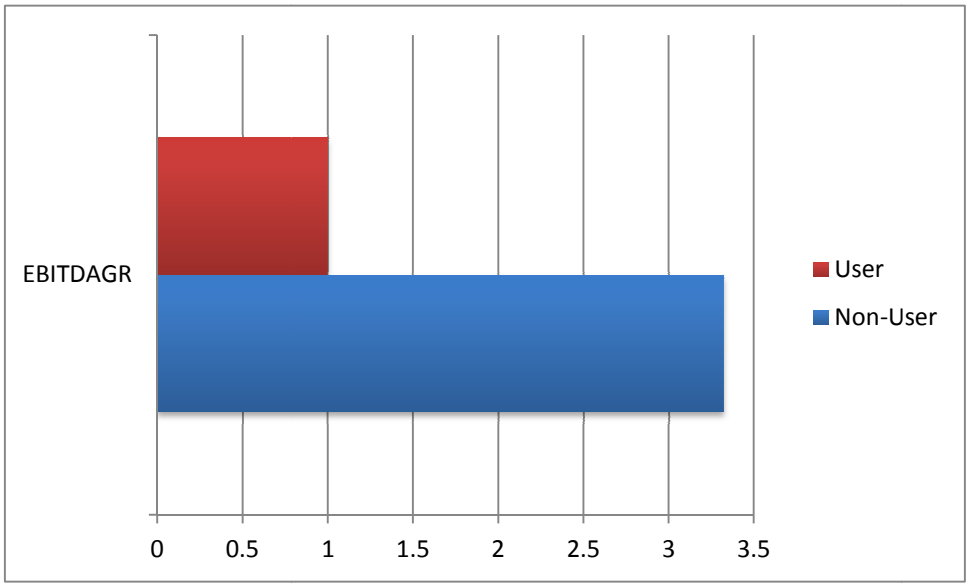
to be one of the most important statistically speaking due to its high t-value. At 1.76 earnings growth for users is significant at the 95% level.

Figure 3. EBIT Growth



EBIT (Earnings Before Interest and Taxes) and EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) are strong indicators of a company's momentum. For EBIT users hold a clear advantage, but that is quickly changed with EBITDA where non-users pull ahead. Ebit doesn't appear to have much statistical significance with a t-value of .25 but ebitda is significant but only at a 90% level with a t-value of 1.64.

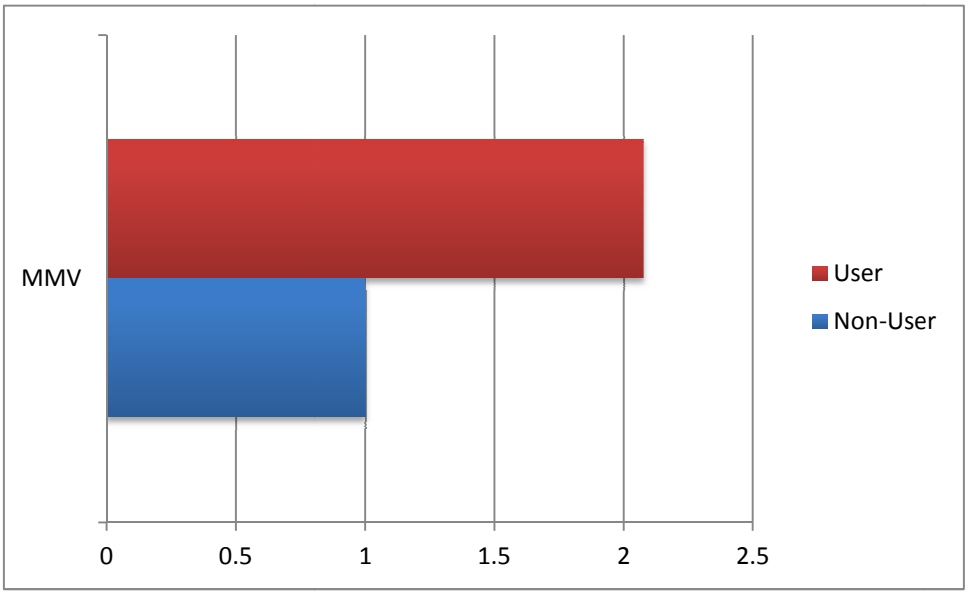
Figure 4. EBITDA Growth



That concludes the section of profitability. From the results we are able to see that in only one year it is difficult to find a clear winner out of the user vs. non-user. While non-users have a clear advantage as far as numbers go with EBITDA, the only other close category falls under revenue growth but the margins appear to be so slim that it's difficult not to argue for the users. Their earnings growth are significantly larger and coupled with their EBIT performance, should be viewed as more profitable companies.

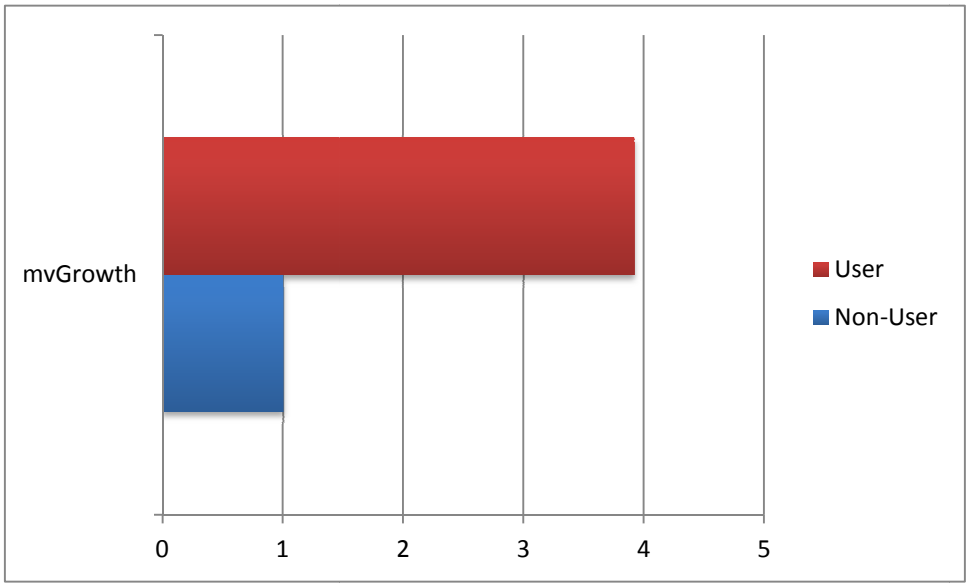
Shareholder Value

Figure 5. Mean Market Value



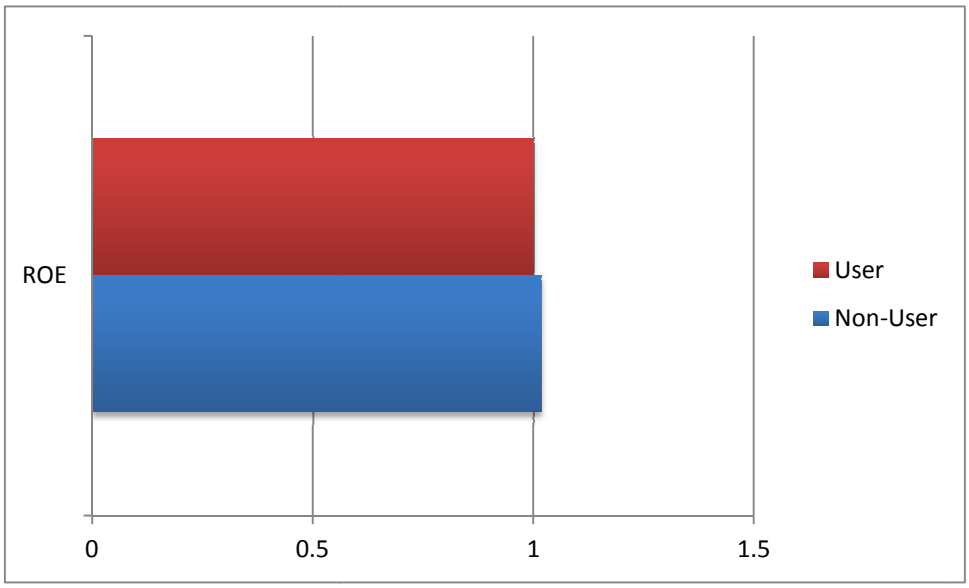
Users were able to see firms have a mean market value over twice that of non-users. The exact number is 2.08 in favor of users. This is the most significant category in the study. Its results found a differential t-value of 3.6 making it statistically significant and different from non-users at a 99% level.

Figure 6. Market Value Growth



Under market value growth users grew at nearly four times the amount of non-users. The ratio was 3.92 to 1. The t-value associated with this figure is 1.54 making it significant at the 90% level.

Figure 7. Return on Equity



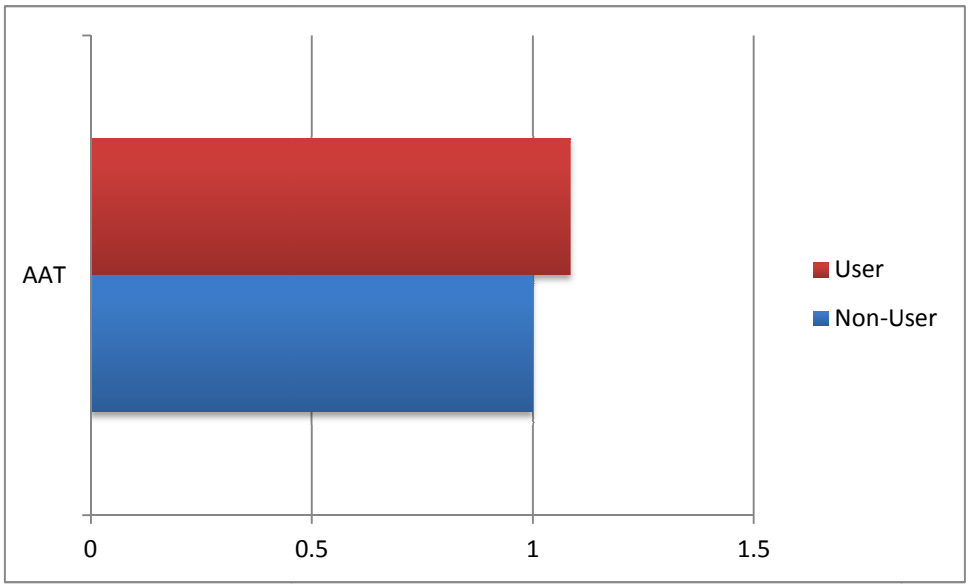
Equity capital can be seen as an ownership stake in a business by outside investors that allows it to grow in operational capability. The returns that are produced based on said capital are a key

indication of a firms ability to produce returns and bring in more equity based on need. We find little difference between users and non-users when comparing ROE.

It is evident that users are able to increase shareholder value despite what some might see as additional and unnecessary costs. The increase in the firm's efficiency and customer satisfaction directly correlates with the firm's value and thus increases shareholder value.

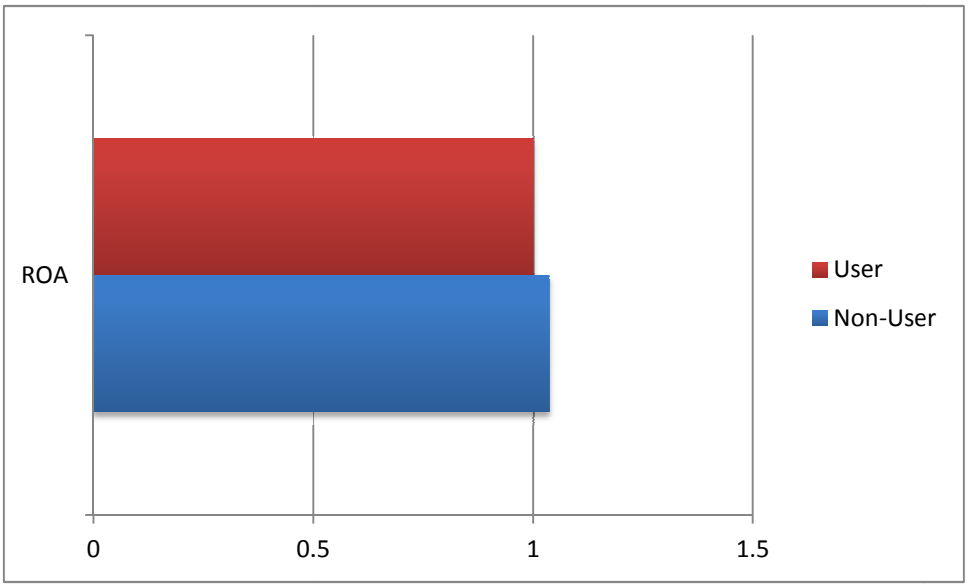
Asset Utilization

Figure 8. Average Asset Turnover i.e. Asset Efficiency



Asset efficiency reflects a company's ability to generate revenue and profitability through its assets. This also helps measure a company's productivity of assets. Users had a slight advantage with an asset turnover ratio of 8 percent higher than non-users. Statistically speaking the difference between users and non-users was not significant on any level with a t-value of 0.89.

Figure 9. Return on Assets



Return on Assets is a good indicator of a company's ability to produce bottom line earnings. In this study non-users barely slipped above users by only 0.03 though doesn't appear to have any statistical significance with a t-value of 0.33.

In conclusion of this section, it appears to be a push between users and non-users. Both resulted in narrow margins and therefore neither is a clear winner. The following graph depicts all of the previous findings in one graph. Many of the results are neck and neck and users and non-users split with four a piece. Interestingly enough, the margins of victory are greater for users and the only clear cut win for non-users falls under the category of EBTIDA Growth.

Figure 10. Overview of Results

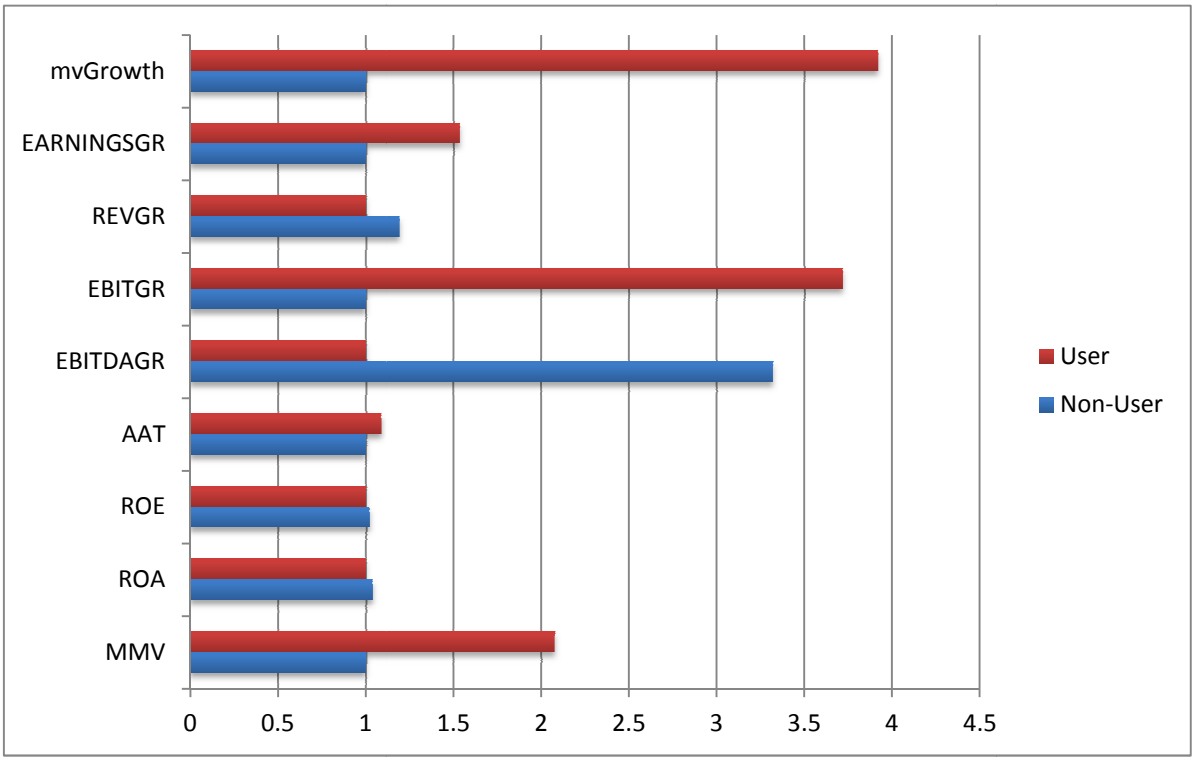


Table 1. Overview of Numerical Results

	RevGr	EarnGr	EBIT GR	EBITDA GR	MV Growth	MMV	ROE	AAT	ROA
Users	0.0586	0.0047	0.0527	0.00642	0.0223	28937768	0.05976	0.8582	0.0631
Non Users	0.0698	0.00442	-0.0142	1.9441	0.00569	13941894	0.06083	0.7912	0.0654
Diff	-0.0112	0.00028**	0.0669	(-)1.93768*	0.01661*	14995874***	-0.00107	0.067	-0.0023
T-Value	0.42	1.76	0.25	1.64	1.54	3.6	0.49	0.89	0.33

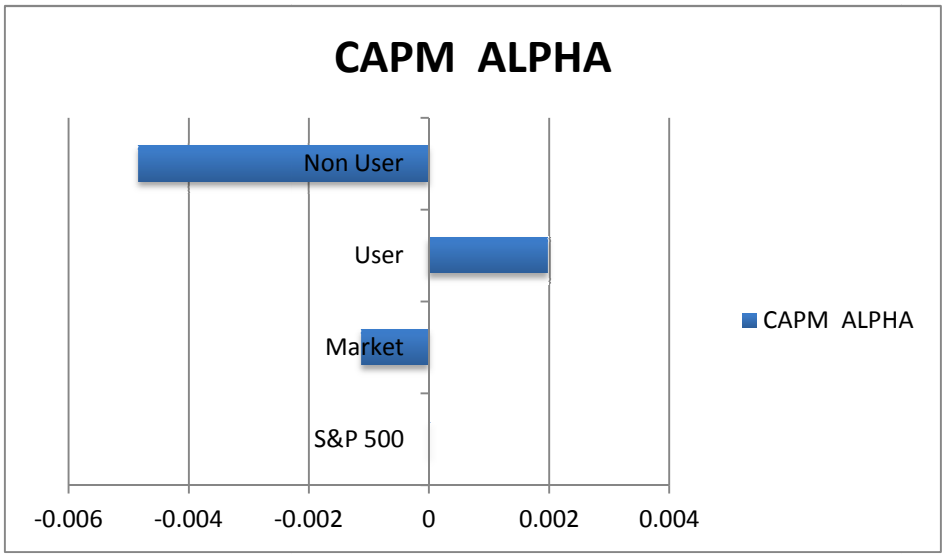
After reviewing the data from *Table 1*, we see that though the results are split, of the four categories that have any statistical significance (Earnings Growth, Ebitda Growth, Mean Market Value, and Market value growth) the three most significant fall under the users with earnings growth and market value.

CAPM and Fama-French Three Factor Model

As previously mentioned both the CAPM and Fama-French models attempt to determine a rate of return on an investment. The measurement is determined by an alpha value. The higher the alpha value the higher your expect return should be. Starting with the CAPM and

examination of figure 10 we see the results of non-users, users, the complete market, and the S&P 500.

Figure 11. CAPM Alpha



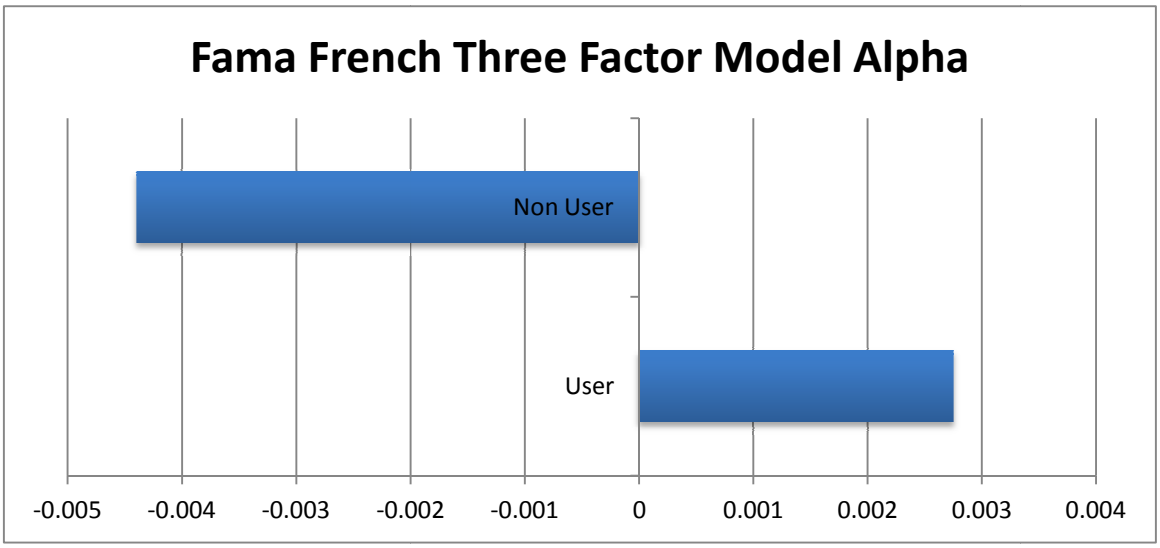
We see that besides the S&P 500, which is practically zero, users is the only positive alpha with non-users being extremely negative. Below the table shows each value and their t-statistics.

CAPM			
	ALPHA	BETA	T-STAT
S&P 500	0.00001482	1.02430337	0.016239
Market	-0.0011243	1.0418965	-1.78913
User	0.00196969	0.9462903	1.904031
Non User	-0.0048382	1.21797219	-2.66635

The difference between the user and non-user beta value is significant at the 95% confidence level. The t-value is 3.2928

Moving on to the Fama-French Three Factor model, which has the same initial model as the CAPM but adds to it SMB and HML making it a better estimator we find the following results.

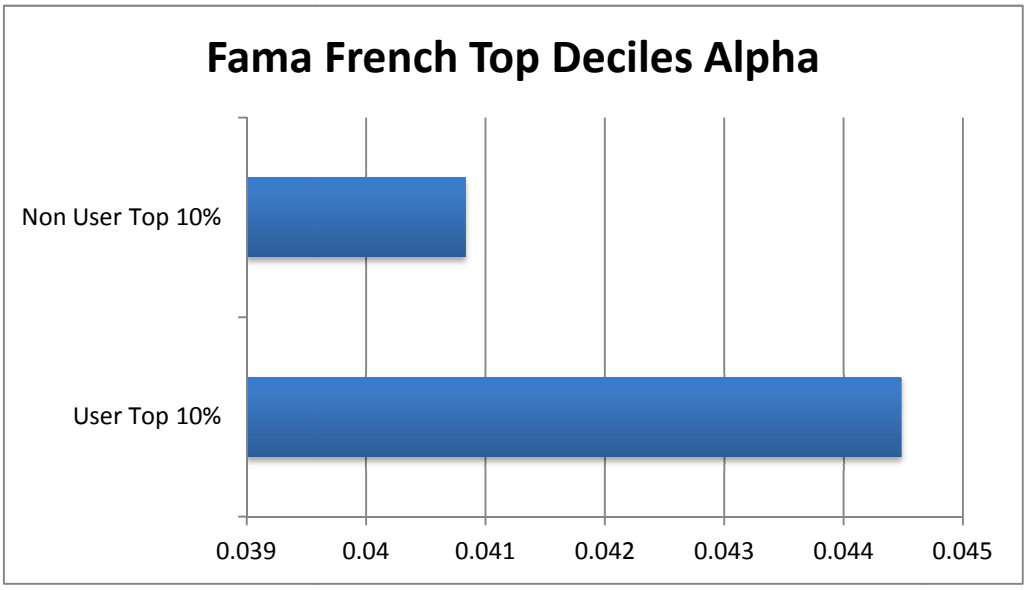
Figure 12. Fama-French



	Alpha	A T-STAT	BETA	B T-STAT	SMB	SMB T-Stat	HML	HML T-STAT
S&P 500	0.00069767	0.648603	1.01424569	27.21152	0.06452417	0.76812	-0.042474	-1.78293
Market	0.0011537	0.736822	1.06455807	16.35291	0.42316751	2.883669	-0.1389836	-2.07888
User	0.00274933	2.206888	0.94482996	23.13461	0.00575587	0.063047	-0.0626759	-2.12675
Non User	-0.0043956	-2.1343	1.18657146	14.92888	0.21041751	1.137519	0.00767752	0.197084

Once again user has the highest value of alpha and non-user has the lowest. When sorted into deciles, the top deciles or top 10 percent of the firms of both users and non-users we find the following results. Users still maintain a higher alpha.

Figure 13. Fama-French Deciles



Econometrics Model

For this part of the study data was pulled from CRSP and will be used along with data from NEXA Capital Partners. The CRSP data is comprised of price, volume, returns, bid, ask, and shares outstanding for the months of January 2012 through December 2012. The data is the mean of the monthly data for the year of 2012 and also separate it's cumulative totals. Further variables made were size (price * shares outstanding) and spread ((ask – bid)/2). The NEXA data included all of the following: Company Name, Industry, Relationship to Aircraft (i.e. owner, lessee, or fractional owner), Make, Model, S/N, N-Number, TICKER, and address.

The model used for the regression is the following:

$$Mret = \alpha + \beta_1 \, ln(Price) + \beta_2 \, Volume + \beta_3 \, Size + \beta_4 \, Spread + \gamma_1 \, User$$

Where User is a dummy variable for whether or not the firm is a user. Found below are the results.

Parameter Estimates Mean Returns						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	1	-0.00635	0.00504	-1.26	0.2081	0
size	1	-4.4E-05	2.15E-05	-2.06	0.0403	1.37277
volume	1	0.00173	0.000429	4.03	<.0001	1.36347
lnprice	1	0.00452	0.00119	3.79	0.0002	1.50037
spread	1	-0.00739	0.01721	-0.43	0.6679	1.2559
user	1	0.00349	0.0019	1.84	0.067	1.04513

Focusing on the dummy variable *user*, we see that it is slightly significant; this may be due to a relatively low sample size of only 500 companies, and with a more robust data set we may see an increase in significance. Using the same model as above but this time accounting for cumulative returns instead of mean returns we get the following results.

$$Cret = \alpha + \beta_1 \, ln(Price) + \beta_2 \, Volume + \beta_3 \, Size + \beta_4 \, Spread + \gamma_1 \, User$$

Parameter Estimates Cumulative Returns						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	1	-0.07241	0.05919	-1.22	0.2218	0
size	1	-0.00051443	0.0002524	-2.04	0.0421	1.37277
volume	1	0.02036	0.00504	4.04	<.0001	1.36347
lnprice	1	0.05294	0.01401	3.78	0.0002	1.50037
spread	1	-0.08416	0.20231	-0.42	0.6776	1.2559
user	1	0.04042	0.02233	1.81	0.0709	1.04513

While there are no major changes, it solidifies that our findings don't rely only on either a mean or cumulative return but that regardless of the data; User is still significantly different than zero and positive. Considering many firms have multiple aircraft, I created a dummy variable for users with 2-5 aircraft, 6-9, and 10 plus. Now using the following mean model we get these results:

$$Mret = \alpha + \beta_1 \, ln(Price) + \beta_2 \, Volume + \beta_3 \, Size + \beta_4 \, Spread + \gamma_1 \, User + \gamma_2 \, User2to5 + \gamma_3 \, User6to9 + \gamma_4 \, User10plus$$

Parameter Estimates Mean Returns						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	1	-0.00674	0.00503	-1.34	0.1807	0
size	1	-4.8E-05	2.24E-05	-2.15	0.0321	1.5021
volume	1	0.00175	0.000435	4.01	<.0001	1.4084
lnprice	1	0.00466	0.00119	3.91	0.0001	1.50579
spread	1	-0.00885	0.01721	-0.51	0.6072	1.26071
user	1	0.00729	0.00265	2.75	0.0061	2.03645
user2to5	1	-0.00517	0.0025	-2.07	0.0393	2.14312
user6to9	1	-0.00578	0.00375	-1.54	0.1237	1.4186
user10plus	1	-0.00157	0.00429	-0.37	0.7148	1.50265

From this model it is evident that as the users number of aircraft increase their returns decrease. Also it is important to note an increase in significance on the t-value of .91 from the previous t-stat. The most obvious explanation to this is diminishing marginal utility of operating multiple aircraft. As before, here are the results of the cumulative model.

$$Cret = \alpha + \beta_1 \ln(Price) + \beta_2 Volume + \beta_3 Size + \beta_4 Spread + \gamma_1 User + \gamma_2 User2to5 + \gamma_3 User6to9 + \gamma_4 User10plus$$

Parameter Estimates Cumulative Returns

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	1	-0.07606	0.05921	-1.28	0.1996	0
size	1	-0.00054915	0.00026394	-2.08	0.038	1.5021
volume	1	0.02054	0.00513	4.01	<.0001	1.4084
lnprice	1	0.05425	0.01403	3.87	0.0001	1.50579
spread	1	-0.0985	0.20263	-0.49	0.6271	1.26071
user	1	0.07608	0.03116	2.44	0.015	2.03645
user2to5	1	-0.04806	0.02949	-1.63	0.1038	2.14312
user6to9	1	-0.05742	0.04413	-1.3	0.1938	1.4186
user10plus	1	-0.01468	0.0505	-0.29	0.7714	1.50265

Once again we see nearly the same results as before, that user is positive and significantly different than zero using both mean and cumulative estimates.

Conclusion

Looking back at all of the different and diverse methodologies used to determine whether or not business aviation has a positive or noticeable effect on firms when comparing them to non-users in the S&P 500, no matter what kind of comparison it was, that of metrics, asset pricing, or any other measurement of value, it seems evident that the results generally favored that of users. There were a few exceptions, but that is to be expected when using over 15 different categories. We found that users have higher returns and are statistically significant. Also users have higher expected returns than the market, all S&P 500 firms, and especially higher than non-users. Finally we found that besides EBITDA growth and revenue growth, users had higher means of every other category.

As was mentioned by many in the interviews conducted, in the business world everyone is always looking for that slight advantage to give them an edge over their competition. It appears that business aviation is an excellent tool to help companies run more efficiently and establish

better relationships with clientele among many other benefits. The utilization of business aircraft provides great amounts of benefits while adding value to the firms.